HANSENYUNCKEN

Construction Environmental Management Plan (CEMP)

Project: Catherine Fields Public School

Job No: SC126

Rev: 4 | October 2020

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Contents

1 Document Information

1.1 Review & Approval

Review			
Position	**Name**	**Sign**	**Date**
Contracts Authorised Person	Kevin Gomez		
Snr Contracts Administrator	Ertac Turk		
Services Engineer	Nicholas Ko		
(CF) Project Manager	Paul Todhunter		
(CF) Contracts Administrator	Mikky Baroni		
(CF) Site Manager	Andrew Baker		
(CF) Site Safety Officer	Andrew Wackwitz		
(CF) Project Engineer	Basel Atatreh		
(CF) Site Engineer			
(CF) Cadet			
(CF) Foreman			
(CF) Site Administration			
Approval			
State HSE Manager	Peter Fay		
Construction Manager	Dean Marcon		

1.2 Change Information

Change Information			
Revision	**Description**	**Issued by**	**Issue date**
1	Preliminary		22-10-2019
2	Draft		09-04-2020
3	Final – Issued for SSDA Main Works		29-06-2020

2 Definitions

The following definitions and abbreviations have been used in this Environmental Management Plan. Further definitions and abbreviations are provided in referenced procedures and plans.

BIM360 Field	Cloud based QHSE field management software application designed specifically for the construction industry.
EMP	Environmental Management Plan (this document)
EPA	State Environment Protection Authority
ESD	Ecologically Sustainable Development
HSE	Health, Safety & Environment
HY	Hansen Yuncken Pty Ltd
HYWAY	An information management platform developed by HY utilising Microsoft SharePoint
NC	Non-Conformance
NGER	National Greenhouse and Energy Reporting
CF	Catherine Fields Public School
NVMP	Noise and Vibration Management Plan
OEH	Office of Environment and Heritage
PLN	HY Plan
PMP	Project Management Plan
POEO	The Protection of the Environment Operations Act
PROJ	Project Management
REO	Regional Environmental Officer
RMS	Roads and Maritime Services
S/C	Subcontract(s) or Subcontractor(s) as the context requires
Site Safety Supervisor	Site Manager
SSC	Site Safety Coordinator
SSO	Site Safety Advisor
SWMS	Safe Work Method Statement
TMP	Traffic Management Plan

3 Commitment & Policy

3.1 Scope & Application

The Construction Management Plan (CMP) has been developed to demonstrate that the proposed Works will be executed in accordance with legislated safety and environmental requirements with minimal inconvenience to stakeholders including neighbours and the general public.

Hansen Yuncken, appointed as Principal Contractor in accordance with NSW WHS legislation, complies with the requirements detailed in this Construction Management Plan, as well as the requirements of any other legislation or statutory bodies.

The proposed development includes the design and construction of a Core 35 Public School inclusive of; teaching spaces, ancillary & sport spaces, hall, library, administration spaces, canteen, special programs spaces and unique areas.

A combination of offsite and onsite construction techniques will be used to deliver a high quality, future focused innovative, state of the art school. Meeting the current and future school and community needs whilst complying with the requirements as detailed in the Educational Facilities Standards and Guidelines (EFSG) and providing a high level of end user satisfaction.

This EMP has been generated to satisfy the requirements of “ISO 14001:2015, Environmental management systems – Requirements with guidance for use” and the “NSW Government Environmental Management System Guidelines – 3rd edition”. It establishes guidelines and controls for all HY activities that may impact the surrounding environment for the duration of the works, including but not limited to; air, water, land, natural resource use & waste, flora & fauna, and their respective interrelationship. Furthermore, it has been designed to embrace the environmental management requirements, both in terms of the Contract and generally, to demonstrate HY as an environmentally responsible organisation to the broader community.

3.1.1 Hours of Work

The proposed hours of work for the project are as follows:

- Monday–Friday – 7am – 6pm
- Saturday – 8am – 1pm
- Sunday – Nil

The proposed hours align to Condition C4 of SSD 9477.

3.1.2 24 Hour Contact Details

The 24-hour contact details for the project are as follows:

Andrew Baker

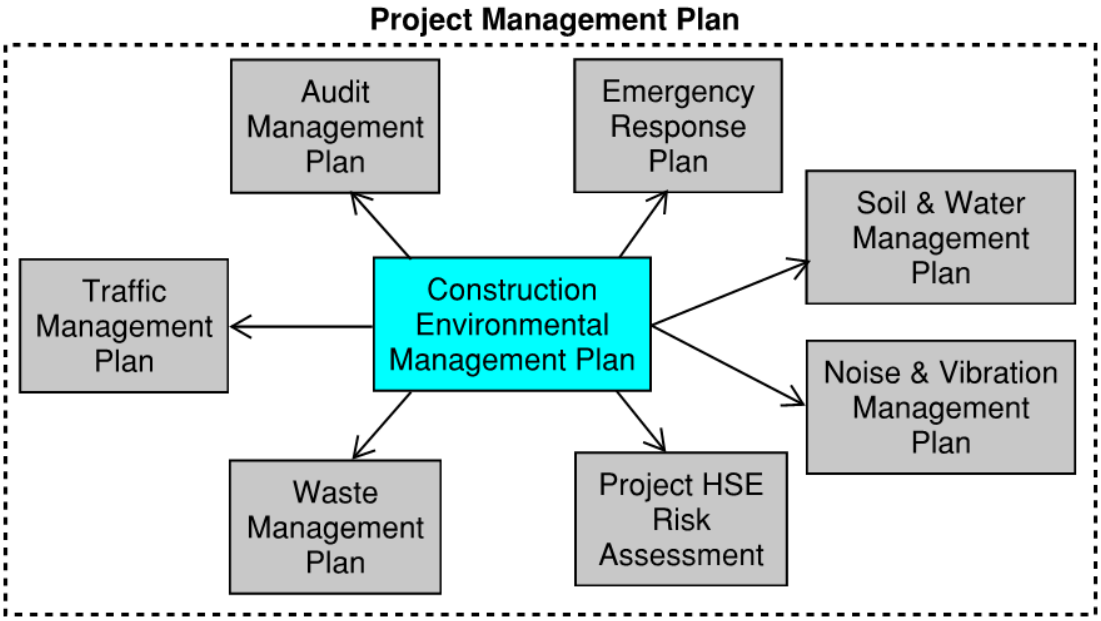
M: 0401 141 509

ABaker@hansenyuncken.com.au

3.2 EMP Interrelationship with PMP

This EMP forms part of Hansen Yuncken's Environmental Management and interfaces with the company's Quality & WHS Management Systems. Furthermore, this EPM is an integral part of Catherine Fields Public School PMP. The following plans referenced within this EMP form part of the overall PMP for the project and contribute to the environmental management procedures:

- **Project Site Induction** – Ensures all workers onsite are aware of the Environmental Management Plan & also trains all workers onsite on the requirements for controlling: dust & windblown debris, dirt & debris on public roads, protection of stormwater drains, tool & equipment washout, chemical spills, noise disturbance, waste collection & disposal, rubbish & food scraps & excess concrete.
- **Project HSE Risk Assessment** – Identifies what subcontractor onsite are impacted by or the risk of; air quality/dust, archaeology & cultural heritage, chemical spill, flora & fauna, littering, noise disturbance, stormwater contamination & watercourse pollution each month. This will be monitored through task observations scheduled for each month.
- **Noise & Vibration Management Plan** – Identifies mitigation methods to minimise the risk of noise & vibration to the workers onsite and the surrounding properties.
- **Traffic & Pedestrian Management Plan** – Summarises how construction and pedestrian traffic will be managed on the project to minimise the impact on the existing facility and the neighbours surrounding to the project.
- **Site Layout Plan** – Identifies the location of sediment controls, access routes, truck washout, location of site bins, spill kits, concrete washout.
- **Emergency Response Plan** – Outlines the process to manage the following environmental emergencies; asbestos exposure, water pollution, fire, major fuel spill & chemical spill
- **Audit Management Plan** – Describes the frequency of internal and external environmental audits and the process for closing out any non-conformances raised.



3.3 Policy & Objectives

The HY Environmental Policy Statement provides the framework for the development of this EMP (refer Appendix A.1), and details the company's commitment to "*providing a high quality environment, which meets the requirements and expectations of; Clients, Statutory Authorities, Employees and Community Groups*", through the application of "*sustainable development principles, to continually improve environmental performance in minimising impact on, and pollution of, the environment during the construction process"*.

The objective of the Environmental Management Plan is to:

- Satisfy Client requirements related to environmental performance, set out in the Specification for the Works.
- Incorporate and provide mitigation strategies for environmental issues arising from site activities and as detailed in the Catherine Fields Public School Environmental impact assessment document (Environmental Impact Statement SSD 9477 by RPS)
- Encourage best practice environmental management through planning, commitment and continuous improvement;
- Prevent and minimize adverse impacts on the environment;
- Identify the potential for, and respond to, environmental incidents and emergency situations and take corrective actions;
- Identify and control possible environmental hazards with the works and HY activities;
- Identify and protect any special environmental characteristics of the site including cultural heritage significance;
- Define roles and responsibilities and allocate the necessary resources
- Ensure environmental training and awareness programmes are provided to employees and subcontractors;
- Establish mechanisms to monitor, evaluate and report progress.

The HY Environment Policy commits the company to achieve the following goals:

- Develop and promote a culture of environmental leadership, responsibility and continual improvement across the HY business;
- Audit, monitor and ensure compliance with environmental legislative and regulatory obligations and other environmental commitments;
- Utilise the resources of HY to lead the way in defining and achieving best environmental practice; and
- Advance and disseminate environmental knowledge and applied environmental management through training, research and engagement with the wider community

A copy of the Environment Policy is contained within the PMP and displayed at the project / site office and induction sheds. HY recognises this implementation will involve effective training of personnel to ensure they fully understand their responsibilities to comply with and monitor the management system. In addition, all site workers are consulted on HY environmental policies & procedures through the following mechanisms; site induction, notice board, site inspections, prestart meetings, subcontractor meetings, team meetings, toolbox talks.

3.4 Targets

3.4.1 Objective: Comply with all environmental legislation

KPI: Number of identified breaches of State or Commonwealth Environmental legislation

Target: Nil for duration of project.

Responsibility: HY & Subcontractors

3.4.2 Objective: Minimise impacts on the environment

KPI: Number of significant environmental incidents causing serious harm to the environment

Target: Nil for duration of project.

Responsibility: HY & Subcontractors

3.4.3 Objective: Conduct environmental site inspections to validate environmental conformance

KPI: Schedule and undertake regular site inspections

Target: > 90% of scheduled HSE inspections

Responsibility: HY Site Manager

3.4.4 Objective: Minimise and manage environmental complaints

KPI: Consult with impacted neighbours and promptly address all complaints

Target: ≤ 1 complaint per significant construction milestone

Responsibility: TSA

3.5 ESD Vision & Principles

The project provides an opportunity for HY to expand its practical and theoretical knowledge of ESD to a level that is considered ‘best practice’ status.

As such, the ESD vision and principles for HY involves:

- Identification and prioritisation of environmental risk based on AS/NZS ISO 31000:2009 and Guidelines HB158:2010, using qualitative likelihood vs. consequence methods.
- Development of management systems which build knowledge and capacity on environmental issues, principles and sustainable behaviours including training and communication.
- Reduced energy and water consumption as well as waste minimisation during the construction process.
- Environmental training and management of trade contractor’s activities to ensure that the project ESD objectives are obtained.
- Efficient and effective use of natural resources in a way that maintains the ecological processes on which life depends
- Sustainable use of renewable energy resources.

3.6 Environmental Planning

In accordance with the contractual requirements, applicable legislation, and in keeping with proper environmental practices, Hansen Yuncken has instituted a methodology which is reflective of observes the requirement, as set out in ISO 14001:2015.

3.6.1 Environmental Aspects & Impact

All activities related to the Catherine Fields Public School, which are enacted by or on behalf of Hansen Yuncken, are identified in the "Project HSE Risk Assessment" (refer Appendix A.4). For each activity the environmental aspects and associated actual and potential impacts are identified as they relate to the following environmental elements:

- Location and Land Use;
- Noise & Vibration;
- Traffic and Access;
- Air Quality;
- Soils, Erosion and Water Quality;
- Terrestrial Flora and Fauna;
- Cultural Heritage;
- Site Contamination; and
- Waste Management.

Environmental impacts are detailed in the "**Project HSE Risk Assessment**" and assessed for significance by using the Risk Matrix. Each identified potential impact is rated (Risk rating) in relation to its predicted likelihood and consequence. Environmental Impacts as applicable to the Catherine Fields Public School are summarised in the "Environmental Risk Register" contained within this CEMP (Section 4.3).

3.6.2 Work Method Statements

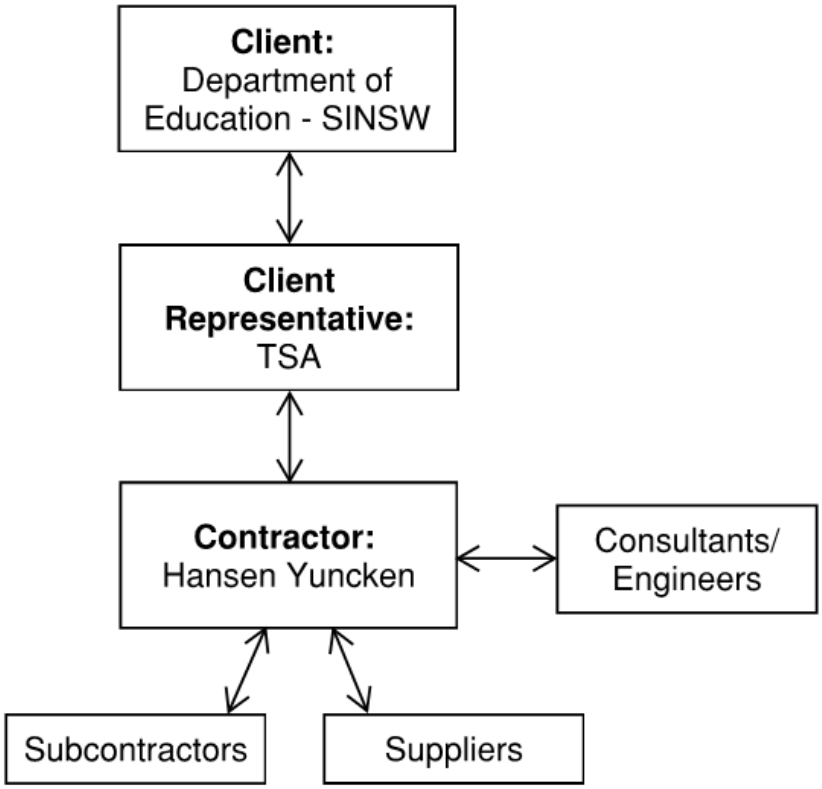
For each activity rated as a significant risk (i.e. Risk class >M/Medium) to the environment, a further Risk assessment is undertaken with the additional controls identified and contained within a Work Method Statement. This document details the; steps involved, hazards, control measures and persons responsible associated with the higher risk activity. A Tool Box talk is then completed with the relevant workers that will be completing the task to ensure that they comply with the Work Method Statement.

3.6.3 Legal Compliance and Other Requirements

Hansen Yuncken has developed a procedure ("Legislation Standards and Codes of Practice"), available on HYWAY to identify legal and other requirements that are applicable to the Catherine Fields Public School and to ensure the accessibility of the information. The procedure shall be referenced and is applicable to those activities and functions that have the potential to interact with the environment. Furthermore (URL) links are supplied on HYWAY to regulatory body websites and relevant NSW legislation relevant to environmental Aspects and management of the same.

3.7 Roles and Responsibilities

The below flow chart summarises the organisation structure for communication and reporting between Hansen Yuncken, it's suppliers/subcontractors and the principal.



Hansen Yuncken will collaborate with the project team to provide the following in ensuring we are achieving sustainable environmental management for the duration of the project:

- Engagement with project stakeholders including consultants and contractors
- Notifications and communications with adjacent property occupants and owners advising of the Works;
- Formal notices of road closures and related matters;
- Conveying enquiries and complaints regarding the works (including but not limited to traffic, dust and noise) to the client;
- Liaising with key stakeholders and local authorities regarding the works; and
- Environmental issues related to the works.

A summary of the roles and responsibility of each stakeholder with regards to environmental management for the project is summarised below:

- Client Representative – provides a medium of communication between the client and the contractor and is responsible for all community consultation and communication
- Contractor – responsible for delivering the project in accordance with the relevant legislation, including the enforcement of the CEMP for it's subcontractors and suppliers.
- Consultants/Engineers – provide expert knowledge into the generation of aspects of the CEMP in line with industry standards and the relevant legislations.
- Subcontractor/Suppliers – responsible to abiding by the requirements of the CEMP when carrying out their contract works.

4 Implementation

4.1 Environmental Awareness

All HY and S/C employees shall receive an induction into the project in accordance with the Site Induction procedure including completing the Site Induction Record Form (FM-CORP-HSE-001).

The induction shall include the requirements for the conduct of activities which have the potential for significant environmental impacts on the project which shall be outlined in the project specific Site Induction Handbook.

This document applies to all HY and S/C employees, environmental awareness is the responsibility of every person working on and associated with the project.

4.2 Environmental Impacts of Subcontractor Activities

The environmental impacts of subcontractor activities shall be assessed during the S/C pre-award meeting in accordance with pre-award meeting procedure and the project HSE risk assessment. The general structure of the environmental management of the following risks is contained within this section of the report under the following structure:

- Likely Impacts – outlines the impacts of the environmental issues that have been assessed in the environmental risk register
- Mitigation Strategies – outline the procedures/actions that will be taken to minimise the possibility of the impacts outlined above from occurring.

4.3 Environmental Risk Register

Environmental Risk Register Summary & Responsibilities		
Environmental Issue	Risk to Project	Responsible Personnel
Location & Land use Residential and other properties may be impacted with construction works due to construction noise and dust	Low	PM
Noise & Vibration Construction of the development may result in short term impacts during the project due to the use of heavy machinery, drilling and plant as well as construction personnel and vehicle movements.	Low	PM / SM
Traffic & Access During construction there will be impacts to traffic on public roads surrounding the project from construction vehicles and deliveries for site.	Medium	PM / SM

Environmental Risk Register Summary & Responsibilities		
Air Quality During the earthworks stage of the project, there is a risk of poor air quality generated by the constructions works.	Low	SM
Soils, Erosion, & Water Quality There is a risk of soil leaving the site and potentially contaminating the stormwater system in the short-term during the earthworks stage of the project.	Low	SM
Terrestrial Flora & Fauna The removal of trees during construction works poses minimal risk to landscaped species throughout the area. Particular trees have been flagged for removal. These shall be marked and checked prior to any removal.	Low	PM / SM
Cultural Heritage It is unlikely that construction works will impact any undisturbed aboriginal artefacts given that an Aboriginal Cultural Heritage Clearance Letter has been provided by Kelleher Nightingdale which has advised that no Aboriginal Heritage Constraints exist for Oran Park South – Catherine Fields Precinct.	Low	PM / SM

PM - Project Manager, SM - Site Manager, FM - Foreman, S/C – Subcontractor, PCA - Private Certifier

4.4 Location and Land Use

4.4.1 Site Location

The site is located on O'Keefe Drive near the intersection with Banfield Drive in Oran Park within the Camden Council Local Government Area (LGA). It is located approx. 50km southwest of the Sydney Central Business District (CBD), 35km southwest of Parramatta CBD and 20km south of the proposed Western Sydney Airport. The total site area is 20,810m^2 (refer to Appendix A.3 for further information regarding site location).

4.4.2 Likely Impacts

The construction works would be short term in nature and would not interfere with the current use of the site. All construction activities would be carried out with due diligence, duty of care and best management practices. Given the location of residential and other properties in close proximity to the works area,

some impacts associated with construction traffic, noise/vibration and dust are likely to affect adjacent residents. These likely impacts will be addressed below.

4.4.3 Mitigation Strategies

- The neighbouring landowners are to be consulted in regard to the construction works, predicted program and any access requirements.
- Land disturbance during construction is to be limited to that required to undertake the construction works
- Construction works to be undertaken in consideration of adjacent vegetation
- Areas disturbed during construction to be returned to the pre-construction condition
- The consent approval stipulates working times to minimise the impact on the community being generally Monday to Friday 7am-6pm, Saturday 8am-1pm, no work on Sundays or public holidays.

4.5 Noise and Vibration

4.5.1 Likely Impacts

Construction of the proposed development will result in short term noise impacts during the construction period. The predicted noise levels during the construction phase have been identified in the project Construction Noise & Vibration Management Plan along with associated mitigation strategies that are to be adopted to minimise these impacts (refer Appendix A.6 for the Construction Noise & Vibration Management Plan).

4.5.2 Mitigation Strategies

The following mitigation strategies listed have been developed to control the level of noise and vibration that affect the relevant stakeholders:

- Site construction noise will be managed in accordance Construction Noise and Vibration Management Plan (CNVMP) developed for this project. The CNVMP is based on the proposed construction methodology, activities, durations and equipment type and numbers.
- Keep the community informed in relation to noise intensive activities in the immediate area.
- Provide consultation where prolonged or consecutive periods of construction works are planned.
- Construction activities shall be restricted to the hours dictated in the consent SSD 9477.
  - The consent approval stipulates working times to minimise the impact on the community being generally Monday to Friday 7am-6pm, Saturday 8am-1pm, no work on Sundays or public holidays.
- Any noise complaint received will be investigated as soon as practicable. Any practicable and feasible measures to minimise noise will be identified and implemented if required.
- All possible steps to be taken to silence construction equipment where possible.
- Optimum siting of work areas, vehicle and plant parking areas, materials stockpiles and equipment storage areas in locations where potential acoustical impacts will be minimised.
- All plant and machinery used for the project shall be well maintained.
- Ensure workers and contractors are regularly trained (such as toolbox talks) to use equipment in ways to minimise noise
- “Quacker” reversing alarms to be used for all plant on site where applicable

For more detailed mitigation strategies related to specific work phases and the relevant mitigation strategies to be adopted, refer to the CNVMP (Appendix A.6).

4.6 Traffic & Access

4.6.1 Likely Impacts

Construction of the new site facilities shall see some increase in traffic in the local area. The increased traffic is not predicted to have an impact on local traffic flow and only a minor inconvenience to local road users is expected. Construction vehicle routes have been developed with the intention of minimising the impact of construction traffic on the local streets in the immediate vicinity. Access to site is anticipated to be primarily via O'Keefe Drive. The management of construction traffic developed as a result of these works in summarised in the Construction Traffic Management Plan (refer Appendix A.5).

In accordance with SSD 9477 Condition B19, on-site parking facilities will be provided in line with the site layout plan contained within Appendix A.13.

4.6.2 Mitigation Strategies

Follow the Construction Traffic Management Plan (TMP) based on the detailed construction methodology and use of specific heavy vehicles and construction plant. The Traffic Management

- Plan is to include measures to minimise traffic impacts ensure public safety and is to be prepared in accordance with:
- Traffic Control at Work Sites Manual (RTA, 2010)
- Australian Standard 1742.3 - 2002 Traffic Control Devices for Works on Roads.

- The TMP has been developed in consultation with NSW Roads & Maritime Services (RMS) and Camden City Council.
- The TMP details hours of operation, heavy vehicle volumes (numbers) and routes, construction staff parking, loading / unloading areas and site access arrangements, all temporary warning, guidance and information signage, and appropriate traffic control devices
- Notify surrounding land owners at least one week in advance of the works
- All vehicles accessing the sites will use the designated access roads
- All roads will be kept clean and free of dust and mud. Where material is tracked onto sealed road, it will be removed so that road pavements are kept safe and trafficable
- All vehicles transporting spoil onsite will be covered and filled to maximum capacity to minimise vehicle movements as required
- All roads, kerbs, gutters and footpaths damaged as a result of construction are to be restored to their pre-construction condition. A dilapidation report will be carried prior to construction
- A dedicated vehicle wash-down area will be established on site
- All traffic shall comply with all applicable traffic laws and regulations including speed limits. All construction vehicles shall comply with the speed limits set for the roads accessing the site
- Construction activities shall be restricted to the hours dictated in the consent SSD 9477.
  - The consent approval stipulates working times to minimise the impact on the community being generally Monday to Friday 7am-6pm, Saturday 8am-1pm, no work on Sundays or public holidays.

4.7 Air Quality & Dust Control

In accordance with condition B13a (iii) of SSD 9477, repeated in part as follows; the Construction Environmental Management Plan (CEMP) which must include, but is not limited to, the following; (iii) management of dust and odour to protect the amenity of the neighbourhood. This section of the CEMP

addresses this condition, outlining the likely impacts of air quality and dust control for the various aspect of the construction works, along with the mitigation strategies that will be implemented to minimise these impacts on the neighbourhood.

4.7.1 Likely Impacts

The main impact of air quality during construction is expected to arise from the generation of airborne localised dust associated with earthworks. Given the proximity to of neighbouring properties and existing buildings, there is the potential for impact by dust, particularly during windy conditions.

4.7.2 Mitigation Strategies

- Construction vehicles and equipment to be suitably serviced prior to commencement of construction activities and all necessary maintenance to be undertaken during the construction period to meet EPA air quality requirements.
- Excessive use of vehicles and powered construction equipment will be minimised where possible
- All construction machinery will be turned off when not in use to minimise emissions where possible.
- Construction contractors to monitor dust generation progressively.
- Dust suppression methods will be adopted where required (i.e. on windy days when earthworks and vehicle movements are generating dust). Examples of dust suppression methods include:
  - Water carts
  - Localised use of water to supress excavation activities as they are occurring to suppress dust
  - Covering stockpiles
- Any stockpiled spoil/fill will be protected to minimise dust generation to avoid sediment moving offsite.
- Vehicles transporting spoil from the site to be covered where required.
- The burning of waste materials will not be permitted on site

4.8 Soil, Erosion & Water Quality

In accordance with condition B13a (iv) & (v) of SSD 9477, repeated in part as follows; the Construction Environmental Management Plan (CEMP) which must include, but is not limited to, the following; (iv) stormwater control and discharge & (v) measured to ensure sediment and other materials are not tracked onto the roadway by vehicles leaving the site. This section of the CEMP addresses these conditions, outlining the likely impacts associated with stormwater runoff and the mitigation strategies that will be implemented to ensure that these impacts are minimised. Further to this, in accordance with condition B13e, refer to Appendix A.7 for the Soil and Water Management Sub-Plan.

4.8.1 Likely Impacts

Earthworks and general ground disturbances associated with the site works may result in sediment and other materials leaving the site via wind or water movement. This may have the potential to result in the water pollution such as turbidity and nutrient inputs, should sediment wash into stormwater or natural drainage lines.

Aspects of the site identified as potentially impacting on water quality includes:

- Excavation for foundations and site levelling;

- Stockpiling and transportation of excess spoil; and
- General construction waste entering drainage lines

4.8.2 Mitigation Strategies

- Construction is to be undertaken in accordance with the Erosion and Sediment Control Plan.
- All erosion and sediment control devices shall be properly maintained for the duration of the work. All structures are to be inspected after rain events and sediment to be removed
- Any temporary stockpiles should be stabilised using sediment fencing or similar.
- All fuels and other hazardous liquids shall be stored at designated construction compounds
- All chemicals used for construction shall be stored and used in accordance with the relevant Safety Data Sheets.
- An emergency spill kit shall be kept at the construction compound.
- Workers are to be made aware of the provisions of Section 120 of the POEO Act with regards to water pollution
- Notification to the EPA in accordance with Part 5.7 of the POEO Act is to be undertaken where a pollution incident occurs
- All construction vehicles and equipment are to be maintained in designated areas away from watercourses
- Construction vehicles shall be appropriately cleaned of any soil or mud prior to leaving each works site at dedicated wash down bays
- “Clean” stormwater shall be diverted around the site where possible
- All existing stormwater pits and drains subject to HY construction works will be silt protected with geo-fabric and/or granular socks. Drains will be monitored and maintained by HY
- Stockpiles to be established at HY approved locations
- Sediment fences shall be installed at required locations at the perimeter of the site
- Stormwater shall be diverted to retention basins
- The location and details of permanent controls shall be included on the Site Layout Plan
- Erosion and sediment controls shall be inspected as part of the Site HSE Inspection

4.9 Terrestrial Flora and Fauna

4.9.1 Likely Impacts

The construction of the Catherine Fields Public School is occurring on a greenfield site, with a small number of existing flora and fauna present. The preliminary site investigations have concluded that there are no native trees that need to be removed as part of the development. There is a total of 15 flora species across the site which are common groundcovers that are typical of derived pasture. The mitigation strategies outlined in the subsequent section will be adopted during construction to minimise the impact that the construction has on the local flora and fauna.

4.9.2 Mitigation Strategies

- No vegetation removal or modification is to occur beyond the proposed works areas shown on the plans.

- Any identified noxious weeds should be removed as part of the works if encountered
- Carry out landscaping in accordance with the landscape design
- Any areas of significant flora and fauna value which have been identified on the construction site will remain bunted/ flagged during construction
- If any additional species are encountered the Site Manager shall arrange for works to be ceased in the area and contact the Superintendent for further directions.

4.10 Archaeology & Cultural Heritage

4.10.1 Likely Impacts

An Aboriginal Archaeological Assessment has been completed for the area, which has deducted that there are no Aboriginal heritage constraints for the Oran Park South – Catherine Fields Precinct. While it is unlikely that the proposed works would disturb any undisturbed Aboriginal objects or sites of historical relics, the following mitigation strategies will be adopted.

4.10.2 Mitigation Strategies

- All workers (including contractors) should be made aware that it is illegal to harm an Aboriginal object or historic relics, and if a potential Aboriginal object or historic relic is encountered during activities, then all work at the site will cease and the OEH will be contacted to advise on the appropriate course of action to allow the Wiradjuri People to record and collect the identified item(s).
- All workers (including contractors) should be inducted concerning Aboriginal cultural heritage values
- In the event that known or suspected Aboriginal skeletal remains are encountered during the activity, the following procedure will be followed:
  a. All work in the immediate vicinity will cease;
  b. The find will be immediately reported to the work supervisor who will immediately advise the environment manager or other nominated senior staff member;
  c. The environment manager or other nominated senior staff member will promptly notify the police and the state coroner (as required for all human remains discoveries);
  d. The environment manager or other nominated senior staff member will contact the OEH for advice on identification of the skeletal material as aboriginal and management of the material; and
  e. If the skeletal material is of aboriginal ancestral remains, the local aboriginal land council will be contacted and consultative arrangements will be made to discuss ongoing care of the remains.
  f. The project team will take all necessary measures to protect the artefacts from being damaged or destroyed.
  g. Works will not re-commence in the area until a written instruction from the superintendent is received.

4.11 Site Contamination

4.11.1 Contaminated Soil Risk Assessment

A preliminary contamination investigation has been conducted by Environmental Investigation Services (EIS) which has concluded that there is a relatively low potential for contamination-related unexpected finds to occur at the site during the proposed development works (refer Appendix A.12 for Executive

Summary). Prior to the commencement of bulk earthworks (under the Early Works DA) and in line with the risk assessment generated for the project, an assessment of actual or potential soil contamination and it's impacts was undertaken using the Soil Contamination Assessment on BIM360 Field. The purpose of this assessment was to provoke whether HY should have an independent third party to provide recommendations or seek wider advice within the company so that the additional knowledge can reduce the risk profile of contaminated soil. The findings of this assessment concluded that there is no contaminated soil present on the site. There are no existing adjacent buildings to the site. Despite this, Section 4.11.7 of this management plan contains the unexpected finds protocol that is to be adopted in the event that unexpected contaminated material is encountered.

4.11.2 Identification of Contaminated Soil

During construction, it shall be necessary to monitor soil contamination levels (if any), dust levels and water runoff quality, to ensure that health and environmental standards are not compromised. This is especially important as contaminated soil may be excavated and transported around the site.

Upon discovery of contaminated soil, the HY Site Manager shall arrange for works to be ceased immediately in the area and contact the Superintendent for further directions.

Contaminated waste shall be collected, contained, stored, handled and disposed of in accordance with relevant legislation and codes of practice.

4.11.3 Risk of Exposure

It is important to minimise the risk of exposure of construction personnel to soil contaminants by adopting appropriate site controls and industrial hygiene practices. Site controls may include:

- Defining certain areas as contaminated and restricting access to them;
- Appropriate signage;
- Training construction employees in industrial hygiene procedures;
- Keeping non-essential motor vehicles such as personal cars out of contaminated areas;
- Regular medical checks of construction personnel who are exposed to contaminated soils;
- Keeping stockpiles of contaminated material watered down to minimise dust generation in accordance with any water restriction requirements and ensure that runoff is not generated from excessive watering;
- Covering truck loads with tarpaulins and watering material when loading and unloading;
- Wheel washes for trucks and vehicle leaving the contaminated areas;
- Regular road sweeping and cleaning;
- Dust monitoring and adjustment of construction programs to accommodate high risk periods when conditions are windy or very dry; and
- Monitoring of concentrations of volatiles.

Industrial hygiene practices may include:

- Wearing long sleeved shirts and trousers or overalls to minimise dermal exposure;
- Wearing gloves when handling soils;
- Washing hands and faces before eating, drinking or smoking;

- Leaving overalls at site for laundering;
- Showering and washing facilities; and
- Wearing respiratory equipment during times of high dust or volatile emissions.

4.11.4 Groundwater Management

In accordance with condition B13a (vi) of SSD 9477, repeated in part as follows; the Construction Environmental Management Plan (CEMP) which must include, but is not limited to, the following; (iv) groundwater management plan including measures to prevent groundwater contamination. The contamination investigation conducted by EIS concluded that groundwater is not considered to pose a risk to the site (refer Appendix A.12 for the Executive summary). This was based on boreholes that were completed in the investigation that did not encounter any groundwater on the site, and the laboratory testing of groundwater samples obtained was below the Site Assessment Criteria. Despite this, the measures outlined in Section 4.11.5 will be adopted to mitigate the potential contamination of groundwater. Furthermore, the unexpected finds protocols outlined in Section 4.11.7 & Section 4.11.8 will be adopted in the event that groundwater is encountered on site.

4.11.5 Release of Contaminants to Soil and Groundwater

Water spraying of stockpiles and of soils being loaded and unloaded from trucks, covering of truck loads with tarpaulins and other measures described in the previous section would minimise the potential for dust to be generated.

If heavily contaminated soil is placed in contact with clean soils, contaminants could be mobilized by rainwater or chemical / physical reactions and affect the clean soils to a limited extent.

Similarly, there is a risk that contaminated soil is not clearly differentiated from clean soil and that mistakes could occur which cause the materials to be mixed or wrongly handled or disposed of.

This shall be overcome by implementing a material tracking system for all contaminated soils and ensuring that construction staff are trained how to use the system.

This shall involve documenting areas containing contaminated soil and putting signage near stockpiles that indicated the type of material present and its contamination status.

It shall also require supervision and documentation of all movements of contaminated materials around the site.

Avoiding contact between stormwater and contaminated soils is difficult to achieve if larger areas of a site are being exposed within a short period, because it does not allow for minimizing the amount of soil that is uncovered or placed in temporary stockpiles.

Therefore, it is necessary to manage stormwater in such a way that it does not mobilize contaminants and transfer them to clean areas.

This may be achieved by:

- Covering stockpiles of contaminated soil;
- Placing stockpiles of contaminated soil on bitumen or other sealed areas;
- Installation of adequate bunding or other approved method to contain runoff;
- Collecting stormwater run-off from stockpile areas; and
- Analytical testing of collected stormwater prior to its release.

Erosion and sediment control procedures in accordance with the relevant Code of Practice may also be applied, but with the additional objective of keeping water that is exposed to contaminated soils separate from water that has only come into contact with clean soils.

Groundwater could potentially be impacted by contaminants mobilized from stockpiled contaminated soil or by buried material.

Minimising runoff from stockpiles, as outlined above would reduce the risk to groundwater.

Land filling of contaminated material which is below the relevant criteria for soil contamination above the water table and capping the landfill area with low permeability material would minimise the risk of groundwater contamination from infiltration of stormwater into buried soils.

4.11.6 Heavy Metal Contamination

Any suspicious industrial wastes encountered will be immediately isolated to enable these assumptions to be confirmed by analytical testing.

4.11.7 Mitigation Strategies

In the event that unexpected conditions are encountered during development work or between sampling locations which may pose a contamination risk, all works should stop and an environmental consultant shall be engaged to inspect the site and address the issue.

4.11.8 Unexpected Finds

In accordance with Condition B13f and B13g of SSD 9477, unexpected finds protocols must be included within the CEMP to outline the process to be followed in the event that unexpected contamination and/or Aboriginal/non-Aboriginal heritage is found through the duration of the project. Unexpected Find shall be addressed in compliance with the Hansen Yuncken's Unexpected Finds protocol listed below:

Unexpected Finds Protocols – General including aboriginal and non-aboriginal items

1. Immediately cease work and contact site foreman
2. Site Foreman to construct temporary barricading to prevent worker access to the unexpected substance(s) and install appropriate stormwater/sediment controls
3. Site foreman to contact Client and arrange inspection by environmental consultant
4. Environmental consultant to undertake detailed inspection and sampling & analysis as per the documented sampling procedures outlined in the RAP analytical results against documented site assessment criteria in the RAP
5. If substance assessed as presenting an unacceptable risk to human health
6. If substance assessed as not presenting an unacceptable risk to human health Site foreman to remove safety barricades and environmental controls and continue work
7. Environmental consultant to supervise remediation and undertake validation/clearance as per the remediation/validation/clearance plan
8. Site Foreman to remove barricades and environmental controls and continue work.
9. Environmental consultant to submit assessment/validation/clearance to site foreman for distribution to Client and appropriate regulatory authorities.

Unexpected Finds Protocol – Asbestos and contamination

If asbestos is detected in unexpected areas prior to, or during, site development works the following 'Unexpected Finds Protocol' will apply:

a. Upon discovery of suspected asbestos containing material, the site manager is to be notified and the affected area closed off by the use of barrier tape and warning signs. Warning signs shall be specific to Asbestos Hazards and shall comply with the AS1319-1994 – Safety Signs for the Occupational Environment.

b. An Occupational Hygienist is to be notified to inspect the area and confirm the presence of asbestos and to determine the extent of remediation works to be undertaken. A report detailing this information would be compiled by the Occupational Hygienist and provided to the Principal (or their representative) and the site manager.

c. The location of the identified asbestos material would be surveyed using sub-meter Differential Global Positioning System (DGPS).

d. If the impacted soil is to be disposed off site, it should be classified in accordance with the DECCW's Waste Classification Guidelines (2008) and disposed of, as a minimum, as asbestos contaminated waste to a suitably licensed landfill. In dry and windy conditions the stockpile would be lightly wetted and covered with plastic sheet whilst awaiting disposal.

e. All work associated with asbestos in soil would be undertaken by a contractor holding a class ASA Licence. WorkCover must be notified 7 days in advance of any asbestos works.

f. Monitoring for airborne asbestos fibres is to be carried out during the soil excavation in asbestos contaminated materials.

g. Documentary evidence (weighbridge dockets) of correct disposal is to be provided to the Principal (or their representative).

h. At the completion of the excavation, a clearance inspection is to be carried out and written certification is to be provided by an Occupational Hygienist that the area is safe to be accessed and worked. If required, the filling material remaining in the inspected area can be covered/sealed by an appropriate physical barrier layer of non-asbestos containing material prior to sign–off.

i. Validation samples would be collected from the remedial excavation to confirm the complete removal of the asbestos containing materials. If the asbestos pipes/conduits are uncovered, then sampling density would typically comprise one sample per 10-20 linear meter (depending on the length of the pipe). If asbestos debris are found, then the sampling density would typically comprise 1 sample per 5 metre x 5 metre grid.

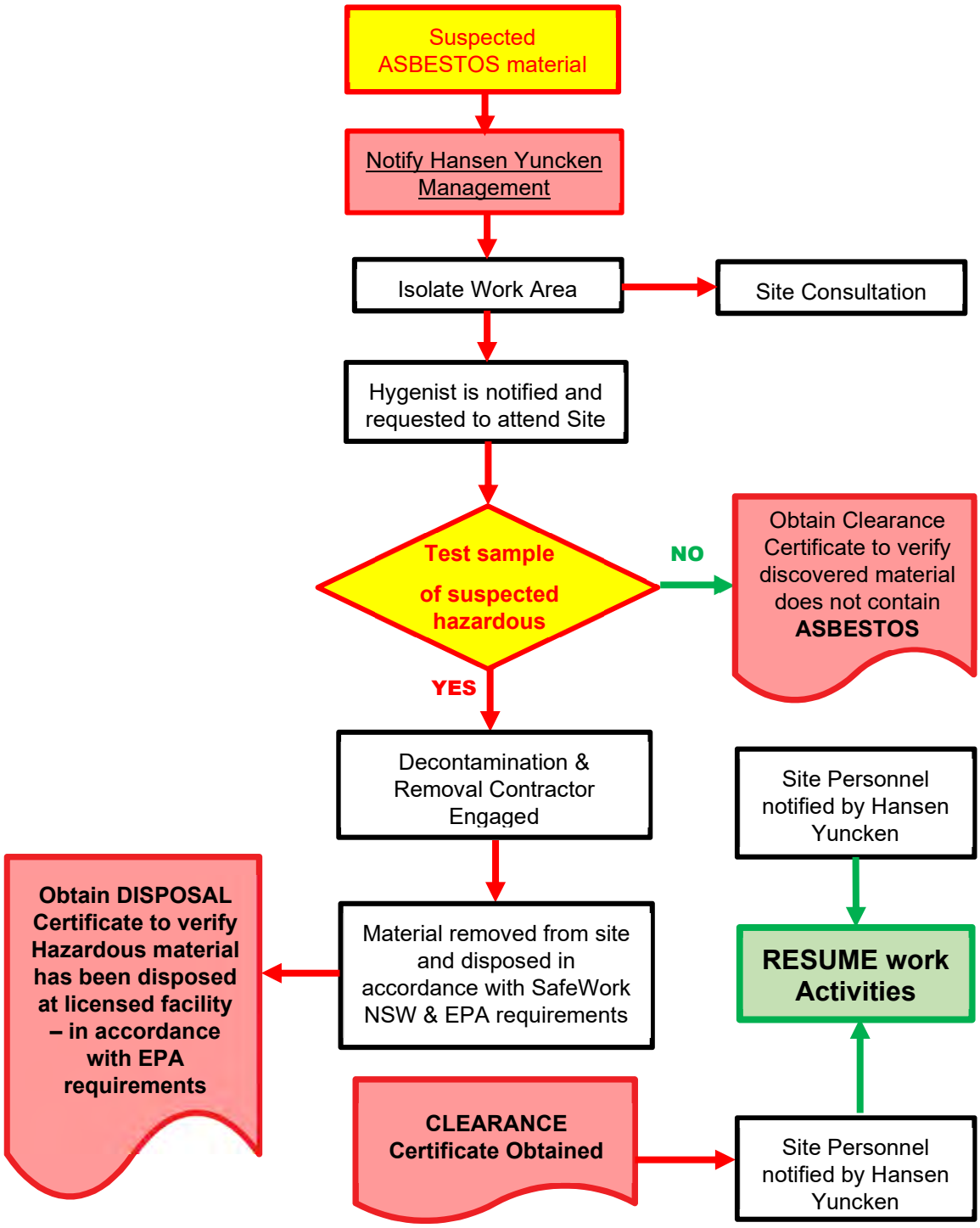
j. The sampling locations should be surveyed using a sub-meter DGPS.

k. Details are to be recorded in the site record system.

l. Following clearance by an Occupational Hygienist, the area may be reopened for further excavation or construction work.

There are no existing adjacent buildings to the project site.

Unexpected Finds Protocol - ASBESTOS



Unexpected Finds Protocol - Buried Structures

In the unlikely event that buried structures such as Underground Storage Tanks (USTs) are encountered during site works, the structure(s) and any associated pipe-work should be managed /removed as follows:

a. Upon discovery of structure, the site foreman is to be notified and the area barricaded;

b. Visual identification of the tank and associated pipe-work;

c. Remove and dispose of the structure and associated pipe-work by a qualified contractor. In the case of an UST, the tank must be removed in accordance with Australian Institute of Petroleum (AIP) Code of Practice and Australian standards;

d. Excavate and stockpile impacted materials (based on field observations) for classification;

e. Validation of the remedial pit by a qualified environmental consultant for the contaminants of concern at the following sampling density:

   i) Base of tank pit excavation - 1 sample per 25 m^2 (i.e. 5m x 5 m grid);

   ii) Side of tank pit excavation - 1 sample per 10 linear metre (minimum of 1 sample per side) and 1 sample per 2m – 3m depth interval;

   iii) Fuel feed lines/pipe-work - 1 sample per 10 linear metre and 2 - 3 depth interval; and

f. If required, “chase out’ all of materials in the remediation pit identified to be impacted by petroleum/hydrocarbons and further validation sampling and analysis as required to assess appropriate removal of impacted materials;

g. Waste classification and off-site disposal of impacted materials in accordance with Section 4.12 of this plan on Waste Management and

h. Inclusion of validation, waste classification and disposal documents (including landfill dockets and, in the case of USTs, tank and pipe work destruction certificates) in the validation report.

4.12 Waste Management

In accordance with Condition B13 d), the Construction Waste Management Plan (CWMP) has been completed for the project and is contained within (Appendix A.8). The CWMP contains detailed information regarding the types and disposal of different waste types throughout the project. In particular, section 5 of the Waste Management Plan addresses the way that waste will be addressed throughout the construction process with reference to the unexpected finds protocols that are to be adopted in the event that an unexpected find is encountered.

In accordance with Condition B13 h), the waste classification for the project is contained within Appendix A.9. Detailed information regarding the treatment and allocation of waste for the duration of the project is contained within the CWMP.

4.12.1 Waste Reduction

It is likely that some excess building materials will be produced due to the construction work such as miscellaneous waste associated with packaging and transport of plant and equipment and various other manufactured items forming part of the augmentation works. Waste generated as a result of construction will be minimised, recycled, reused or recovered, where practical.

HY has accepted the challenge to reduce waste on construction projects, particularly in materials transferred to landfill.

The strategy for reducing the waste on the project will be made up of three strategies as detailed below in order of priority. The prime objective is to keep the amount of materials transferred to landfill from this project to the minimum possible amount.

1. Reduce the amount of waste material produced on the project by ensuring that only enough materials required to perform the works are ordered.
2. Any excess materials from particular work areas are to be retained and incorporated into other work areas where practical.
3. Encourage “just in time” delivery of construction materials (minimum storage on site) to reduce the potential of loss / waste due to damage prior to usage.

4.12.2 Waste Generation – Fill Material

All materials are site won and will be retained on site.

4.12.3 Non-Recyclable Waste

Non-recyclable waste will be disposed of at an EPA approved landfill or transfer station.

4.12.4 Waste Collection & Disposal

Appropriate waste bins are to be provided by HY and made available to all S/C

All S/C shall be directed to place waste in the bins provided. This shall be included in the Site Induction.

Waste collection points are nominated on the Site Layout Plan.

4.12.5 Waste Reporting

Waste generation is monitored by HY on monthly basis to ensure that the company’s waste reduction objectives are achieved. Waste disposal quantities are monitored monthly by HY to ensure compliance.

The Project Administrator shall record waste disposal data on BIM360 Field using the waste record checklist.

Waste quantities from the PMR shall be entered into the State HSE Database for analysis and reporting against HY Waste reduction targets.

4.12.6 Concrete Waste & Washout

Concrete trucks and pumps shall be washed out at designated locations as shown on the site layout plan. Washout of concrete pumps and AGI’s in other areas will not be permitted.

Washout shall be captured using membranes or other suitable means and allowed to set.

Waste shall be placed in bins for disposal with site waste.

Excess concrete shall be returned to the concrete plant for disposal or re-use.

4.12.7 Mitigation Strategies

- Accurate written records are to be kept such as:

  - Who transported the waste (company name, ABN, vehicle registration and driver details, date and time of transport, description of waste)
  - Copies of waste dockets/receipts for the waste facility (date and time of delivery, name and address of the facility, it's ABN, contact person).
- The construction contractor to ensure that waste generated by the works is transported to a place that can lawfully accept it as per Section 143 of the *Protection of the Environment Operations Act* 1997.
- The removal of any asbestos containing material if found is only to undertaken by an appropriately licenced contractor as per WorkCover NSW requirements and current guidelines.
- All waste, including excess spoil be recycled where practicable
- Trucks transporting spoil off site to be covered.
- The EPA is to be notified immediately of any pollution incidents or harm to the environment (as defined under Part 5.7 of the POEO Act).

4.13 Visual

4.13.1 Likely Impacts

The project has minimal visual impact to neighbouring properties. The visual impact has been assessed through the SSDA within the Environmental Impact Statement (EIS).

4.13.2 Mitigation Strategies

- Construct landscaping in accordance with the design documentation will reduce visual impacts of the new development.

4.14 Environmental Complaints

Complaints received regarding HY's Environmental Impacts or performance shall be recorded as Complaint in accordance with Hansen Yuncken's HSE Incident Procedure. Actions to be taken to address the complaint.

4.15 Fuel & Chemical Spills

Response to major fuel spills shall be implemented in accordance with the fuel spill procedure in the Emergency Response Plan. The requirements for storage of large fuel and chemical quantities are not expected for this project.

A spill kit shall be located adjacent to fuel and chemical storage and dispensing areas.

4.16 Hazardous Materials

Hazardous materials shall be controlled in accordance with Hazardous Materials procedure.

4.17 External Lighting

In accordance with condition B10 & B13a (vii) of SSD 9477, the external lighting to the proposed Catherine Fields Public School complies with AS1158.3.1:2005 – Pedestrian area (Category P) lighting – Performance and Design Requirements and AS4282-2019 – Control of the Obstructive Effects of

Outdoor Lighting. Please refer to Appendix A.11 for the certificate verifying the compliance with these Australian Standards.

4.18 Community Consultation and Complaints Handling

In accordance with condition B13a (viii) of SSD 9477, community consultation and complaints handling is primarily the responsibility of the Client. Hansen Yuncken will provide assistance where possible to ensure that the client is complying with the requirements of Community Communication Strategy, developed for the New Primary School in Catherine Fields.

4.18.1 Community Consultation

Community consultation is primarily the responsibility of the client. Hansen Yuncken will ensure that the relevant strategies/outcomes are incorporated within the relevant management plans and construction process where possible. The main channels that the client is planning on conducting consultation is through the following:

- Community information phone line
- Community contact cards
- Door knocks
- Face-to-face meetings/briefings
- Fact sheets
- Information Booths
- Project updates
- Project Reference Group
- Website
- Works notifications
- Letterbox drops

The above have been extracted from Table 3 of the Community Communication Strategy.

4.18.2 Complaints Handling

The primary form of assistance that Hansen Yuncken will provide is through the complaints handling process. During the project delivery phase, a complaint defined as in regards to construction impacts – *such as* – safety, dust, noise, traffic, congestion, loss of parking, contamination, loss of amenity, hours of work, property damage, property access, service disruption, conduct or behaviour of construction workers or other environmental impacts. If a complaint is made directly to Hansen Yuncken, it will be redirected to the following SINSW communication channels through the provision of business cards containing the following information:

- Phone: 1300 482 651
- Email: schoolinfrastructure@det.nsw.edu.au

Upon receipt of the complaint from the Project Director, Hansen Yuncken will endeavour to close out the complaint in a timely manner. The complaint will be logged to ensure that the impact of future construction works that may impact the community in a similar manner are minimised.

5 Measurement & Evaluation

5.1 Environmental Incidents & Emergencies

5.1.1 Environmental Incidents

Incidents resulting in potential or actual environmental damage shall be reported and investigated in accordance with the Hansen Yuncken's HSE Incident Procedure and recorded on BIM360 using the HSE incident report

5.1.2 Environmental Emergencies

Preparation for and response to the environmental impacts of emergency events shall be conducted in accordance with Hansen Yuncken's project Emergency Response Plan. The environmental impacts controlled in ERP are;

Asbestos Exposure

In the event that during works, personnel become accidentally exposed to asbestos, the following procedures shall be followed:

1. Personnel in the immediate affected area shall cease work and immediately go to the emergency showers on site.
2. All contaminated clothing is to be removed and placed into a thick plastic bag. The plastic bag must then be tightly sealed and labelled as "Asbestos Contaminated Clothing".
3. Personnel are to immediately decontaminate themselves in a shower and a clean set of clothes to be re-issued.
4. Asbestos contaminated clothing is to be industrially cleaned or disposed of appropriately

Water Pollution

An incident involving actual or potential harm to human or environmental health must be reported immediately to the EPA.

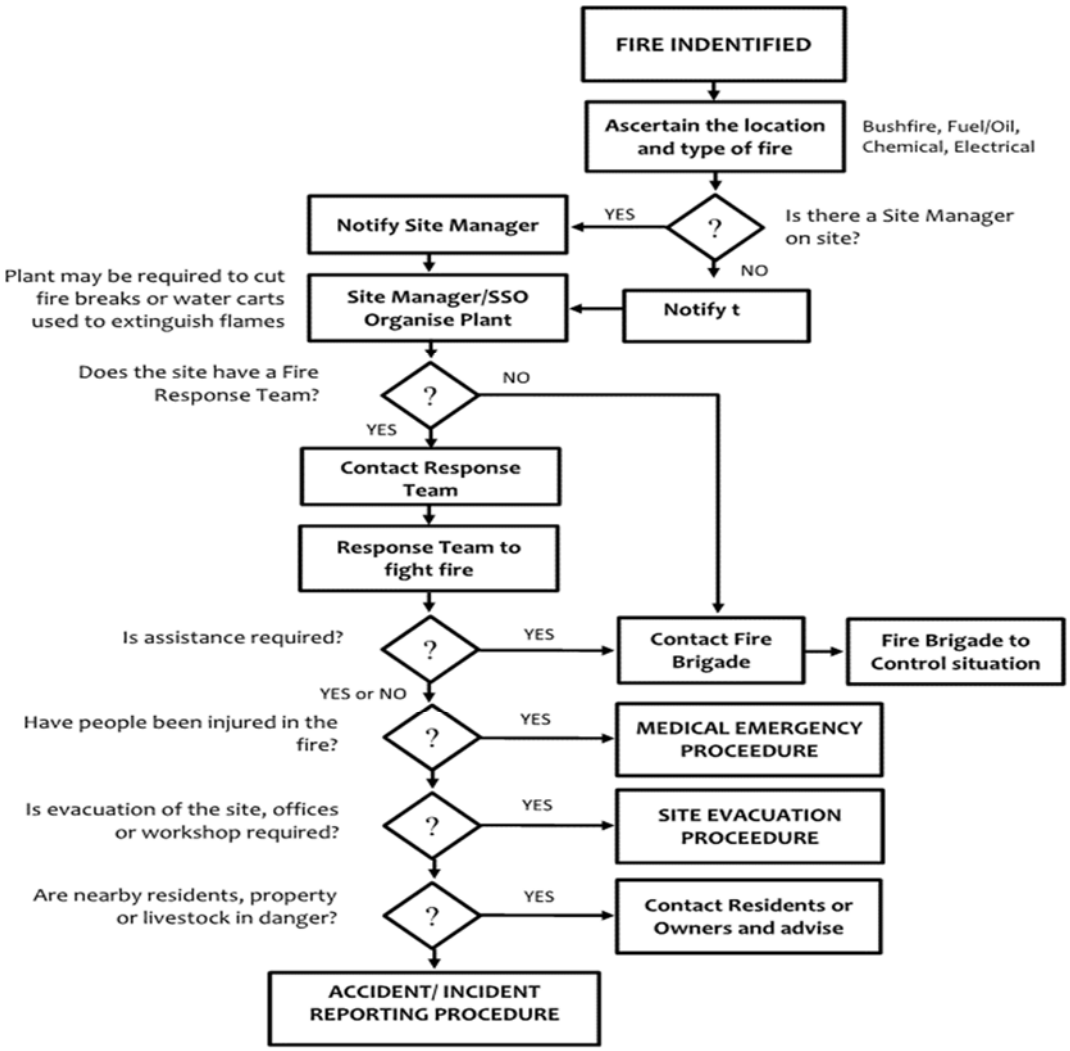
Firstly, call 000 if the incident presents an immediate threat to human health or property. Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are the first responders, as they are responsible for controlling and containing incidents.

If the incident does not require an initial combat agency, or once the 000 call has been made, notify the HY Site Manager who will notify the relevant authorities in the following order. The 24-hour hotline for each authority is given when available:

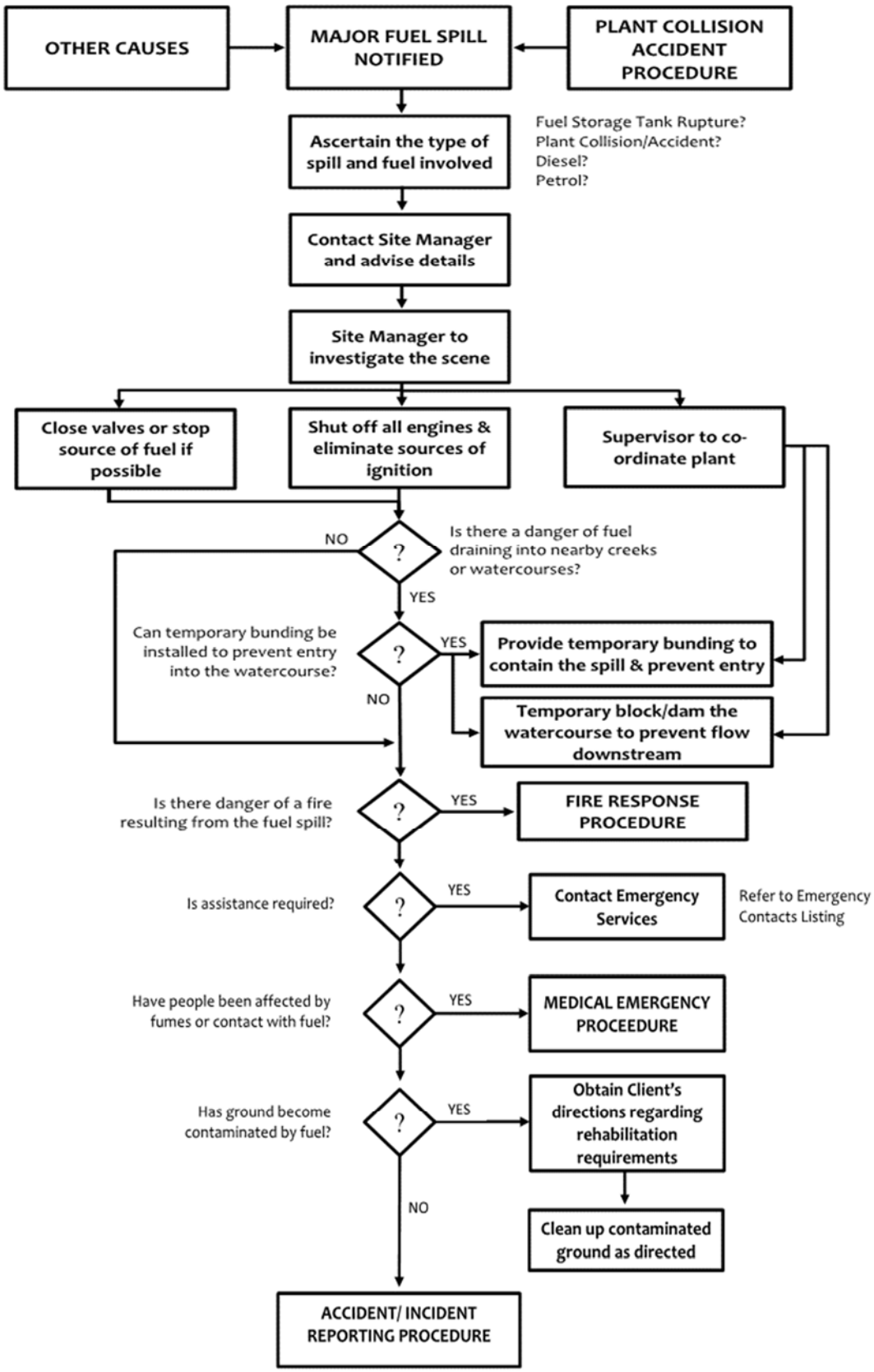
EPA Environment Line on 131 555

Safework NSW Authority – phone 13 10 50 (Where appropriate)

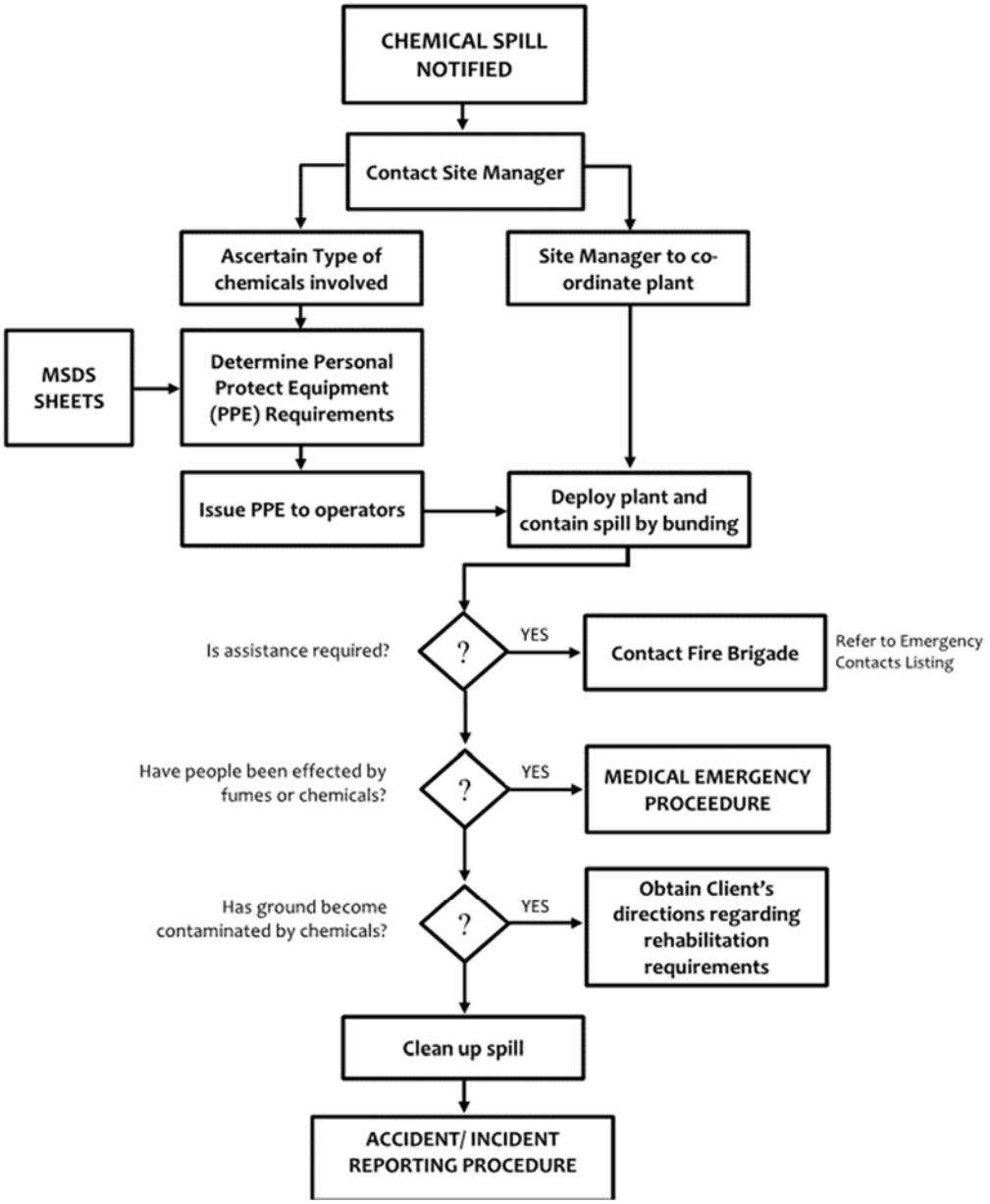
Fire


FIRE INDENTIFIED
Ascertain the location and type of fire
Bushfire, Fuel/Oil, Chemical, Electrical
Notify Site Manager
YES
?
Is there a Site Manager on site?
NO
Plant may be required to cut fire breaks or water carts used to extinguish flames
Site Manager/SSO Organise Plant
Notify t
Does the site have a Fire Response Team?
?
NO
YES
Contact Response Team
Response Team to fight fire
Is assistance required?
?
YES
Contact Fire Brigade
Fire Brigade to Control situation
YES or NO
Have people been injured in the fire?
?
YES
MEDICAL EMERGENCY PROCEEDURE
Is evacuation of the site, offices or workshop required?
?
YES
SITE EVACUATION PROCEEDURE
Are nearby residents, property or livestock in danger?
?
YES
Contact Residents or Owners and advise
ACCIDENT/ INCIDENT REPORTING PROCEDURE

Major Fuel Spill



Chemical Spill



5.2 Environmental Inspections & Audits

Inspections & audits of the site including environmental controls shall be conducted in accordance with the procedure for Site HSE Inspections & the project Audit Management Plan. The following inspections will be conducted onsite throughout the time on the project:

- Fortnightly site inspections,
- Monthly task observations,
- 3 monthly internal audits,
- Monthly external audits in line with the contract requirements &,
- Bi-Monthly external audits in line with the contract requirements.

5.2.1 Non-Conformances

Where an item has been assessed as Non-Conformance (NC) during any internal inspection an issue shall be raised in BIM360 Field to bring the activity or process into compliance with requirements. The issue(s) shall be recorded in BIM360 Field and allocated to the relevant contractor/subcontractor.

The independent consultant in writing shall raise all items assessed as non-conformance during external audits and HY will address all issues and close out within the time frame advised.

HY shall ensure that product/ works which does not conform to specified requirements are identified and controlled to prevent its unintended use or delivery. A nonconformance shall be raised when:

- Works/products not meeting specified requirements are identified; and/or
- Works have not been inspected or tested in accordance with specified requirements (frequency, method, authority); and/or
- A systematic and/or repeated omission/error that may result in a time or cost implication to the project.

5.2.2 Reporting & Corrective Actions

All nonconformities will result in corrective action being undertaken. The significance of nonconformities shall be evaluated in terms of their impact on:

- operating costs,
- cost of nonconformity and its correction,
- product performance,
- regulatory requirements,
- client satisfaction, and
- any other risks

HY project management shall undertake the following actions to investigate the causes of nonconformities specific to the project in order to prevent recurrence.

- identify nonconformities that relate to: products; QMS processes; resources; subcontractors and outsourced work; client complaints;
- review and determine the causes of nonconformities using problem solving tools such as the root cause analysis process - Process Workflow flowchart - to determine the underlying root cause(s) of the nonconformity;
- evaluate the need for corrective action to minimise the occurrence of identified nonconformities;
- determine and implement the corrective action needed; and
- monitor the corrective actions taken and record the results to determine if further improvement is necessary to get it right.
- Actions taken to eliminate the cause of nonconformity must flow from the root cause analysis and may involve changes to product, process, resources, methods, equipment, etc. or any combination of these.

Records of the actions taken and follow-up activities shall be monitored and maintained by the project Ensure timely completion of any open corrective action. Monitor corrective action records on an ongoing basis, for any recurrence of the nonconformity where corrective action was taken.

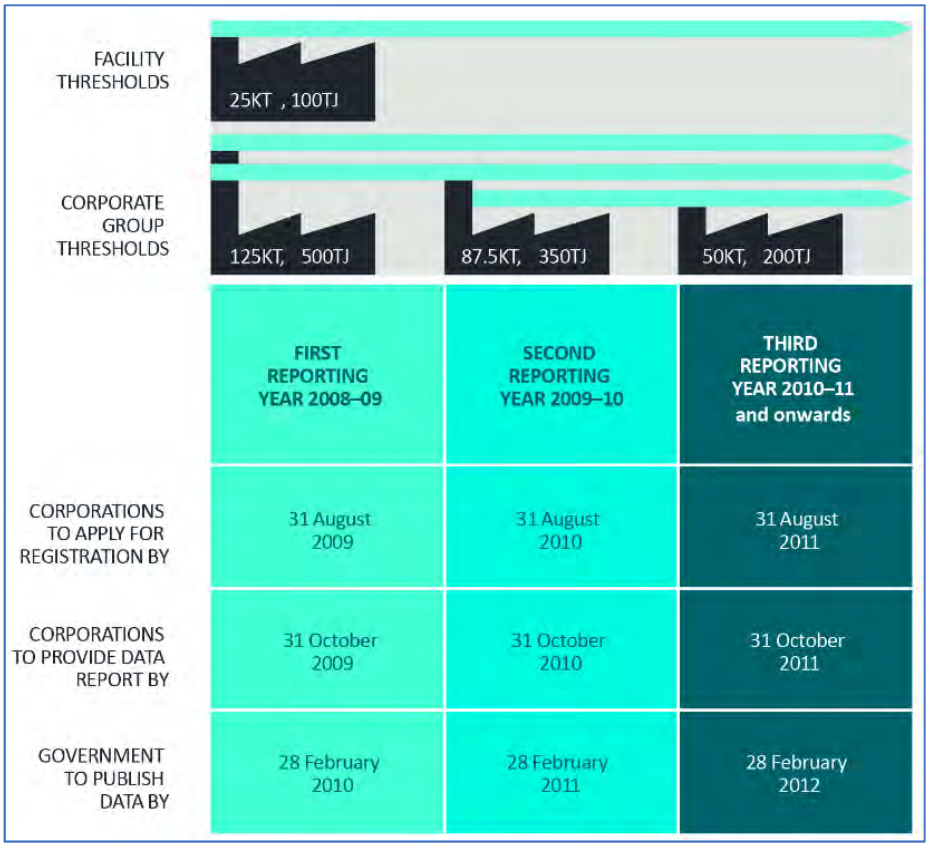
5.3 National Greenhouse & Energy Reporting (NGER)

5.3.1 National Reporting Guidelines

The purpose of the National Greenhouse and Energy Reporting Guidelines is to help corporations understand their obligations under the National Greenhouse and Energy Reporting Act 2007 (the Act).

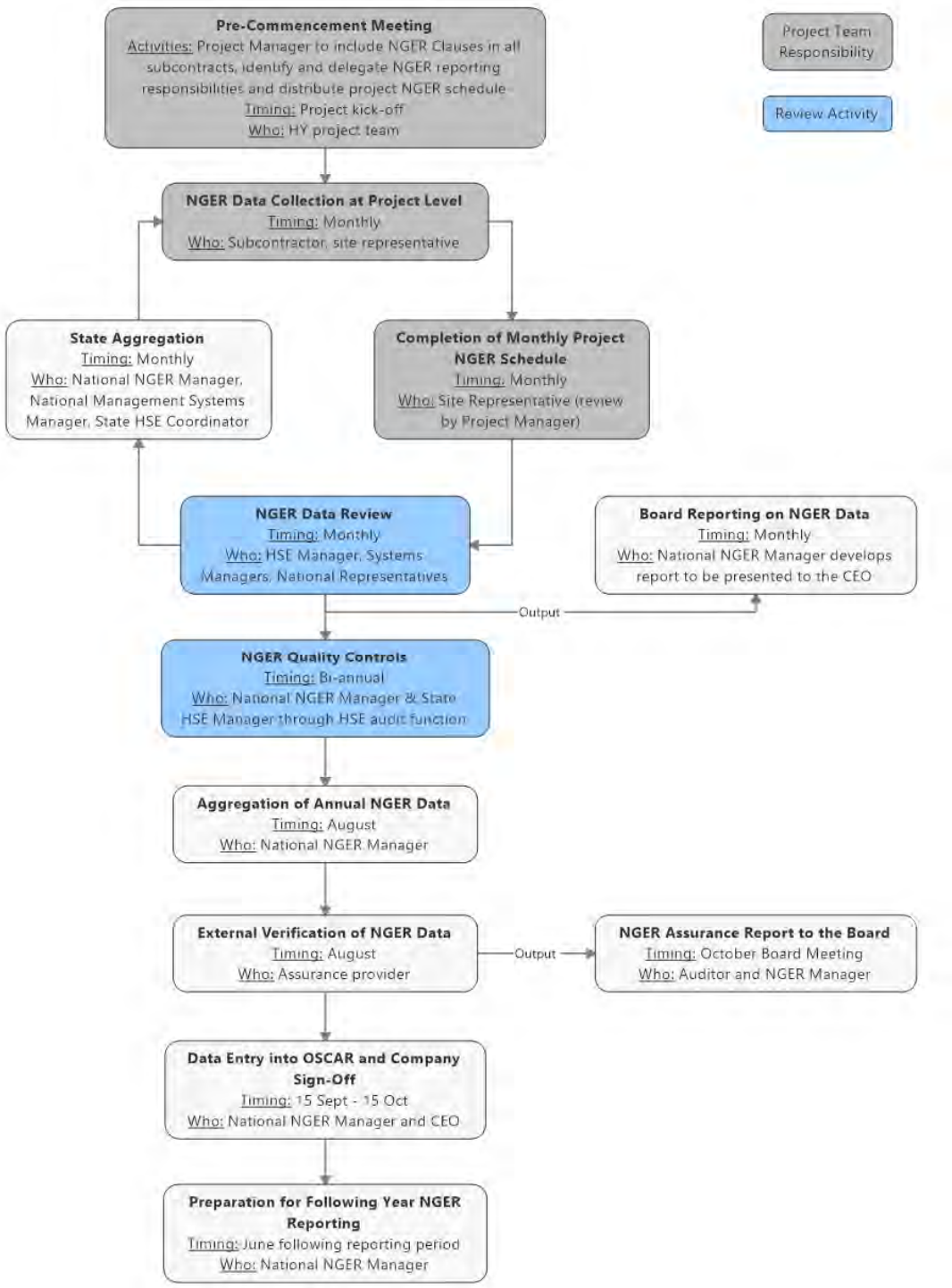
5.3.2 Reporting Thresholds

HY's has been assessed and determined to be below the corporate group reporting thresholds – detailed in the below table. Notwithstanding this, all natural gas and electricity consumption is recorded monthly on BIM360 Field and collated for national reporting. Furthermore, all site mobile plant and equipment fuel consumption is registered on BIM360 Field and incorporated in the HY greenhouse gases (CO2-e) annual report (NGER).



	FIRST REPORTING YEAR 2008–09	SECOND REPORTING YEAR 2009–10	THIRD REPORTING YEAR 2010–11 and onwards
CORPORATIONS TO APPLY FOR REGISTRATION BY	31 August 2009	31 August 2010	31 August 2011
CORPORATIONS TO PROVIDE DATA REPORT BY	31 October 2009	31 October 2010	31 October 2011
GOVERNMENT TO PUBLISH DATA BY	28 February 2010	28 February 2011	28 February 2012

5.3.3 NGER Reporting process



5.3.4 NGER Data Collection

NGER data shall be collected and recorded on BIM360 Field using the Site Electricity and Natural Gas Usage Checklist

6 References

Environmental Planning and Assessment Act 1979 No 203

Environmental Planning and Assessment Regulation 2000

Protection of the Environment Operations Act 1997 (NSW)

Protection of the Environment Operations (General) Regulation 2009

ISO 14001; 2015 Environmental management systems - Requirements with guidance for use

AS/NZS ISO 31000:2009 Risk management – Principles and guidelines

HB158:2010 Delivering assurance based on ISO 31000:2009 – Risk management – Principles and guidelines

NSW Government Environmental Management System Guidelines (edition 3 - August 2013)

7 Appendices

A.1 Hansen Yuncken Environmental Policy Statement

HANSENYUNCKEN

ENVIRONMENT POLICY

Hansen Yuncken Pty Ltd is committed to providing a high quality environment in the building and construction industry, which meets the requirements and expectations of Clients, Statutory Authorities, Employees and Community Groups.

Hansen Yuncken recognises that impacts on the environment in the building and construction industry relate not only to the process of construction but also to the design and subsequent use of the buildings constructed. Hansen Yuncken affirms its commitment to applying sustainable development principles to all facets of the building and construction process and to continually improve our performance in minimising the impact on, and pollution of, the environment during the construction process.

In achieving this Hansen Yuncken is committed to the implementation, maintenance and improvement of a Management System meeting the requirements of Australian and International Standard AS/NZS ISO 14001.

The National Executive Committee shall review Environmental objectives and set performance targets each year. State Managers, through their line management structure, are accountable for ensuring all employees and subcontractors achieve these objectives and targets.

The Company's Environmental performance shall be monitored against established performance targets and the results reported to the Board of Directors on the regular basis.

Hansen Yuncken affirm that they have a legal obligation to comply with relevant Environmental legislation, standards and codes of practice as the minimum level of performance and a professional obligation to acknowledge the views of Environmental and Community Groups.

Hansen Yuncken acknowledges that environmental excellence can only be achieved and maintained by a clear unequivocal direction of all levels of management, stimulating a participative atmosphere and sense of pride in our environmental achievements by all employees and trade contractors, and through recognition by concerned groups in obtaining this.

Peter Salveson
Chief Executive Officer
May 2018

A.2 Environmental Management Accreditation - ISO14001

CERTIFICATE OF REGISTRATION

Hansen Yuncken Pty Ltd

SCP, Building 1, Level 3, 75-85 O'Riordan Street, Alexandria NSW 2015 Australia
Suite 12, 125 Bull Street, Newcastle West NSW 2302 Australia
and transient sites
ABN 38 063 384 056

complies with the requirements of

ISO 9001:2015
Quality Management Systems – Requirements
and
ISO 14001:2015
Environmental Management Systems – Requirements with guidance for use

for the following capability:

This registration covers the Quality and Environmental Management Systems for the provision of project management and the design and construction of commercial, industrial and institutional buildings and civil engineering works.

Registered by:
Quality Control Services (Environmental) Pty Ltd
ABN 85 102 935 195
10 Rosina Street Woodcroft South Australia 5162 Australia

This certificate is subject to the Terms and Conditions for Certification, and relevant program rules. Currency of certification can be validated at www.qcse.com.au/certified-register, and www.jas-anz.org/our-directory/certified-organisations; it remains the property of QCSE Pty Ltd and must be returned upon request.

Certificate Number: 160052022
Issue Date: 26 February 2019

Original Certification: 23 February 2010
Expiry Date: 22 February 2022

CAStone

Cheryl Stone
Certification Manager

QMS/EMS Certified Company
Licence Number: Q0160

IAF QMS 010

Quality Control Services QCS ENVIRONMENTAL

JAS-ANZ

www.jas-anz.org/register

A.3 Site Description and Location

(extracted from RPS Environmental Impact Statement SSD 9744 – Catherine Fields Public School)

REPORT

Figure 1 Future roads and built form

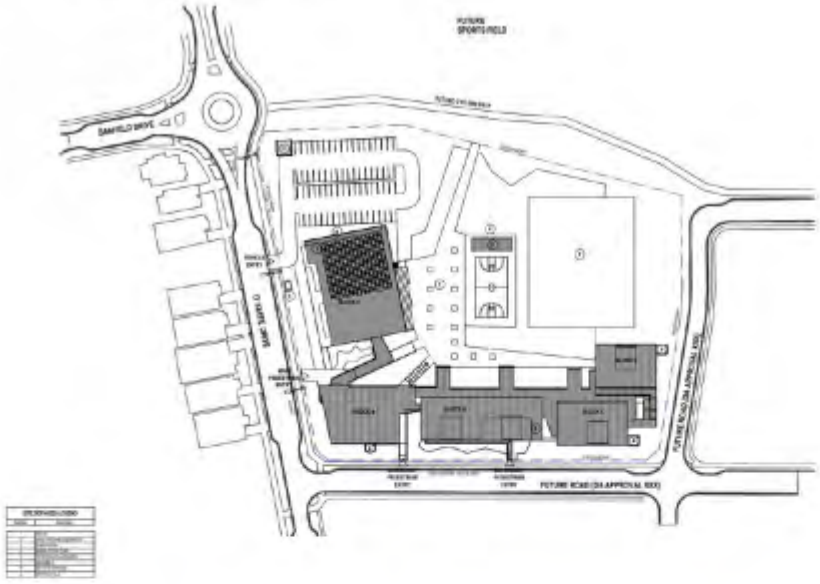


Figure 2: The site

Source: SixMaps

A.4 HSE Project Risk Assessment

PROJECT HSE RISK ASSESSMENT

This Project HSE Risk Assessment is to beused as aguide when completing the monthly Project High Risk Identification assessment on HYWAY Site Management Dashboard in accordance with the Project HSE Risk Assessment procedure and should be conducted at the time of Construction programme statusing to assess hazards and risks for next month. Hazards with residual risk from the Design WHS Risk Assessment (if applicable) are also to be considered.

RELEVANT PROCEDURE:	Project HSE Risk Assessment
PROJECT:	New High Quality Schools
JOB NO:	SC 126 (Catherine Field and East Leppington)
ASSESSED BY:	Paul Todhunter
ASSESSMENT DATE:	26-May-20

RISK ASSESSMENT TABLE		**Consequence**				
		1	2	3	4	5
Likelihood		Significant	Major	Moderate	Minor	Insignificant
A	Very Likely	High	High	High	Medium	Medium
B	Likely	High	High	Medium	Medium	Medium
C	Possible	High	Medium	Medium	Medium	Low
D	Remotely Possible	Medium	Medium	Medium	Low	Low
E	Very Unlikely	Medium	Medium	Low	Low	Low
NA	Not applicable	NA	NA	NA	NA	NA

	RISK ASSESSMENT			**CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)**	
HAZARD (Include additional project specific hazards as required)	**L**	**C**	**Class**	**Legislation, Standards & Codes of Practice**	**Enter Details of Specific Controls Required**
Amenities					
Access	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Gravel, all weather footpaths have been installed for safe access to all amenities in the compound area. The compound area is fenced off to protect workers from moving plant, trucks and vehicles
Location and nature of workplace	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	All amenities are set up in a compound area at the main entry to site making it easy for access and egress in emergency situations
Housekeeping	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	A cleaner is engaged twice a week to manage and maintain all amenities.
Seating	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Sufficient seating is in place for all workers to rest, take breaks and eat lunch
Lighting (Poor)	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Lighting is setup in all amentities for safe access
Air Quality	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Windows, fans and airconditioning are installed to all site sheds
Hot and Cold Environment	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Air conditioning installed to all lunch sheds
Drinking water	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Bubbler set up at lunch sheds and varoius locations throughout site
Dining Facilities	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Clean and tidy tables are available in all lunch sheds. There is sufficient space for all workers to site down and have lunch
Hand washing	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Warm water, soap and hand dryers are available in the toilets
Shower Facilities	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Hot showers are provided on site
Change Room	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Change rooms with benching and coat hooks are proivded on site for workers to change clothes
Air Quality					
Dust from plant & truck movements	C	4	Medium	WHS Plan	Water cart to conduct regular laps of the site spraying water on the ground to keep dust settled particularly where there is high plant and truck movements. Temporary water has been installed at several locations around site.
Refuelling of plant and equipment	B	4	Medium	AS/NZS 1715 Selection, use and maintenance of respiratory protective devices AS/NZS 1716 Respiratory protection devices	All refuelling is to be conducted in well ventilated areas only. Refuelling to be conducted clear of any hot works on site such as grinding, welding etc
Concrete cutting / coring	E	5	Low	NSW Cutting & Drilling Concrete & Other Masonry Products 1996	Water must be used to minimise dust. Demolition saws take preference over dry cutting with a masonry blade on an angle grinder. Rubble to cleaned up immediately. Slurry to be cleaned up immediately
Access/ Egress and movements around site					
Workers entering site without Hansen Yuncken permission would be unaware of any specific site hazards eg, asbestos, gas lines, high risk construction work etc	A	2	High	SafeWork NSW Code Of Practice: WHS Consultation, coordination and cooperation	All workers must be site inducted by Hansen Yuncken prior to entering site. This is clearly marked on the contact details sign at the main entry to site. Subcontractors must give Hansen Yuncken site staff sufficient notice prior to workers attending site to be site inducted. All workers on site to display a HY photo ID at all times and sign into the site attendance register on a Daily Basis after they have been Inducted.
Unauthorised access to Site	B	3	Medium	SafeWork NSW Code Of Practice: WHS Consultation, coordination and cooperation HY procedure - Site Establishment Hansen Yuncken HYer Standard 09 Site Establishment	Install safety/warning signage e.g. Construction Site Authorised Persons Only, All visitors report to site office Where a security fence is used to control unauthorised entry onto a construction site, they should: • be constructed from suitable, dedicated materials with no holes or gaps; • be a suitable height to deter entry (for example, at least 1.8 metres high) • be soundly constructed (for example, gates and joints) • be secure and not present a weak point for entry • be stable and able to withstand anticipated loads or forces (for example, strong winds, persons attempting to climb the fence) • be difficult to gain access under the fence and to scale the fence Where a fence is comprised of discrete panels, the joints should not weaken it and should provide the same level of security as the panels Sheets of reinforcing mesh should not be used as site fencing because it may allow adequate hand and foot hold for children to climb over the protruding ends Fencing with signage and shade cloth type coverings may require additional support to resist wind loadings. Gates should not represent a weak point and the closed gate should provide the same level of security Gates to have locks and chains fitted Gates to be kept locked where required, e.g. vehicle access points, or traffic controllers in place Undertake regular inspections to ensure integrity of fences and gates After Hours Security on Site
Unauthorised access to work areas / Work areas not secured	B	4	Medium	SafeWork NSW Code Of Practice: WHS Consultation, coordination and cooperation HY Procedures - Work Permits, Excavations and Trenches, Working at Heights, Inexperienced workers	Barricading of excavations and trenches Signage in place (danger/caution/mandatory) Work Permit systems Exclusion zones Lock access to roof areas HRCW SWMS Safe access to work areas Communication of work areas/exclusion zones at daily prestart meetings Site specific induction
Visitors entering site without Hansen Yuncken permission would be unaware of site hazards eg, asbestos, gas lines etc	C	5	Low	SafeWork NSW Code Of Practice: WHS Consultation, coordination and cooperation	All visitors must sign in at the site office prior to entering site. Signs have been erected clearly stating this. Visitors must display a ID card and be escorted by an inducted guide at all times. Visitors entering site must have approval from the Site Manager.
Pedestrians/ workers walking around site being struck by vehicles/trucks/ plant moving around site	D	1	Medium	SafeWork NSW Code of Practice: Managing the risks of plant in the workplace SafeWork NSW Code of Practice - Moving Plant on Construction Sites	Bunted/fenced off pedestrian pathways have been erected on site to keep pedestrians clear of areas where there are high movements of vehicles/ trucks and plant. All subcontractors using moving plant must have a HRCW SWMS which details how to protect other workers in the area from being struck by the plant. All plant must have a flashing light, horn and reversing beeper. Vehicles/ trucks must turn their flashing lights on. There is a 10km/h speed limit on site. All workers have been told at the site induction to be aware of moving plant on site and keep clear whenever possible. Only workers who are involved with the task are to be in the vicinity of the plant. HY have instructed all subcontractors to train their workers through pre-start meetings on how to approach moving plant and equipment. Haul roads for plant and vehicles are to be maintained. Pedestrians are to avoid walking on haul road whenever possible. Plant operators are to keep reversing to a minimum. Pedestrians that need to approach moving plant are to do so from the front of the machine and are to gain the operators attention by waving arms and yelling out to the operator. No person is to approach the machine until the operator has stopped moving the machine and signalled that it is safe to approach. Spotters working with machines must always stand in an area where they are visible to the operator. A site spotter/ delineation plan has been proposed to and approved by the site safety committee. This plan states areas where a spotter is mandatory for all plant and vehicle movements. This plan is posted on the site notice board.

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JOB NO:	SC 126 (Catherine Field and East Leppington)
ASSESSED BY:	Paul Todhunter
ASSESSMENT DATE:	26-May-20

RISK ASSESSMENT TABLE		**Consequence**				
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	RISK ASSESSMENT			**CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)**	
HAZARD (Include additional project specific hazards as required)	**L**	**C**	**Class**	**Legislation, Standards & Codes of Practice**	**Enter Details of Specific Controls Required**
Public being struck by trucks entering and exiting site	D	3	Medium	SafeWork NSW Code Of Practice: How to manage work health and safety risks	Gate keeper is in place managing vehicle and pedestrian movements at main entry to site
Subcontractors bringing vehicles onto site without Hansen Yuncken permission	B	4	Medium	Ford Civil/ Traffic Construction Traffic Management Plan	All subcontractors must seek approval from the Hansen Yuncken Site Manager prior to bringing vehicles/ trucks onto site.
Workers slipping/ tripping over on muddy/ uneven ground	c	3	Medium	WHS Management Pan	Pedestrian pathways have been constructed to minimise slip and trip hazards. Wheel ruts, eroded ground, muddy haul roads and pathways are to be bladed back to solid ground as required. On rain days the foreman & safety committee (when established) is to walk the site prior to work commencing and determine which areas are safe for work and which areas are no go zones.
Vehicles becoming bogged or losing traction whilst entering/ exiting and driving around site	E	4	Low		Vehicles to be driven on solid ground only. No vehicles will be allowed to drive on muddy terrain
Collisions between plant on site	E	3	Low		Sufficient distance to be kept between all plant on site. Flashing light, horn and reversing beeper must be working. Plant and vehicles to stay on haul roads whenever possible. Site speed limit is 10km/h
Too many vehicles parked on site creating restricted access around site	NA	4	NA		A Parking area on site has been established. Vehicles are not permitted to park outside of the car park area.

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HAZARD (Include additional project specific hazards as required)	**L**	**C**	**Class**	**Legislation, Standards & Codes of Practice**	**Enter Details of Specific Controls Required**
Asbestos					
Workers being exposed to the asbestos contaminated soil (ACM) at various locations around site	NA	3	NA	Working with asbestos guide 2008	A contamination report for the sites has been produced and has not identified any ACM. An unexpected finds protocol is to be implemented
Unidentified finds of asbestos	B	3	Medium	HY Procedure SafeWork NSW Code of Practice: How to manage and control asbestos in the workplace SafeWork NSW Code of Practice: How to safely remove asbestos	If asbestos is found stop work immediately and notify HY site staff immediately whom will arrange for a hyienist to assess the area. Area to be closed off with bunting/ red white tape and warning signage. Air monitors to be installed and all workers in the area must wear appropriate PPE as defined in SWMS.
Atmosphere - Contaminated/ Flammable					
Flammable fumes from fuel containers	A	4	Medium	SafeWork NSW NSW Code of Practice: Managing risks of hazardous chemicals in the workplace	Fuel to be stored in fuel storage areas only. Fuel drums are to be placed back in the fuel storage area after refuelling has been completed. No refuelling near any hot works being undertaken. All subcontractors must have a 'refuelling SWMS'
Unsafe storage of fuel	C	4	Medium	AS/NZS 2430 Classification of hazardous areas	Fuel must be stored in ventilated cages. No fuel to be stored in shipping containers
Fumes from spray selear application to carpark slab	D	4	Low	AS1318 Use of colour for the marking of physical hazards and the identification of certain equipment in industry	Applicators must wear mask whilst spray painting. Warning signage to be erected and all other personnel not involved with the task are to be clear of the area
Biological Hazards					
Disease from unhygienic facilities and amenities	E	4	Low	SafeWork NSW Code Of Practice: Control of work related exposure to Hepatitis and HIV (blood borne) viruses WHS Management Plan SafeWork NSW: Code Of Practice: Managing the work Environment and Facilities	A cleaner has been engaged by Hansen Yuncken to clean amenities on a bi-weekly basis. Amenities to be kept clean and tidy at all times
Bomb Threat					
Persons unaware of what to do in the event of an emergency	E	5	Low	HY Emergency Response Plan AS 2293 Emergency escape lighting and exit signs for buildings AS 3745: 2002 Emergency Control Organisation and Procedures For Buildings, Structures and Workplaces	Emergency response procedure is explained to all workers at the site induction. HY to practice emergency drills every 6 months to ensure the system is working.
Changes in design					
Changes in design could result in new hazards not being identified	D	4	Low	WHS Management Plan	All design changes must be risk assessed by HY and Consultants. Subcontractor SWMS will be reviewed by HY as required
Craning & Hoisting Operations					
Persons/ other trades on site walking into the crane slew area may be struck by crane or load	B	1	High	AS 2550: Cranes, hoists & winches - Safe Use WHS Plan	The work area around all cranes must be fully barricaded eg bunting and signposted to keep other workers clear.
Slings or chains failing resulting in loss of load	A	1	High	AS 1418.1: Cranes, hoists and winches – General Requirements AS 4991 Lifting Devices WHS Plan	Subcontractors must keep an up to date register of all chains and slings. All equipment must be visually checked daily prior to use.
Crane out riggers sinking in ground resulting in crane rolling over	A	1	High	NWHSC 1010: National Standard for Plant WHS Plan	Subcontractor SWMS to detail craning and hoisting operations. Subcontractor to communicate with HY staff and obtain a plant setup permit prior to setting up cranes to ensure outriggers are not set up over underground services or in unstable ground conditions.
Crane striking structures whilst slewing	A	2	High	AS 1418.10(Int): Cranes, hoists and winches - Elevating work platforms WHS Plan	Dogman and crane operator to constantly communicate with each other. Crane operator to take directions from dogman only.

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	RISK ASSESSMENT			**CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)**	
HAZARD (Include additional project specific hazards as required)	**L**	**C**	**Class**	**Legislation, Standards & Codes of Practice**	**Enter Details of Specific Controls Required**
Concrete					
Concrete Pumping - overload formwork structure	A	2	High	WHS Plan	Spotter to be used when positioning boom over formwork
Trip hazard after excess concrete has cured	A	4	Medium	Environmental Protection Act 1994	Back to plant policy for large amounts of excess concrete
Slip hazard from excess water and slurry on the ground/ concrete washout	A	4	Medium	WHS Plan	Concrete washout to be set up in area where water will not run over pedestrian pathways. Generally plastic is rolled out on the ground. The hopper is washed out onto the plastic, the concrete cures then is placed in a skip bin the following day
Slurry and wet concrete entering stormwater drains	B	5	Medium	WHS Plan	The concrete washout area will constantly move on site to suite site conditions. The HY site foreman will determine where the wash out area will be on the day of any concrete pours.
No designated washout area could result in truck drivers washing out wherever they please leaving the site messy and untidy	D	4	Low	WHS Plan	Excess concrete from washing out the pump is to be placed onto plastic, allowed to set then placed into the skip bin with a telehandler
Concrete cutting / coring - dust	B	4	Medium	WHS Plan	Water must be used to minimise dust. Demolition saws take preference over dry cutting with a masonry blade on an angle grinder. Rubble to cleaned up immediately. Slurry to be cleaned up immediately
Strike PT cables whilst cutting concrete	B	4	Medium	WHS Plan	Review As Constructed Drawings, consult Structrular engineer and obtain permission to proceed. Enact Cutting and Coring Permit prior to any works commencing
Confined Space					
Poor ventilation inside in-ground pits	C	4	Medium	NWHSC 1009: Safe Working in a Confined Space AS 2865: Confined Spaces SafeWork NSW Code of Practice: Confined spaces	No chemicals are to be used inside in-ground pits. Close supervision of all men working inside pits at all times. Lid to be kept open at all times. Sparging up of pits is to be conducted as pit risers are installed to minimise the need to enter the pit afterwards
Workers unable to easily enter and exit trenches	D	3	Medium	WHS Plan	All trenches over 1.5m must be benched at 1:1 at a maximum of 1.5m or battered at 45 degrees. A ramp or steps must be cut into the trench for easy pedestrian access.
Workers being overcome by fumes building up in open trenches	D	3	Medium	NSW WHS Regulation 2017: Part 4.3 Confined spaces	All open trenching has good ventilation. Refuelling does not occur inside open trenches. Oxy acetylene equipment is kept clear of open trenching.
Contaminated Soil					
Exposure to contaminated soil which has not been identified	C	3	Medium	AS 4482: Guide to the investigation & sampling of sites with potentially contaminated soil NSW Environment Operations Act 1997	All subcontractors that will excavate onsite to have a SWMS for 'unexpected finds'. All workers have been instructed at the site induction to stop work immediately and notify Hansen Yunken site staff whom will take action to make the area safe.
Exposure to contaminated soil which has not been identified	C	3	Medium	WHS Plan	Unexpected finds protocal
Deliveries To Site					
Delivery vehicle drivers unaware of site hazards	A	4	Medium	SafeWork NSW Code of Practice: Moving Plant On Construction Sites: 2004	All delivery drivers must complete a 'delivery driver induction' prior to entering site.
Delivery vehicle unloading in an unsafe area eg. in an area where there is mobile plant or pedestrians frequently moving past	C	2	Medium	WHS Plan	The subcontractor supervisor must have good communication with the delivery driver and escort him to the work area where the delivery is to be unloaded. The s/c supervisor must take charge and assist the driver to unload materials from the truck. Exclusion zones to keep people clear of loading/unloading areas will consist of flagging on bollards with Danger Loading/unloading area – no go zone signage Delivery Driver Safe Zone Three pedestrian control barriers will be installed off the exclusion zone “bollards and flagging” where the delivery driver will remain during loading/unloading activities. This driver safe zone must be on the same side of the vehicle where mobile plant is operating so the operator has line of sight with the delivery driver at all times. A “driver safe zone” sign will be attached to the barriers.
Pedestrians/ other workers in the area being struck by materials as they are being unloaded from the truck	A	4	Medium	WHS Plan	All delivery drivers are told at the 'delivery driver induction' to be aware of any pedestrians/ other workers in the area. Delivery drivers must ensure they have enough space to unload/ load materials from trucks safely. If they have any problems they must notify HY staff immediately whom will assist the driver to undertake their task safely. Subcontractors must manage and supervise their deliveries on site. Subcontractors must spot the driver whilst materials are being unloaded and warn other workers in the area to keep well clear.
Untrained delivery drivers using plant to unload goods	E	3	Low	WHS Plan	SWMS must be in place for subcontractors using plant to unload their delivery
Drugs & Alcohol					
Persons under the influence of drugs or alcohol are at high risk of injuring themselves or others	E	4	Low	Alcohol and other drugs in the workplace guide - 2006 Drug and Alcohol Management Plan	Persons assumed to be under the influence of drugs or alcohol will be stopped from working immediately. Their employer will be notified who will investigate and take appropriate action as per their drug and alcohol policy.

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HAZARD (Include additional project specific hazards as required)	**L**	**C**	**Class**	**Legislation, Standards & Codes of Practice**	**Enter Details of Specific Controls Required**
Dust					
Disruption/ nuisance to neighbours and client	D	5	Low	SafeWork NSW Code of Practice: Managing the risks of hazardous chemicals in the workplace Environmental Engagement Plan Zoic Construction Soil and Water Management Plan	Shade cloth installation to site perimeter fence to contain all dust within the construction site.
Eye injuries and respirable damage to workers	D	4	Low	AS/NZS 1336 Recommended practices for occupational eye protection	Water carts and hoses used to keep dust to a minimum. Plant and trucks to move at low speeds to keep dust settled. Eye protection to be worn for any task that creates large amounts of dust
Dust from wall chasing	NA	4	NA	AS/NZS 1715 Selection, use and maintenance of respiratory protective devices	Dust must be minimised whilst wall chasing by way of vacuum system. Workers must wear dust mask whilst wall chasing. Rooms are to be swept frequently to minimise dust
Concrete cutting / coring	E	4	Low	AS/NZS 1716 Respiratory protection devices NSW Cutting & Drilling Concrete & Other Masonry Products 1996 WHS Plan	Water must be used to minimise dust. Demolition saws take preference over dry cutting with a masonry blade on an angle grinder. Rubble to cleaned up immediately. Slurry to be cleaned up immediately . HY Cutting amnd Coring permit in place.
Electricity					
Electrocution from faulty/ damaged electrical equipment	D	1	Medium	AS/NZS 3017: Electrical installations - Testing & inspection guidelines SafeWork NSW: Code Of Practice: Managing Electrical Risks	All power tools/ leads must be visually checked daily and tested and tagged monthly. Damaged leads and power tools are not to be used on site. Lead are to be elevated off the ground to minimise risk of electrical leads being damaged.
Electrocution from faulty/ damaged Distribution boards	NA	1	NA	WHS Plan SafeWork NSW: Code Of Practice: Managing Electrical Risks	HY DB Board checklist to be completed for all DB boards. All temporary distribution boards will be inspected, tested and tagged monthly. All RCD's to be padlocked and only reset by a qualified electrician.
Workers tripping on leads	C	4	Medium	AS/NZS 3199 Approval & test specification for cord extension sets SafeWork NSW: Code Of Practice: Managing Electrical Risks	All power leads must be elevated off the ground. A maximum of 5m may be on the ground for general movements in the area whilst using the power tool.
Electrocution from temporary construction wiring being damaged	B	1	High	SafeWork NSW: Code Of Practice: Managing Electrical Risks	All temporary construction must be labelled with 'yellow temporary construction wiring tape'. All temporary construction wiring will be inspected and recorded on the site HSE inspection report weekly.
Working around energised live Substation	B	2	High	AS/NZS 3000: Electrical Installations SafeWork NSW: Code Of Practice: Managing Electrical Risks	All subcontractors conducting excavation works must obtain a ground works permit from HY site staff. A plan with existing underground services must be attached to the permit to dig.
Workers piggy backing leads	C	3	Medium	AS 3012: Electrical Installations - Construction & Demolition Sites SafeWork NSW: Code Of Practice: Managing Electrical Risks	Portable generators must be used if electrical leads cant reach from the DB board to the work area so a power source is close to the work area.
				AS 3190: Approval & test specification - Residual current devices	
				AS/NZS 3001 Electrical installations - Relocatable premises and their site installations	
				SafeWork NSW: Code Of Practice: Managing Electrical Risks	
				AS3760: 2010 In-service safety inspection and testing of electrical equipment	
				NSW Code Of Practice: Electrical Practices for Construction Work 2007	
Emergency Services Unavailability					
Injured person may not receive first aid treatment in a sufficient amount of time	E	3	Low	WHS Act 2011 SafeWork NSW Code of Practice: First Aid in the Workplace HY emergency response plan	Emergency contact details are displayed on the site safety notice board in the lunch shed and in the first aid room. HY site staff have senior first aid training. There are first aid kits in the site office. The first aid facilities have been setup in accordance with SafeWork NSW Code Of Practice: First Aid in the Workplace taking into account the number of workers on site, response times and types of injuries which may occur on site.
Site Emergencies	B	3	Medium	WHS Regulation 2017	HY emergency response plan details actions to be taken for different types of emergencies
Erosion/ Loss of Topsoil					
Sediment entering stormwater systems	E	4	Low	Environmental Protection Act 1994 Northrop Water Stormwater Managemetn Plan	All stormwater pits to be covered with sediment control fabric. Sediment barrier to be erected around the low perimeter of site perimeter fencing in accordance with the site sediment control plan. Sediment control to be inspected weekly and recorded on the site HSE inspection report. All de-watering of site must be discharged in accordance with the stormwater management plan. The water must be flocked, tested and approved by HY prior to being pumped into the existing stormwater system.
Erosion causing perimeter scaffolding to become unstable	NA	3	NA	Environmental Management Plan	All perimeter scaffolding to be checked following significant rainfall and rectified by scaffolder as required.

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Existing services					
Damage to existing services could cause major disruption to the client eg. live power, security cables etc.	D	3	Medium	SafeWork NSW Code Of Practice: Excavation Work WHS Plan	Subcontractors are available to repair services in the event they are damaged
PLANT OPERATORS STRIKING UNDERGROUND SERVICES WHILST UNDERTAKING TRENCHING/ EXCAVATION WORKS	C	1	High	Ausgrid National Standard NS 156 - Working near or around underground cables WHS Plan	A ground works permit system is in place on this site. All known existing services have been marked up on the site plans. Pot holing and hand digging must occur when working around existing services. Striking existing underground services has been listed as a hazard on all subcontractor SWMS involving excavation works
Excavators digging trenches accidently striking recently installed and charged up hydrant lines throughout the site	E	2	Medium	Jemena Guidelines Construction Activities Near & Over Jemena Gas Networks Assets A WHS Plan	A plan has been issued to all subcontractors notifying them of existing services
Explosive Powered Tools					
Eye and hearing damage	E	4	Low	WHS Plan	Eye and hearing protection must be worn. Workers must be closely supervised by their supervisor
Excavations					
Excavation over 1.5m	C	3	Medium	SafeWork NSW Code Of Practice: Excavation Work	All trenches over 1.5m must be benched at 1:1 at a maximum of 1.5m or battered at 45 degrees unless stated otherwise by a geotechnical engineers report. A ramp or steps must be cut into the trench for easy pedestrian access.Shoring boxes to be used for trenches greater than 1.5 m deep if benching is not possible
Large stockpiles of spoil creating blind spots for plant operators and truck drivers	E	3	Low	NSW Code Of Practice: Moving Plant On Construction Sites 2004	Plant operators must neatly stockpile all spoil and limit the height of the stockpile to maintain good vision. Plant operators are to avoid stockpiling spoil next to bends on haul roads.
Trench collapse trapping workers	C	1	High	AS 2763 Vibration and shock - hand transmitted vibration - guidelines for measurement and assessment of human exposure	Any trenching in unstable ground is to be benched/ battered. If the excavation reaches rock or shale and benching/ battering is not practical geotechnical engineers signoff is required. A ramp must also be cut into the end of trench for emergency access/ egress.
Plant eg. mobile crane set up too close to a trench could result in trench collapse and plant roll over	C	2	Medium	WHS Management Plan	All plant must be set up clear of the zone of influence
Plant outriggers sinking into ground resulting in plant roll over.	C	1	High	AS 3798 Guidelines on earthworks for commercial & residential developments	Plant must only be set up on solid ground and sufficient pig sty packing/ sole plates placed underneath out riggers. Sole plates are to be used underneath EWP stabilizers if the ground is soft. Ground conditions to be constantly checked during and after rain fall.
Open trenches restricting access for vehicles and pedestrians around site	C	4	Medium	NSW Dial Before U Dig Legislation	Pedestrian / vehicle/ plant access must be kept clear at all times around site. Alternative access routes are to be set up prior to trenching across pathways and roadways.
Building materials/ stockpiles stored near trench could result in trench collapse	C	3	Medium		Materials and equipment must not be stored within the 'zone of influence'
Different trades working in the same area at the same time could strike each other with mobile plant	A	2	High		Daily pre-starts and SWMS detail how to work around moving plant on site including plant used by other trades eg. spotters, barricade the work area, signage etc
Damage to existing buildings from vibrations caused by machinery	NA	4	NA		Vibration from earthworks to be monitored by HY and subcontractors
Formwork					
Formwork collapse	B	1	High	SafeWork NSW Code of Practice: Formwork	Formwork must be certified by a qualified engineer that it is structurally sound and able to safely support loads that may be applied by the concrete pour, workers, reinforcement & crane lifted loads. Once engineer's inspection complete ensure any additional back propping is installed if required. Place plant and materials on formwork and falsework only where allowed for by the design and when the structure or deck is sufficiently constructed so it is able to bear the load
Fall from heights	A	1	High	SafeWork NSW Code of Practice:Managing the risks of falls at the workplace	Spread first section of joist on beam from intermediate work platform and only access the deck to start laying ply once the joist are down and handrail is in place. Use scaffold to gain access to deck to start laying plywood When you sheet up to 1.8m from end of joist lay next section of joist NEVER sheet to the end of the joist even if there is a catch deck in place Lay joist across bearers fixed at a spacing of 450 maximum to prevent any possibility of falls while construction of the deck. Establish working areas for steelfixers & other trades. A 'formwork only' zone should be maintained behind the leading edge. This zone should be clearly demarcated by signage and a barrier. Protect open penetrations with edge protection (e.g. handrails) or cover securely. Cast5in metal mesh with a small aperture (e.g. 50 x 50 mm mesh size or smaller) for small penetrations. Paint ply covers with appropriate warnings (e.g. "PENO" or similar) and fasten securely.
Cuts/ impalement on starter bars	B	3	Medium		Safety caps to be fitted to all starter bars wherever there is a risk that a person may fall on one.
Fall prevention/ arrest equipment					
Failure of fall arrest equipment	B	1	High	HY emergency response plan AS/NZS 1891: Industrial fall arrest systems and devices	All safety harnesses and lanyards must be visually checked daily. Safety harness is the last form of control and other forms of fall protection should be used such as perimeter scaffolding, EWP, handrails etc Maintenance and inspection records in subcontractor safety management plans to be kept up to date Roof anchor points must be certified prior to use Rescue procedure for rescuing persons in fall arrest must be developed prior to persons using safety harnesses

PROJECT HSE RISK ASSESSMENT

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ASSESSED BY:	Paul Todhunter
ASSESSMENT DATE:	26-May-20

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A	Very Likely	High	High	High	Medium	Medium
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HAZARD (Include additional project specific hazards as required)	**RISK ASSESSMENT** L	C	Class	**CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)** Legislation, Standards & Codes of Practice	Enter Details of Specific Controls Required
Fall from heights					
Workers falling into open trenches	C	3	Medium	AS 1418.1: Cranes, hoists and winches – General Requirements	All open trenches must be bunted off at least 1m from the edge of the trench. Where there are high movements of pedestrians an plant then a solid barrier such as a temporary mesh
Workers falling into open penetrations (eg in-ground pits)	C	3	Medium	WHS Regulation 2017 Part 4.4 Falls	All penetrations to be covered and secured and the wording "peno" or "do not remove" sprayed onto the plywood/metal plate.
Workers falling from ladders	C	3	Medium	SafeWork NSW Code Of Practice: Managing the risk of falls at workplaces	Ladders are to used in accordance with the HY ladder policy. Ladders are the last resort for height access and other means of height access should be used eg EWP's, mobile scaffolding, platform ladders etc. Standard A frame ladders can be used but only for short duration works or tight restricted spaces such as small rooms where a scissor lift will not fit. Ladders with 4 steps or less are not permitted on site
Bricklayers falling from trestle scaffold	C	1	High	AS 4576: Guidelines for scaffolding	Bricklayers must install a handrail to the scaffold and a ladder for safe access/egress. Trestle scaffold must be set up correctly on solid ground
Fall from scaffold	E	3	Low	AS 1576: Scaffold general requirements	Modular stairs to be installed at the same time as decks are installed for safe access to each deck. Handrails must be installed from deck below prior to accessing the deck above. Ends must be closed off with trannys. Scaffolder will erect 'danger scaffold incomplete' signage until the scaffold is ready for use and a handover certificate has been issued to HY. All trades have been made aware not to alter the scaffold under any circumstance.
Personnel falling into open trenches or off the edges of batters and excavations	D	3	Medium	Emergency Response Plan	All open trenches and along the top edge of batters must be bunted off at least 1m from the edge of the trench. Deep trenching must be benched every 1.5m so that a person can only fall a maximum of 1.5m.
Fall from mobile scaffold	B	3	Medium	Scaffold erection guide (comes with scaffold)	All mobile scaffolding must be built as per the manufacturers instructions. Handrails and midrails must be in place. Any scaffold where a person can fall more than 4m must be erected by a licenced scaffolder.
Workers falling from heights	C	2	Medium	WHS Plan	Roof access permit must be obtained by the roofer prior to accessing the roof. Perimeter scaffold or handrail must be in place for fall protection. Safety mesh must be installed correctly as per Code Of Practice: Safe Work On Roofs: Part 1
Falls into bored piers	B	2	High	AS/NZS 1892 Portable Ladders	Bored piers must be fully covered with plywood or mesh to eliminate risk of workers falling into the hole. Deep excavation signs are to be erected and the are fully bunted off. Best practice is to fill the hole with concrete as soon as possible.
Falling objects					
Pallets of blocks stacked too high could tip over and injure a person	A	4	Medium	Workcover Bricklayers guide	Pallets of blocks must be stacked on level ground no more than 2 pallets high
Scaffold parts could fall/ be knocked off the deck and injure workers below	NA	2	NA	AS 1576: Scaffold general requirements	All excess scaffold material must remain on the ground. No excess scaffold material is to be left lying on scaffold decks
Formwork and reo materials falling from deck onto persons below	B	2	High		All materials must be stacked neatly clear from edge of deck and kick boards must be put in place
Building material and tools falling from scaffold decks	NA	2	NA	WHS Plan	Edge boards to be fitted to all scaffold decks. Materials stored on scaffolding is to be kept to a minimum and removed from decks daily. If possible do not store materials on scaffold at all.
Falling materials from EWP's	A	1	High	AS/NZS 2210 Occupational protective footwear	No worker is to walk underneath an elevated EWP. All EWP operation must have a spotter or the area must be fully barricaded off with red/white tape, bunting or flagging or signage in place
Loose materials and rocks from walls of trenches falling onto workers within the trench	D	3	Medium	AS/NZS 1800 Occupational protective helmets - Selection, care & use	No access to any open trenches for workers unless the walls of the trench are stable. Geotech sign off required for trenching over 1.5m
Materials left behind after works finish eg. loose bolts, off cuts etc	B	1	High	AS/NZS 1801 Occupational protective helmets	Work areas at heights must be checked daily and loose items brought down to ground level.
Fauna (protected or endangered species)					
Snakes and insects in long grass	B	3	Medium	Environmental Protection Act Environmental Management Plan	Weeds and long grass alongside pedestrian pathways around the site are to be cut back with a whipper snipper
Fire					
Chemical and fuel spills may cause a fire	E	1	Medium	Emergency Response Plan	A;BE Powder type fire extinguishers are installed at several locations strategically placed around the site
Sparks from hot works eg welding, grinding may cause a fire	D	3	Medium	AS 2444: Portable fire extinguishers & fire blankets - selection and location AS/NZS 1850 Portable fire extinguishers - Classification, rating and performance testing	All subcontractors must obtain a hot works permit from HY staff. The permit will detail any controls required for undertaking the task
Flammable materials stored on site may ignite from hot works in the area	D	2	Medium	SafeWork NSW Code of Practice: Managing the risks of hazardous chemicals in the workplace	Hazardous materials must be stored in cool, dry areas away from ignition sources and flammable material signage installed.
Fuel drums could catch on fire from sources of ignition	B	4	Medium	AS 3745 Emergency control organisation and procedures for buildings, structures and workplaces	Fuel drums are to be put away when not in use in a storage cage in a well ventilated area
Workers could be seriously injured whilst attempting to extinguish fire	E	1	Medium	AS 2444 Portable fire extinguishers and blankets - Selection & location	All workers are told at site induction not to place themselves at risk and not to try and fight the fire
Time taken to obtain fire extinguisher in the event of an emergency	D	1	Medium	AS/NZS 1841 Portable fire extinguishers	Fire extinguishers are places strategically around site for easy/ fast access. Locations of fire extinguishers are on the site layout plan
Poor maintenance of fire extinguishers	E	1	Medium	AS 2375 Guide to the selection, care & use of clothing for protection against heat & fire	Fire extinguishers are to be tagged every 6 months by a competent person

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	RISK ASSESSMENT			**CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)**	
HAZARD (Include additional project specific hazards as required)	**L**	**C**	**Class**	**Legislation, Standards & Codes of Practice**	**Enter Details of Specific Controls Required**
First aid					
Persons unaware of what to do if an individual requires first aid	E	5	Low	WHS Regulation 2017	Emergency response plan posted on site notice board. All workers explained of the location of the first aid room and contact details for site first aiders.
Injured person not receiving first aid treatment quickly enough due to the site being so large	D	3	Medium	Work injury management and workers compensation act 1988	Site staff to communicate by way of mobile phones and 2 way radios. A first aid room is set up in the HY amenities. Within the first aid room is a fixed type A kit and portable type A kit for rapid response.
It may not be possible to take the injured person to the first aid room because of the seriousness of their injuries	E	4	Low	SafeWork NSW Code of Practice: First aid in the workplace:	Access routes to be kept clear around site for emergency vehicles
Inadequate first aid supply's	E	3	Low	WHS Plan	First aid room to be set up with portable and fixed first type A first aid kits, stretcher, defibrillator, ice packs, sun cream, eye wash and examination couch as per SafeWork NSW Code of Practice: First aid in the workplace
Inadequately trained first aiders/ insufficient number of first aiders	E	3	Low	Emergency Response Plan	HY Site Foreman must have Apply First Aid type certification. HY Safety Officer must have Occupational First aid certificate
Persons working alone unable to raise the alarm	E	3	Low	Emergency Response Plan	No person is to work alone. There must be another person in the area at all times. This is told to all workers at site induction
Heart attack/ stroke	E	1	Medium	Emergency Response Plan	Defibrillator to be kept in first aid room
Number of buildings	E	5	Low	Emergency Response Plan	5 - all easily accessible for pedestrians or vehicles
Maximum Number of levels on each building	E	5	Low	Emergency Response Plan	3 - All have internal stair access
Time taken to walk to furthest point on site	D	4	Low	Emergency Response Plan	5 minutes - from first aid room to furthest point on site
Nearest Hospital	D	4	Low	Emergency Response Plan	Camden Hospital Sydney
Nearest Medical centre	D	4	Low	Emergency Response Plan	Gregory Hills Medical centre
Maximum time to medical service	D	4	Low	Emergency Response Plan	10 min
Maximum number of workers	D	4	Low	Emergency Response Plan	>100
Site hours	E	5	Low	Emergency Response Plan	7:00am - 6:00pm Monday - Friday 8:00am - 2:00pm Saturday. No Works on Sundays or Public Holidays. A first aid qualified person from Hansen Yuncken is on site at all times
Average hours worked by a worker	E	5	Low	Emergency Response Plan	Workers generally work 8-9 hours per day
Remote or isolated works	E	4	Low	Emergency Response Plan	Workers are not permitted to work alone. There must be atleast 2 workers in the same area at all times. Due to the nature of the site it is unlikely any worker will be isolated or work alone
Types of injuries over the last 12 months	E	4	Low	Emergency Response Plan	Majority of types of injuries include: cuts and abrasions, minor eye injuries, insect bites, sprains and strains, back injuries and dislocations
Incidents not resulting in injury	E	5	Low	Emergency Response Plan	Incidents have occurred where excavator operators have struck existing live underground electrical cables - defibrillator will be required in the event persons are electrocuted
Cuts and abrasions	C	4	Medium	Emergency Response Plan	Type A first aid kit has contents for treating these types of injuries
Sprains and strains	D	4	Low	Emergency Response Plan	Ice packs and instant cold packs to be available
Eye injuries	D	3	Medium	Emergency Response Plan	Eye wash facilities will be made available
Burns	E	4	Low	Emergency Response Plan	Burn cream and non adherent wound dressings
Fractures	D	4	Low	Emergency Response Plan	Type A first kit and a stretcher for moving injured workers
Dislocations	D	4	Low	Emergency Response Plan	Type A first aid kit has triangle slings
Poisoning and toxic effect of substances	E	5	Low	Emergency Response Plan	Safety data sheets available for all substances used.
Heat stroke	D	4	Low	Emergency Response Plan	Ice packs and cold water on standby. Subcontractors have been addressed at side induction to take breaks, work in shade wherever possible., job rotation etc

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HAZARD (Include additional project specific hazards as required)	**RISK ASSESSMENT** L	C	Class	**CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)** Legislation, Standards & Codes of Practice	Enter Details of Specific Controls Required
Ground Collapse/poor ground					
Plant roll over from sinking in unstable ground conditions	C	3	Medium	WHS Plan	Subcontractors to complete a plant risk assessment prior to operating plant. Plant will not be operated in unstable ground conditions. If the ground is too soft or uneven then the ground will be bladed back to solid ground prior to plant operating on it. All subcontractors must obtain a HY plant setup permit prior to operating plant with outriggers. Concrete boom pumps and mobile cranes must obtain a geotechnical engineers report stating the ground is stable and able to take the weight of the crane and load being lifted. Site to be inspected by the Site Manager and subcontractor WHS representatives following heavy rain prior to work commencing the next day
Vehicles/ plant could become bogged in soft muddy ground	D	4	Low	National Standard For Plant: 10:10 (1994)	Temporary roadways have been rolled and compacted to keep ground stable, No plant to work on unstable ground accessed in wet weather prestart to be conducted after each inclement weather event
Pedestrian slip and trip hazards from muddy/ uneven ground	E	3	Low	WHS Plan	Crusher dust has been spread over pedestrian pathways to minimise slip and trip hazards. Plant is to be used to blade back ruts and muddy ground to minimise slip and trip hazards for workers in the area particularly on rain days
Trucks and vehicles tracking mud and dirt onto road from muddy tyres	E	3	Low	WHS Plan Environmental Management Plan	Shaker grid installed at site entrance. High pressure water blaster to be used to wash tyres if required
Pedestrians/ workers tripping over in deep wheel ruts left by plant movements	E	3	Low	WHS Plan	Wheel ruts are to be bladed/ levelled out to minimise trip hazards around site
Hazardous Chemicals					
Spillage of fuels and chemicals	C	3	Medium	AS 1940: The storage and handling of flammable and combustible liquids Environmental Management Plan	A spill kit is kept in the site office. Any drums of fuel larger than 20 litres must be bunded. All trades are to set up a hazardous substance storage are next to their site containers with signage erected 'no smoking', 'Danger Fuel Storage area' etc
Unsafe storage of oxy acetylene equipment	C	3	Medium	AS 4332 The storage and handling of gases in cylinders Environmental Management Plan	Oxygen and acetylene bottles are to be stored in separate ventilated cages 3m apart at the end of each day and appropriate warning signage erected.
Mix matched storage of hazardous substances could cause a chemical reaction	C	3	Medium	NWHSC 2017 - 2001 Storage & Handling of Dangerous Goods	Only substances of the same class can be stored together as per the Safety Data sheet for the products
				AS 3780: The storage & handling of corrosive substances	
				NWHSC 2011: Preparation of Material Safety Data Sheets	
				WHS Plan	
				SafeWork NSW Code of Practice: Manging risks of hazardous chemicals in the workpace	
				NWHSC 1015 - 2001 Storage & Handling of Dangerous Goods	
				NWHSC 2011 - 2003 Preparation of Material Safety Data Sheets	
				NWHSC 2007 - 1994 Control of Workplace Hazardous Substances	
				NWHSC 2012 - 1994 Labelling of Workplace Hazardous Substances	
				NWHSC 2014 - 1995 Carcinogenic Substances	
Heat stress					
Sun burn	D	4	Low	SafeWork NSW Code Of Practice: How to manage work health and safety risks	Sun cream is available in the site office. Singlets are banned. Workers are encouraged at the site induction to wear long sleeve pants and shirts.
Hot temperatures may cause persons to become dehydrated resulting in illness, headaches, fainting etc	E	4	Low	NSW Hot & Cold Environments 2001	Air conditioned lunch sheds. Subcontractors to work in shaded area wherever possible.
				NSW Code Of Practice: Managing the work Environment and Facilities	
				WHS Plan	
Heavy lifting (over normal crane operation)					

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Manual handling injuries	E	4	Low	WHS Regulation 2017 Part 4.2 Hazardous Manual Tasks	Team lifts for heavy items. Mechanical lifts wherever possible
Back injuries	E	3	Low	WHS Plan	Bend knees, keep a straight back, don't twist
Block and tackle use	NA	4	NA	NCOP for Manual Tasks 2007 National Standard for Manual Tasks - 2007 NCOP for the Prevention of Musculoskeletal Disorders Caused From Performing Manual Tasks	Use of block, tackle and slings is to be used in accordance with SWMS. Slings are to wrapped around a solid structure only. Slings to be wrapped by dogman and riggers only
				NSW Manual Handling Resource 2004	
				SafeWork Code of Practice: Hazardous Manual Tasks	
Hot Works					
Sparks from welding, grinding or using oxy acetylene may cause a fire if flammable materials are in the area	C	4	Medium	AS 1674: Safety in welding and allied processes	A hot works permit must be obtained by the subcontractor.. All sources of ignition to be removed from the area prior to hot works occurring
Fire and injury to others from persons using angle grinders	A	4	Medium	hot works permit	Conduct all grinding away from flammable materials and other workers I the area. Be ware of direction of flying sparks
Welders flash to other trades	B	4	Medium	WHS Plan	Welding screens and warning signage must be erected to protect other trades from welders flash if others are within a 10m radius of the work area
				SafeWork NSW Code Of Practice: Welding Processes	
Hygiene (poor)					
Unhygienic facilities could result in workers becoming ill and contracting diseases	D	4	Low	SafeWork NSW Code Of Practice: Managing the work environment and facilities	A cleaner has been engaged by Hansen Yuncken to clean amenities on a bi-weekly basis. All amenities to be kept clean and rubbish bins emptied daily
Trades not putting rubbish and off cuts in bins provided creating trip hazards	D	4	Low	SafeWork NSW Code Of Practice: Managing the work environment and facilities	Improvement notices to be issued to subcontractors who do not keep the site neat and tidy
Inadequate facilities for general site rubbish	D	4	Low	WHS Plan	Skip bins to be placed on site at various locations and changed over regularly
Lifting Over Public/outside site					
Injury to pedestrians/ public	NA	4	NA	AS 1742.3-2009: Manual of uniform traffic control devices - Traffic control for works on roads WHS Plan Traffic Management Plan Road Management Act 2004	No lifting of building materials outside of the construction fence unless traffic control and diversions are in place and the subcontractor has seeked approval from the HY Site Manager.
Manual Handling					
Back injuries/sprains and strains	C	3	Medium	HY Glove and clip policy	Team lifts for heavy items. Mechanical aids eg. telehandler to be used wherever possible. Building material to be dropped off as close to the work area as possible to minimise carrying distance.
Cuts to hands	C	4	Medium	WHS Regulation 2017 Part 4.2 Hazardous Manual Tasks	Gloves to be worn for manual handling tasks as per Hansen Yuncken glove & clip policy
				SafeWork NSW Code Of Practice: Hazardous Manual Tasks	
				AS/NZS 2161 Occupational protective gloves	
				WHS Plan	

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Mobile Plant					
Mobile plant could strike a pedestrian worker on site	C	1	High	NWHSC 1010: National Standard for Plant	All trades are warned of moving plant at the site induction. High vis vests are to be worn at all times. All workers on site must keep well clear of plant on site and gain the operators attention prior to approaching any plant. Only workers involved with the task are to be with in the work areas of plant. People working within the work area of plant must be visible to the operator at all times.
Mobile plant could crash into a structure or open trench	D	3	Medium	WHS Plan	Trained, experienced, qualified workers to operate plant only. Plant operator competency statement to be issued to HY for any plant which does not require a legislated ticket.
Pedestrians/ workers being struck by mobile plant	C	1	High	AS 2294 Earth moving machinery - Protective Structures AS 4602 High Visibility Safety Garments	A combination of controls must be put into place and detailed in sub contractors SWMS eg. barricade the area, erect signage, use a spotter etc. Bunted off pedestrian pathways have been erected on site to keep pedestrians clear of areas where there are high movements of vehicles/ trucks and plant. All subcontractors using moving plant must have a SWMS which details how to protect other workers in the area from being struck by the plant. All plant must have a flashing light, horn and reversing beeper. Vehicles/ trucks must turn their flashing lights on. There is a 10km/h speed limit on site. All workers have been told at the site induction to be aware of moving plant on site and keep clear whenever possible. Only workers who are involved with the task are to be in the vicinity of the plant. HY have instructed all subcontractors to train their workers through pre-start meetings on how to approach moving plant and equipment. Access routes for plant and vehicles are to be maintained. Pedestrians are to walk along the side of access routes whenever possible. Plant operators are to keep reversing to a minimum. Pedestrians that need to approach moving plant are to do so from the front of the machine and are to gain the operators attention by making verbal conatct and eye contact with the operator. No person is to approach the machine until the operator has stopped moving the machine and signalled that it is safe to approach. Spotters working with machines must always stand in an area where they are visible to the operator.
Plant roll over on unstable ground	E	3	Low	SafeWork NSW Code of Practice - Managing the Risks of Plant in the Workplace	Plant operator and HY site staff must assess conditions and determine if the ground is stable for plant. If the plant has out riggers then they must be fully extended. Subcontractors must obtain a 'plant setup permit' from Hansen Yuncken prior to setting up any plant with outriggers eg. concrete boom pumps, cranes, frannas etc
Possibility of scissor lift being driven off edge of concrete slab resulting in scissor lift tipping over	NA	2	NA	SafeWork NSW Code of Practice - Managing the Risks of Plant in the Workplace	A timber bump stop must be installed to the edge of the slab whenever EWP's are used close to the edge of a slab
Crushing Injury from scissor or boom lift	NA	1	High	SafeWork NSW Code of Practice - Managing the Risks of Plant in the Workplace	Provide onsite training, Instruction and supervision Pre starts and Toolbox talks to be done as consultation with person's affected by the controls outlined. Only person's with EWP ticket to operate Scissor Lift No Person to work isolated or alone on an EWP 2 person team as a minimum , whilst using a EWP, 1 person to spot and also assist with task All Personnel to be trained by a qualified person from the hire company on the specific EWP, as not all EWP's are the same. Prior to use, completion of a logbook check is to be done All faults are to be immediately reported to supervisor and machine is to be tagged out Personnel using EWP must be aware of the emergency response protocol of that specific EWP Person operating scissor lift must be able to communicate clearly to spotter/work partner(team)
Needle stick Injury					
Injured person could contract a disease	E	2	Medium	SafeWork NSW Code Of Practice: Control of work related exposure to Hepatitis and HIV (blood borne) viruses	Workers injured by needle stick to be sent to the nearest medical centre
Workers unaware of what to if a needle is found	E	4	Low	WHS Plan	Workers to be told at site induction that if they find a needle on site they are not to touch it and report it to HY staff immediately
Inadequate disposal facilities for needles found on site	E	4	Low	SafeWork NSW NSW: Code Of Practice: Managing the work environment and facilities	Sharps clean up kit to be kept in site office at all times
Noise					
Hearing damage from general construction noise eg. power tool usage, jack hammering etc.	B	3	Medium	AS/ANZ 1269: Occupational Noise Management Acoustic Dynamics Construction Noise and Virbation Management Plan	Hearing protection to be worn when using power tools or loud equipment. Signage to be erected to warn other trades of excessive noise. A noise monitor is available in the site office. The noise monitor is available for use on site safety walks
Disruption to client and neighbours	D	5	Low	NWHSC 1007 - 2000 National Standard for Occupational Noise NWHSC 2009 - 2004 Noise Mgt & Protection of Hearing at Work	Notice of disruption to be issued to client if required. Work to be conducted within approved hours of DA contract only
				AS/NZS 1269 Occupational noise management AS/NZS 1270 Acoustics - hearing protectors AS 2436 Guide to noise control on construction, maintenance & demolition sites	
				NSW Noise Management & Protection of Hearing at Work 1996	
				AS 2436: Guide to noise control on construction, maintenance & demolition sites	
				AS 2012: Acoustics – Measurement of Airborne Noise Emitted by Earthmoving Machinery & Agricultural Tractors	
				WHS Plan	
				AS/NZS 1270: Acoustics - hearing protectors	
Overhead Power lines					
Power lines over Chalmers St Construction zone	A	1	High	WHS Plan	All plant and workers must keep clear of overhead power lines as per SafeWork NSW Code Of Practice: Work near overhead power lines
				SafeWork NSW Code of Practice: Work near overhead power lines 2006	Tiger Tails to be installed prior to and hoarding installation and cranage

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HAZARD (Include additional project specific hazards as required)	**RISK ASSESSMENT** L	C	Class	**CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)** Legislation, Standards & Codes of Practice	Enter Details of Specific Controls Required
Plant & Equipment					
Plant failure may cause serious injury to workers	D	3	Medium	NWHSC 1010: National Standard for Plant	HY plant verification reports to be completed for all plant. Maintenance records to be submitted to HY as evidence machine is safe for operation. Plant risk assessments to be conducted for all high risk work. Plant operators must conduct pre-start safety inspections of their machine daily and report faults to their supervisors
Poorly maintained ladders and scaffolding failing/ collapsing	D	3	Medium	AS/NZS 1892: Portable Ladders	No timber ladder on HY sites. Ladders must be in good condition. Electricians must use fibre glass ladders. All workers are aware of the HY ladder policy posted on the wall in the lunch shed. Extension ladders must be tied off at the top landing. Scaffolding to be visually checked daily and full inspection monthly or after adverse weather
Use of damaged ladders	D	3	Medium	AS 4576: Guidelines for scaffolding	Ladders to be checked for damage weekly on the site safety walk
Lifting gear failure	D	1	Medium	AS/NZS 4994: Temporary edge protection	All lifting gear: soft slings, lifting chains must be visually checked daily prior to use for damage. Damaged lifting gear is to be withdrawn from service. Lifting gear register to be supplied to Hansne Yuncken. Hansne Yuncken Sling verification checklist to be completed for soft slings if not captured on lifting register.
Scaffold collapse/ fall from scaffold	NA	1	NA	AS/NZS 1891.1 2007 Industrial fall arrest systems - harnesses and ancillary equipment	Scaffold handover certificate to be issued to HY prior to anyone accessing the scaffold. Scaffold to be inspected minimum monthly and after heavy rain. Scaffold will also be inspected on weekly safety walks. Mobile scaffolds to be built as per manufacturers instructions. Scaffold where a person can fall more than 4m must be erected by a licenced scaffolder. No person is to alter the scaffold what so ever. Any issues with scaffold is to be reported to the Site Manager immediately.
Multiple mobile plant interaction/ contact	D	1	Medium	WHS Plan	Plant operators must communicate by way of 2 way radios, eye contact and spotters
Vehicle and plant exhaust fumes	D	4	Low	HY ladder policy	Use of electric scissor lifts inside buildings only. All other diesel powered machines are used in open well ventilated areas
Post Tensioning					
Accidental drilling or cutting into PT cable	D	2	Medium		All subcontractors to obtain permit to cut concrete/ core. This permit will detail location of PT cables if applicable
Plant & Equipment Washout					
Water from cleaning plant and equipment creating a muddy/ slippery surface	D	4	Low	Environmental Protection Act 1994	Washout area to be determined on a daily basis as the site changes. The wash out area must not allow water to flow over pedestrian foot paths
Muddy and contaminated water entering stormwater system	D	4	Low	HY environmental management plan	Sediment control to be placed around the washout area
Pressurised Gas Mains					
Excavator buckets striking UNDERGROUND GAS LINES	E	1	Medium	SafeWork NSW Code Of Practice: Excavation Work	A permit to dig system is in place on this site. All known existing services have been marked up on the site plans. Pot holing must occur when working around existing services. Only toothless buckets are to be used when digging in the vicinity of gas lines. Striking existing underground services has been listed as a hazard on all subcontractor SWMS involving excavation works
				WHS Plan	
				Jemena guidelines construction activities near and over Jemena has network assets	
Scaffold					
Fall from heights over 2m	C	2	Medium	WHS Regulation 2017: Part 3.1 Managing risks to health and safety	
Fall from heights whilst forming up and pouring concrete	C	2	Medium	AS4576: Guidelines for scaffolding	
Insufficient egress from building in the event of an emergency	B	5	Medium	WHS Plan	
Inadequate development of scaffold plan	D	5	Low		
Possible scaffold overload resulting in scaffold collapse - materials and workers	C	4	Medium		
Scaffold sinking into soft ground compromising structural integrity	D	3	Medium		
Sediment and erosion control					
Mud, dirt and sediment polluting stormwater systems	C	4	Medium	Environmental Protection Act 1994	Northrop sediment and erosion control plans
Mud, dirt and sediment polluting stormwater systems	C	4	Medium	Environmental Management Plan	Silt barriers to be installed around low areas of site to catch all rain fall. All stormwater pits to be covered in silt control. All vehicles tyres must be washed clean of mud prior to leaving site. Silt socks to be placed in front of stormwater drains in gutters. Inspections to be carried out weekly by HY using the Site HSE inspection report

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Site Lighting					
Sun glare restricting plant operators visibility	C	4	Medium	WHS Regulation 2017	Sunglasses to be worn by plant operators as required. Certain tasks may also be conducted at different times of the day to stop the sun becoming an issue.
Lighting (Poor)	NA	5	NA	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Ensure that task area has adequate natural light and if natural light is not adequate provide artificial lighting
Slips/Trips					
Workers slipping or tripping on rough/ uneven/ muddy/ slippery ground	C	3	Medium	AS/NZS 2210 Occupational protective footwear WHS Plan	Pedestrian pathways to be kept clear of rubbish and material. Safe access around site to be maintained at all times. Gravel/ crusher dust to be placed on slippery/ muddy surfaces. Blading back of ruts and muddy ground conditions to be conducted as required. Bunted off pedestrian pathways are installed around main access routes throughout site for safe pedestrian access, this way people can use the pathway then branch out to their specific work area with minimal risk of slipping over in muddy conditions
Structural Support					
Masonry walls collapsing in high winds	D	1	Medium	National Code of Practice for Precast, Tilt Up and Concrete Elements in Building Construction 2008	Masonry walls must be adequately braced with timbers every 2m until core filled
Formwork collapse	D	1	Medium	AS 3850:Tilt Up Concrete Construction	Engineers sign off required to pouring of any concrete
Precast concrete panel collapse if structural steel is inadequately braced	D	1	Medium	NSW Code of Practice: Formwork 1998	Structural steel must be signed off by engineer prior to installation of precast concrete panels
Structural steel collapse	D	1	Medium	AS 4991: Lifting devices	Structural steel must be erected by qualified dogmen and riggers. Subcontractor must submit ITP's to Hansen Yuncken. Hansen Yuncken to complete QC Compliance audit report: Structural Steel checklist
Synthetic fibres					
Unsafe handling of roof insulation	D	4	Low	SafeWork NSW Code of Practice: Safe use of synthetic mineral fibres	Install roof insulation as per Safety Data Sheet and SWMS
Temperature Extremes					
Dehydration	E	3	Low		Workers are encouraged to drink plenty of water. Water bubbler available at site lunch sheds
Sunburn	C	3	Medium		Workers must wear are shirt on site. Singlets are not allowed. Sun cream is available to everyone and is kept in the site office
Heat stress	E	3	Low		Workers are encouraged to work in the shade wherever possible and take regular breaks whenever required.
Tilt –up or Precast Concrete Work					
Structural steel support collapse	C	1	High	AS 3850:Tilt Up Concrete Construction	HY precast panel installation checklist must be completed and all relevant documentation submitted, reviewed and approved by HY prior to installation of precast panels
Injury to other workers/ trades	B	1	High	AS 4991: Lifting devices	Precast panel installation must be closely monitored by HY Management and conducted in accordance with SWMS . The work area around the crane must be clearly closed off to other trades with bunting, flagging or red/white tape. Spotters must be used to
Plant failure	C	1	High	National Code of Practice for Precast, Tilt Up and Concrete Elements in Building Construction 2008	All maintenance records and plant safety verification reports must maintained and kept up to date
Failure of lifting points on precast panels	C	1	High	AS 2550: Cranes, hoists & winches - Safe Use	Subcontractor ITP's must be submitted and reviewed by HY prior to erection of precast panels , engineered lifting points used to install precast. Lifting gear register in place
Concrete may not have cured to specified strength	C	2	Medium		HY precast panel installation checklist must be completed and all relevant documentation submitted, reviewed and approved by HY prior to installation of precast panels
Crane roll over on unstable ground	B	1	High	AS 1418.1: Cranes, hoists and winches – General Requirements	Plant setup permit must be obtained by subcontractor prior to standing crane
Exceed SWL of crane	B	2	High	AS 2321: Short link chain for lifting purposes	Work to SWL chart for crane at all times
Lifting gear failure	A	3	High	National Code of Practice for Precast, Tilt Up and Concrete Elements in Building Construction 2008	Riggers must inspect all lifting gear prior to use. Damaged lifting equipment must not be used. Lifting gear registers and certificates must be issued to HY prior to use.
Poor communication between crane operator and dogmen	C	3	Medium		Dogman and crane operator to constantly communicate with each other. Crane operator to take directions from dogman only.

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	RISK ASSESSMENT			**CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)**	
HAZARD (Include additional project specific hazards as required)	**L**	**C**	**Class**	**Legislation, Standards & Codes of Practice**	**Enter Details of Specific Controls Required**
Traffic Management					
Vehicles/ trucks speeding on site	B	3	Medium	AS 1742.3-2009: Manual of uniform traffic control devices - Traffic control for works on roads	10km/h speed limits signs are erected around site. Drivers must give way to pedestrians. Delivery driver inductions for all drivers entering site. Hazard or flashing lights must be turned on
Vehicles parking and blocking access roads	B	4	Medium		Vehicles to be used for loading/unloading purposes only and are to be parked off site if not required for work purposes
Blind spots creating collisions between vehicles	E	3	Low		Warning signs to be erected at blind spots
Pedestrians entering site being struck by trucks and vehicles	A	2	High		A fenced off pathway with signage has been installed along the driveway from the street to the site office to keep all pedestrians off the road used by plant and trucks. Pedestrians and vehicles have been seperated theough entry/ exit by way of concrete jersy kerbs
Tree lopping					
Tree lopping	A	4	Medium		Area to be delimeated and HRCW for falling from heights and Plant and Equipment
Vehicle & plant exhaust fumes					
Workers overcome by exhaust fumes from plant	E	1	Medium	SafeWork NSW Code of Practice: Managing risks of hazardous chemicals in the workplace	Plant to be operated in open areas with good ventilation only. Electric scissor lifts to be used inside buildings only. No petrol/ diesel powered equipment used inside buildings
Ventilation (poor)					
Workers overcome by fumes when using chemicals	E	1	Medium	SafeWork NSW Code of Practice: Managing risks of hazardous chemicals in the workplace AS/NZS 1715 Selection, use and maintenance of respiratory protective devices AS/NZS 1716 Respiratory protective devices	MSDS to be read and understood by all workers prior to work commencing
Violence					
Workers arguing and fighting	D	4	Low	Violence in the workplace guide 2002	Zero tolerance for fighting on site - instant dismissal
Waste Management/ Littering					
Inadequate bins on site to dispose of rubbish	E	3	Low	WHS Act/ Regulation 2017 Zoic Construction Waste management Plan	Skip bins to be placed at various locations around site which are easy to access. Bins for food scraps are to be placed at the front of all lunch sheds
Bins attracting rodents	D	4	Low		Food scrap bins to be bagged and changed regularly
Having to walk long distances to dispose of rubbish	D	4	Low		Numerous skip bins to be on site close to all work areas
Workers littering the site with rubbish and off cuts instead of disposing of rubbish in bins provided	D	4	Low		Suspension/ improvement notices to be issued to subcontractors who leave the site untidy
Water Contaminants					
Clean water around site becoming contaminated with mud	E	4	Low		Clean rain water is diverted around site by way of swales and sediment control
Working at Height above 2m					
Workers dropping tools and material onto persons below	C	1	High	SafeWork NSW Code of Practice; Managing the risk of falls in the workplace NSW Code of practice: Safe work on roofs part 1	"Danger workers above" signage to be erected. If there are other trades in the immediate area then red/white tape will be erected to create an exclusion zone.
Scaffolders falling from heights during erection process	B	1	High	WHS Regulation 2017 Part 4.4 Falls	Install handrail, mid-rails and toe-boards where scaffolders are working from deck below while building using the approved control methods such as the 1m rule or Advanced guardrail systems
Perimeter scaffold collapse	E	1	Medium	AS 4576: 1995 Guidelines for scaffolding	Check and confirm the suitability of the subgrade prior to basing out the scaffolding Confirm areas where trenches have been laid Visually check ground for stability, use sole boards where required or get others to compact areas Do not allow scaffold to exceed 4.0 m in height without being tied to the structure and braced or stabilised to an approved design Do not allow standards to be erected and left unsupported Each standard will be braced in a minimum of two directions. A brace is defined as a ledger or transom Scaffolds from which a person can fall more than 4 metres must be constructed and certified by a licensed scaffolder. Secure materials at height & isolate area below where there is risk of falling objects causing injury to persons below. No scaffold alterations are to be undertaken except by licensed scaffolder. Close off access to incomplete scaffolds, for example, install tube barricades and warning signs “Scaffold Incomplete” Ensure all scaffold is checked and secure before issuing handover docket and attaching Scafftag.
Workers falling from roof	A	1	High	HY HSE procedure 9.46 Working at height	Roof access permit must be obtained by the workers prior to accessing the roof. Perimeter scaffold or handrail must be in place for fall protection. Safety mesh must be installed correctly as per SafeWork NSW Code Of Practice: Safe Work On Roofs: Part 1
Mobile scaffold collapse	B	1	High	SafeWork NSW Code of Practice: Managing the risk of falls at workplaces	
Workers falling from perimeter scaffold	NA	1	NA	AS 1577 Scaffold Planks	Perimeter scaffolds to be inspected weekly using the site HSE inspection report. All workers are advised at site induction strictly not to alter any scaffolding
Fall from ladder	C	3	Medium	AS/NZS 4488 Industrial rope access systems - Selection, use & maintenance	Ladders must be used in accordance with HY ladder policy. An Aconex has been issued on ladder use to all subcontractors. EWP's, mobile scaffold and platform ladders take first preference over standard A frame ladders.
Fall from EWP/ boom lift	B	1	High	AS/NZS 1891 Industrial fall arrest systems & devices AS/NZS 4994 Temporary edge protection	WP ticket required to operate boom lift >11m . EWPAA yellow car required for EWP <11m. Ground conditions to be checked prior to operation. Harnesses and lanyards must be maintained and kept in good condition
Fall from scissor lift	B	1	High	NWHSC - Prevention of Falls in General Construction 2008	Timber or angle to be installed to the edge of concrete slabs to stop scissor lifts accidently being driven off edge of slab. Scissor lift operators must have a EWPAA yellow card or WP type ticket. Stabilizers and sole plates must be used for rough terrain scissors used on soft ground
Inadequately installed roof perimeter handrail	B	1	High	NSW Identification Tool for Aluminium Mobile Scaffolds 2008	Installation certificate must be issued to HY prior to any worker accessing roof. Installation manual to be available on site so it can be confirmed the handrail has been installed as per the manufacturers specifications.

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HAZARD (Include additional project specific hazards as required)	**L**	**C**	**Class**	**Legislation, Standards & Codes of Practice**	**Enter Details of Specific Controls Required**
Potential Emergencies - preparation for and response to potential emergency events assessed high or medium risk to be defined in the Emergency Response Plan					
Arrested fall in a harness	B	2	High	HY Procedure for Emergency Response	All subcontractors using harnesses in boom lifts must have a rescue procedure as part of their SWMS. Generally rescue will be by using the ground controls at the base of the machine or by using a second boom lift to retrieve the suspended casualty.
Bomb threat	E	4	Low	HY Procedure for Emergency Response	Procedure for bomb threats is part of the HY Emergency Response Plan
Confined Space Rescue	E	3	Low	HY Procedure for Emergency Response	Procedure for confined space rescue is part of the HY Emergency Response Plan
Cyclone	NA			HY Procedure for Emergency Response	N/A
Drowning	E	5	Low	HY Procedure for Emergency Response	Trenches are to be de-watered prior to any person working in around the area.
Electric shock	D	1	Medium	HY Procedure for Defibrillators	Electric shock procedure detailed in the HY Emergency response plan
Emergency services unavailability				HY Procedure for Emergency Response	N/A
Fire	D	2	Medium	AS 3745 Emergency control organisation and procedures for buildings, structures and workplaces AS/NZS 1221 Fire hose reels AS/NZS 1841 Portable fire extinguishers AS/NZS 1850 Portable fire extinguishers - Classification, rating and performance testing AS 1851 Maintenance of fire protection systems & equipment AS 2375 Guide to the selection, care & use of clothing for protection against heat & fire AS 2444 Portable fire extinguishers and blankets - Selection & location	Fire procedure detailed in the HY emergency response plan
First Aid (inadequate resources)	E	3	Low	HY Procedure for Emergency Response	First aid room to be set up with portable and fixed first type A first aid kits, stretcher, defibrillator, ice packs, sun cream, eye wash and examination couch as per Code of Practice: First Aid . (Refer to first aid assessment)
Gas line contact or damage	D	2	Medium	HY Procedure for Emergency Response	Jemena contact details are part of the HY Emergency response plan
Major rock fall/landslip	E	4	Low	HY Procedure for Emergency Response	Rockall procedure detailed in the HY Emergency response plan
Major Fuel/Chemical Spill	E	3	Low	HY Procedure for Emergency Response	Fuel/ Chemical spill is part of the HY emergency response plan
Medical Emergency	D	3	Medium	HY Procedure for Emergency Response	Medical emergency is part of the HY emergency response plan
Overhead power line contact or arcing	B	3	Medium	HY Procedure for Emergency Response	Contact with overhead power lines is part of the HY emergency response plan
Precast Panel Collapse	D	1	Medium	HY Procedure for Emergency Response	Precast panel collapse is part of the HY emergency response plan
Structural failure/collapse	D	1	Medium	HY Procedure for Emergency Response	Structural collapse is part of the HY emergency response plan
Trench collapse	D	1	Medium	HY Procedure for Emergency Response	Trench collapse is part of the HY emergency response plan

A.5 Construction Traffic and Pedestrian Management Sub-plan

asongroup

Prepared for

HANSEN YUNCKEN PTY LTD

Construction Traffic and Pedestrian Management Sub-Plan

New Catherine Field Primary School
O'Keefe Drive, Oran Park

Ref: P1047r05v3
20/07/2020

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Document Control

Project No: P1047

Project: New Catherine Field Primary School, O'Keefe Drive

Client: Hansen Yuncken

File Reference: P1047r05v02 CTPMSP New Catherine Field Primary School, Oran Park

Revision History

Revision	Date	Details	Author	Approved by
-	03/06/2020	Draft	J. Laidler	D. Budai
1	03/06/2020	Issue I	D. Budai	
2	19/06/2020	Issue II	J. Laidler	J. Laidler
3	20/07/2020	Issue III	J. Laidler	J. Laidler

Table of Contents

Appendices

Figures

1 Introduction

1.1 Overview

Ason Group has been engaged by Hansen Yuncken (HY) to prepare a Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) for the main works of the New Catherine Field Primary School at Lot 1001, DP1234527 on O'Keefe Drive, Oran Park (the Site). This CTPMSP has been prepared by suitably qualified and experienced persons to support the State Significant Development application and demonstrates the proposed management of the impact in relation to construction traffic addressing the following:

a) assessment of cumulative impacts associated with other construction activities (if any)

b) an assessment of road safety at key intersection and locations subject to heavy vehicle construction traffic movements and high pedestrian activity

c) details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process

d) details of anticipated peak hour and daily construction vehicle movements to and from the site

e) details of on-site car parking and access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle and

f) details of temporary cycling and pedestrian access during construction

Having regard for the above, the purpose of this report is establish the traffic principles for construction that would minimise traffic impacts on the surrounding road network, ensure safety and efficiency for workers, pedestrians and road users, and provide information regarding construction vehicle access routes and any changed road conditions (if applicable).

It is expected that this plan will be updated should any necessary changes to the currently proposed arrangements arise in the future. Any special events (if required) would be subject to a separate request for a specific permit not covered by this report.

Please note, Ason Group is responsible for the preparation of this plan only and not for its implementation, which is the responsibility of the Contractor.

1.2 Statutory Requirements

The following conditions have been imposed with respect to construction traffic management and this CTPMP has been updated to incorporate the requirements of the conditions identified.

Condition	Condition Requirements	Document Reference
B11	Management Plans required under this consent must be prepared in accordance with relevant guidelines, and include:	
	a) detailed baseline data;	Section 3.1
	b) details of	
	i) the relevant statutory requirements (including any relevant approval, license or lease conditions);	Section 1.2
	ii) any relevant limits or performance measures and criteria; and	Section 5
	iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	
	c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 6 Appendix A
	d) a program to monitor and report on the: i) impacts and environmental performance of the development;	
	ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	
	e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	
	f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Appendix A
	g) a protocol for managing and reporting any: i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);	
	ii) complaint;	
	iii) failure to comply with statutory requirements; and	
	h) a protocol for periodic review of the plan and any updates in response to incidents or matters of non-compliance	
B14	The 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 limited to, the following:	
	a) be prepared by a suitably qualified and experienced person(s);	Section 1.1 Appendix B
	b) be prepared in consultation with Council and TfNSW;	Section 1.3
	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; and	Section 3
	d) detail heavy vehicle routes, access and parking arrangements, with construction access into the site to focus heavy vehicle access to the southern end of O'Keefe Drive as far as practicable.	Section 2.4,

B18	A Driver Code of Conduct must be prepared and communicated by the Applicant to heavy vehicle drivers and must address the following:	Section 3.3 Appendix A
	a) minimise the impacts of earthworks and construction on the local and regional road network;	
	b) minimise conflicts with other road users;	
	c) minimise road traffic noise; and	
	d) ensure truck divers user specified routes	
B27	Prior to the commencement of construction, evidence of compliance of construction parking and access arrangements with the following requirements must be submitted to the Certifier:	Section 2.4 Appendix C
	a) all vehicles must 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, where shared vehicle and pedestrian access occurs, has been addressed.	
B28	Prior to the commencement of construction of operational parking and access facilities, evidence of compliance of the design of operational parking and access arrangements with the following requirements must be submitted to the Certifier:	Appendix C
	b) the swept path of the largest service vehicle entering and exiting the Site in association with the new work, as well as manoeuvrability through the Site, must be in accordance with the latest version of AS 2890.2.	

1.3 Consultation

In preparing this report, the project team has had the opportunity to discuss key local and sub-regional construction transport issues with officers of Council, and Transport for NSW (TfNSW) at several meetings, workshops and site inspections. Reference documentation is contained in Appendix D and Ason Group acknowledges the insights in regard to existing and future local traffic and transport conditions provided by these officers.

Further, invitation was sought via the Major Projects Planning portal (ref: PAE-1104) on 8 November 2019, for review and comment on the SSDA by the public and public authorities.

Camden Council responded to the submission in their letter dated 11 December 2019 and the issues raised were subsequently addressed in Ason Group's response dated 13 February 2020 (ref: P1047t02v01). No further issues have been raised by Council.

TfNSW responded to the submission in their letter dated 9 December 2019 and the issues raised were subsequently addressed in Ason Group's response dated 28 February 2020 (ref: P1047t03v01). This has been followed up, most recently in an email to the Principal Manager, Land Use Planning & Development dated 19 June 2020, and no further issues have been raised.

1.4 Site Location

The Site is legally referenced as Lot 1001 in DP1234527, O'Keefe Drive, Oran Park. The Site has an area of approximately 2 hectares and is currently zoned SP2 - Education Establishment. The Site lies within the Catherine Field (Part) Precinct (CFPP), and is currently bordered by O'Keefe Drive to the west; in the future, local roads will form the eastern and southern borders of the Site, while a minor access road (to the adjacent sporting fields) will border the Site to the north.

1.5 Road Hierarchy

The key roads surrounding the Site are as shown in Figure 1 and are described as the following:

- **Camden Valley Way:** Camden Valley Way performs a regional classified road under the care and control of Campbelltown City Council. It generally northeast/southwest in its alignment, providing a link between Bringelly Road in the north and The Northern Road in the south. Camden Valley Way is a 4-lane divided carriageway with 2 lanes in each direction, and a posted speed limit of 80km/hr, and no provision of footpath on either side of the road.
- **O'Keefe Drive:** O'Keefe Drive is a collector road that currently runs in a generally north-south direction between South Circuit (as Fifth Avenue) to the north and a terminus just south of the Site; however, in the future O'Keefe Drive will be extended further south to connect to Seidler Parade and then (as O'Keefe Drive) to Catherine Park Drive. In the vicinity of the Site, it provides 2 wide traffic lanes for two-way flows, as well as indented parking lanes on both sides of the road, and has a posted speed limit of 60km/h. A shared path will be provided on both the eastern and western sides of the road, i.e. a shared path will be provided directly adjacent to the Site.
- **Banfield Drive**: Banfield Drive is a local road that runs in a generally east-west and then south direction between O'Keefe Drive to the east and Stoneham Circuit to the south. It provides 2 traffic lanes for two-way flows, as well as indented parking lanes on both sides of the road, and has a nominal speed limit of 50km/h. Footpaths are provided on sides of the road.
- **Perkins Drive:** Perkins Drive is a local road that runs in a generally east-west direction between Peter Brock Drive to the north-east and O'Keefe Drive / Fifth Avenue to the west. It provides 2 traffic lanes for two-way flows, as well as indented parking lanes on both sides of the road, and has a posted speed limit of 50km/h. A shared path and footpath are provided on the southern and northern sides of the road respectively. Like O'Keefe Drive, these flows are primarily northbound in the AM peak and southbound in the PM peak.

- **South Circuit:** South Circuit is a collector road that runs from Civic Way north of the Site to the south and the west to an intersection with Oran Park Road, and then north again to an intersection with Holden Drive. It provides 2 traffic lanes for two-way flows, as well as indented parking lanes on both sides of the road, and has a posted speed limit of 60km/h. In the vicinity of the Site, it provides shared path on one side of the road and a footpath on the other side of the road.

With regard for the above, the site is ideally located to disperse construction traffic onto the arterial road network and direct access can be achieved via Oran Park Drive and Peter Brock Drive to either The Northern Road and/or Camden Valley Way as shown in **Figure 1**.

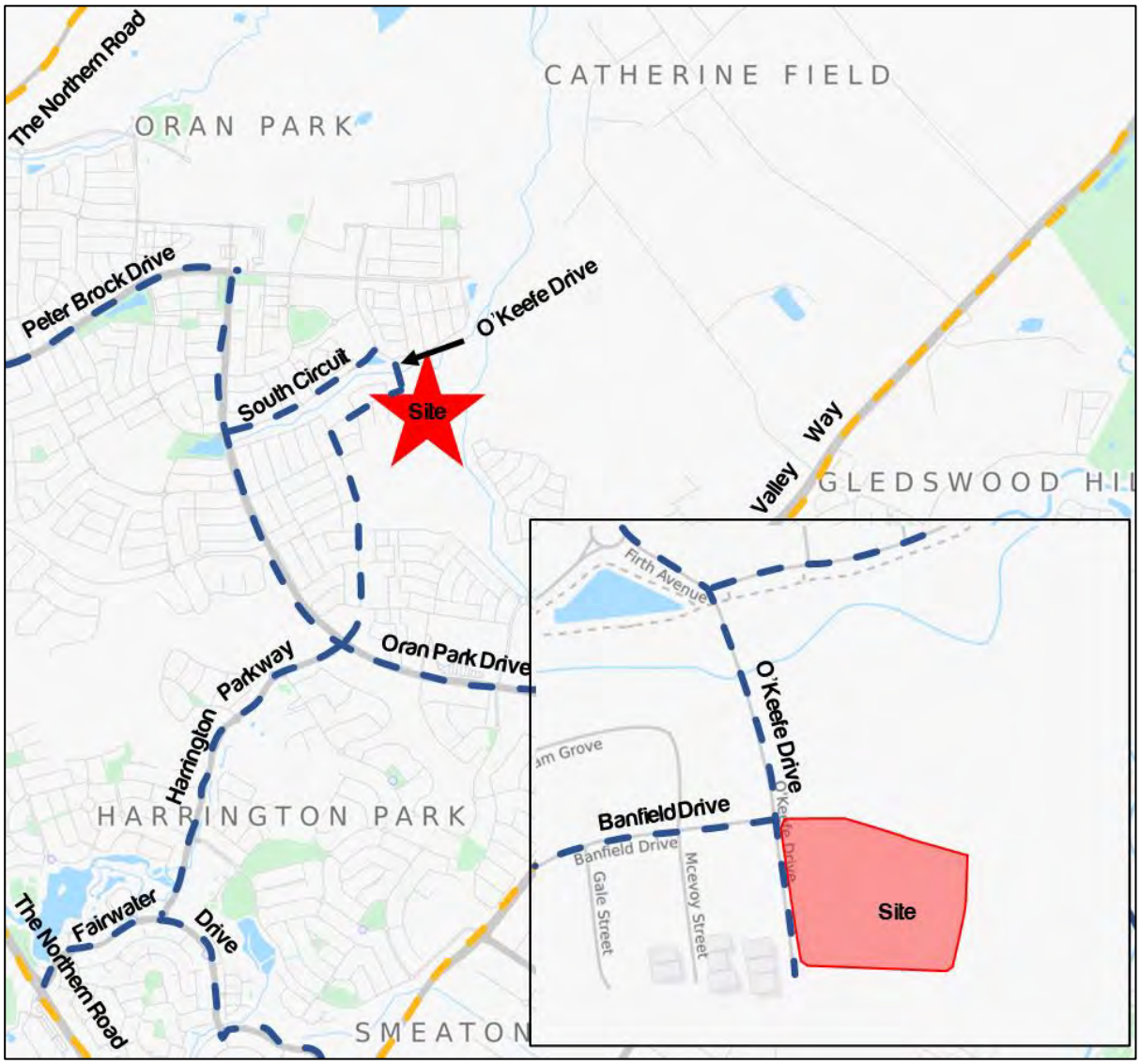


Figure 1: Location Plan

2 Overview of Works

2.1 Staging and Duration of Works

Recognising the purpose of this CTPMSP, the total duration of construction works is currently 6 months from approval with a view to the school opening on day one of term one, 2021. Notwithstanding, it is expected that the following outlines the key aspects of the construction stages:

- Stage 1: General earthworks and benching, and the construction of the temporary access. This is to prepare a temporary construction entrance to the Site for the main construction of the School. It is proposed that this construction access will be within the same location as the final access, which is via O'Keefe Drive.
- Stage 2: The general construction and associated landscape works will occur during Stage 2. During this stage, the primary access to the site will be restricted to construction vehicles only.

2.2 Hours of Operation

The type of work being undertaken and associated activities for both construction and design personnel may vary within this phase of construction. However, all works will be in accordance with standard construction working hours, which are likely to be as follows:

- Monday to Friday (other than Public Holidays): 7:00AM – 6:00PM.
- Saturday: 8:00AM – 1:00PM.
- Sunday and Public Holidays: No works to be undertaken.

2.3 Proposed Site Access

All access to the site by construction personnel during Stage 1 is proposed via the temporary accesses shown **Figure 2** and the access during Stage 2 will utilise the newly constructed road linking with the roundabout at Banfield drive as shown in **Figure 3** and Appendix C.

Emergency vehicle access to and from the Site will be available at all times while the site is occupied by construction workers. This process would be implemented through emergency protocols on the site which will be developed by the Contractor.

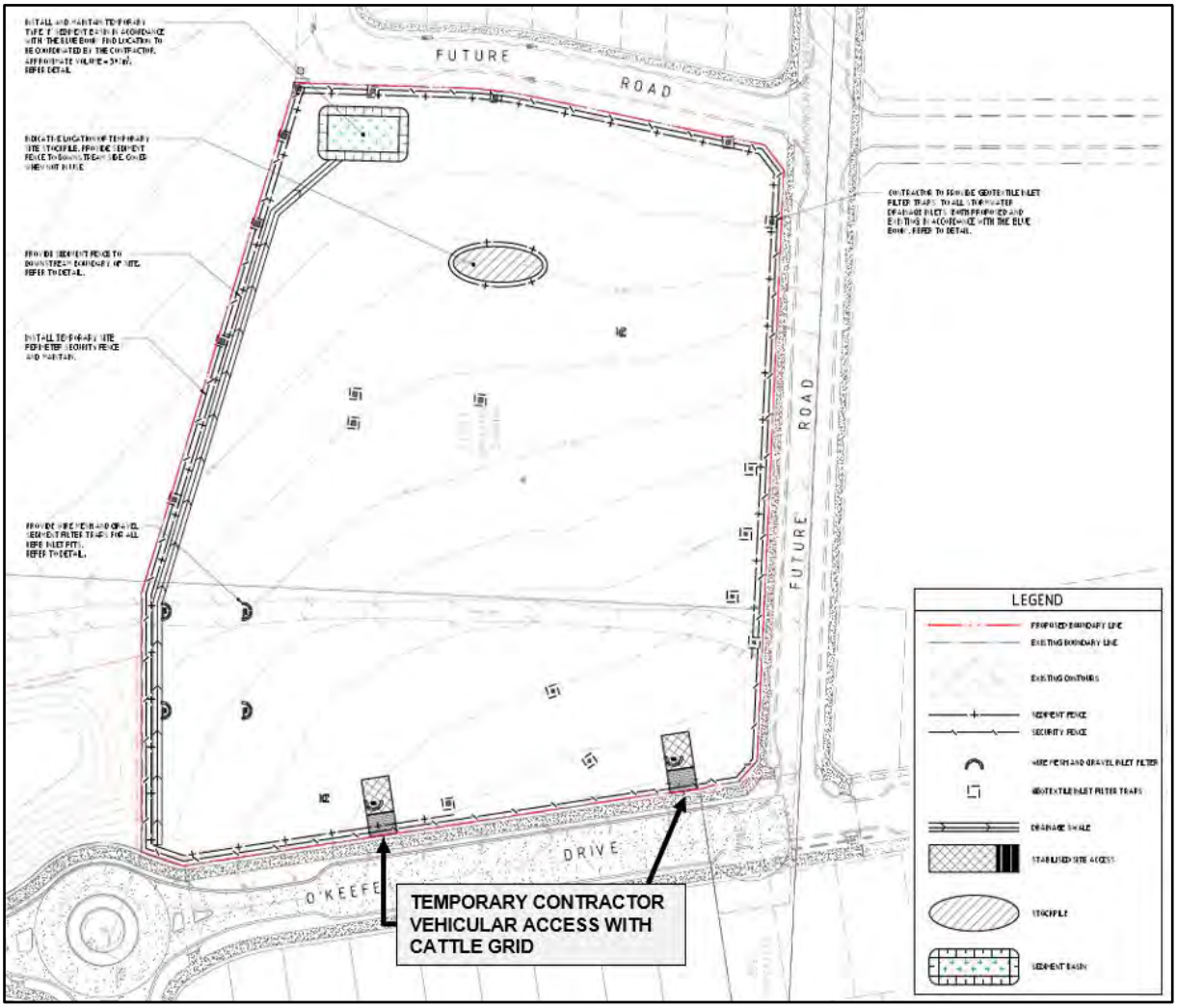


Figure 2: Stage 1 Access Location

2.4 Construction Vehicle Access Routes

It is proposed that all construction vehicles shall enter and exit the site via the routes shown in **Figure 3**. The routes shown are to be utilised by all construction vehicles travelling to and from the site and represents the shortest route between the local and regional road network, minimising the impacts of the construction process and avoiding narrow roads, constrained turning paths and sensitive residential areas. An on-site turning area shall be provided within the car park area so that site access is undertaken in a forward direction, at all times.

It is expected that a copy of the approved routes will be distributed by the Lead Contractor to all drivers by before their arrival to site. All vehicles shall enter and leave the site in a forward direction.

Any vehicles required to access the Site that do not comply with the mass, dimension or operating requirements as specified by the National Heavy Vehicle Regulator (NHVR) will need to apply for a class 1 Oversize Overmass (OSOM) permit. Permits may be issued with conditional restrictions that

limit the time and days that these vehicles are allowed to access the Site. Additionally, specific TCPs may be required to facilitate safe manoeuvring of these vehicles.

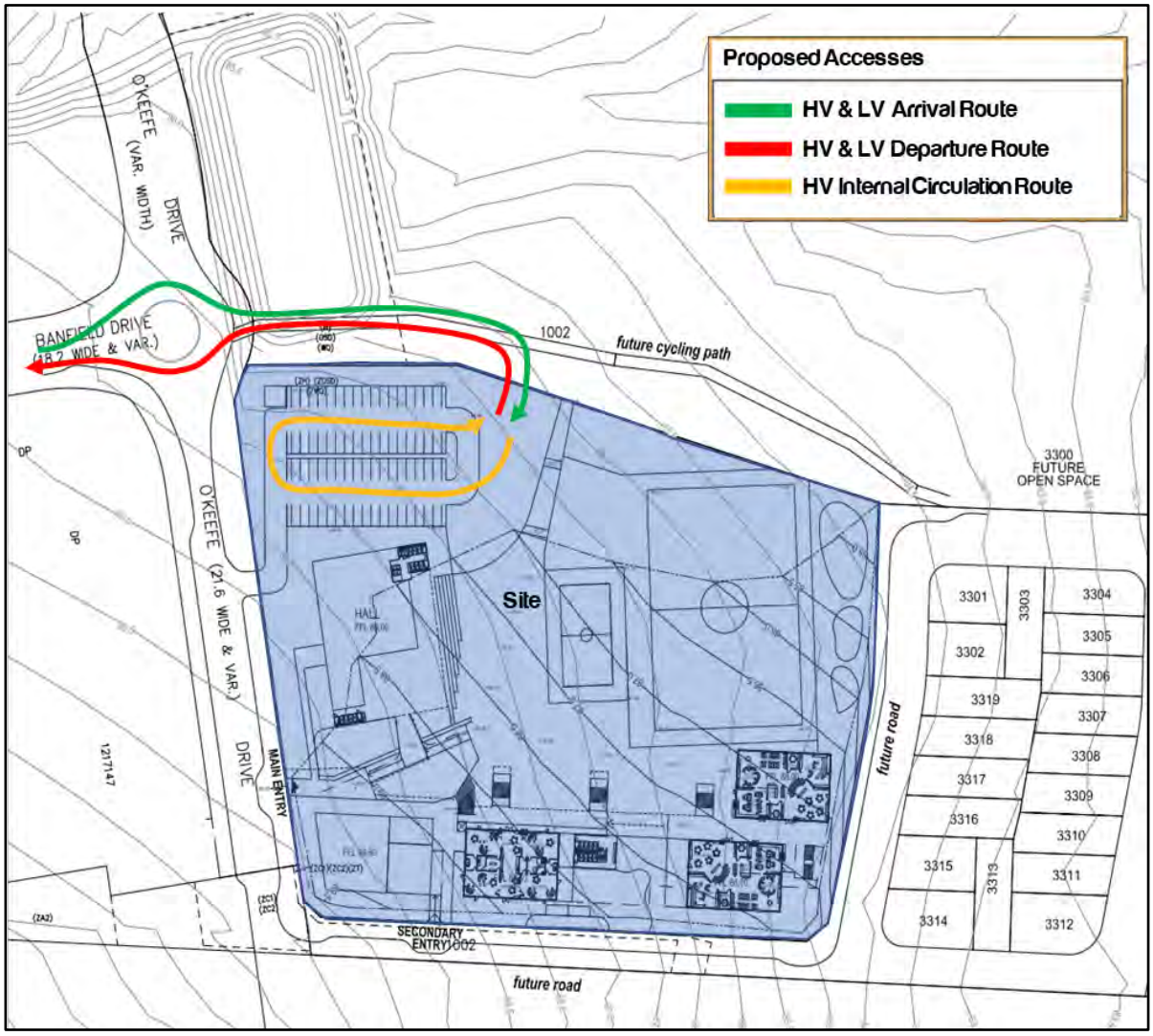


Figure 3: Construction Vehicle Routes

2.5 Fencing Requirements

Temporary exclusion fencing will be erected along the entire boundary of the site as shown in **Figure 2** and **Figure 3** and will be maintained for the duration of the construction program. The fencing is to ensure unauthorised persons are kept out of the Site. Site access gates will be provided within O'Keefe Drive and will be closed at all times outside of the permitted construction hours.

Any control points—operational during work hours—shall be sufficiently setback so that no queuing will occur on-street.

2.6 Materials Handling

Handling of all materials throughout the construction shall adhere to the following;

- It is proposed that all material loading will occur within the construction site boundary.
- No loading is proposed to occur outside of the provisioned areas.
- Equipment, materials, and waste will be kept within the construction site boundary.

During latter stages of construction, tie in works will be required within the kerbside of O'Keefe Drive. All materials handling shall be undertaken off public roadways. However, in the event materials handling is required from a public roadway, prior approval shall be sought and obtained from the relevant Authorities and Work Zones implemented if required.

3 Assessment of Traffic and Transport Impacts

3.1 Construction Vehicle Traffic Generation and Impacts

Light Vehicle traffic generation would be generally associated with construction staff movements to and from the Site. Staff would be comprised of project managers, various trades, and general construction employees. Over the full period, the peak workforce represents the worst-case scenario for vehicle movements during the morning or evening road network peak hour. The workforce arrival and departure periods (6:30-7:00AM and 6:00-6:30PM) represent the peak construction traffic periods.

It is expected that the Heavy Vehicles—maximum of 20 movements per day based on haulage calculations—would generally arrive outside of peak periods and therefore not contribute to the estimated peak hour volumes. It is expected that these volumes will not exceed to the proposed operational volumes for the Site. In this regard, it is noted that the construction traffic is expected to generate far less traffic than the fully developed site.

As mentioned in section 2.4, any vehicles required to access the Site that do not comply with the mass, dimension or operating requirements as specified by the National Heavy Vehicle Regulator (NHVR) will need to apply for a class 1 Oversize Overmass (OSOM) or Special Purpose Vehicle (SPV) permit and comply with restrictions limiting access to the Site to reduce the impact on traffic management and safety.

Accordingly, the estimated construction traffic flows for the proposed construction activities would not result in any adverse impact on the operational capacity of the surrounding road network.

3.2 Vehicle Management – Principles

All vehicles transporting loose materials will have the entire load covered and/or secured to prevent any large items, excess dust or dirt particles depositing onto the roadway during travel to and from the site. Drivers are to be familiar with the Driver Code of Conduct before attending the Site. A copy of the Code is included in **Appendix A**.

All subcontractors must be inducted by the Contractor to ensure that the procedures are met for all vehicles entering and exiting the construction site. The Head Contractor will monitor the roads leading to and from the site and take all necessary steps to rectify any road deposits caused by site vehicles.

Vehicle movements to, from and within the site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration.

No tracked vehicles will be permitted or required on any paved roads. Public roads and access points shall not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances.

A review of the road network surrounding site indicates that there is no crash history.

3.3 Driver Code of Conduct

All drivers shall adhere to the Driver Code of Conduct, outlined in Appendix A

3.4 Employee Parking

A minimum of 68 on-site car parking spaces will be provided for use during operation of the school and designed in accordance with the latest versions of AS 2890.1 and AS 2890.6. It is intended that all contractor and construction light vehicle parking will utilise the area intended for this parking and the designated construction accesses as shown in **Figure 3**. At no time shall parking be permitted on the public roadway.

Contractors are also encouraged to carpool or utilise public transport service within the area, thereby further reducing the minimal parking demand. The Site's accessibility to public and active transport is discussed in Sections 3.5 and 3.6.

3.5 Pedestrian and Cyclist Access

Some external construction activities will occur on O'Keefe Drive at some point during the build. Accordingly, the pedestrian footpath shall be managed by an accredited Traffic Controller during crossover works and deliveries to the site.

During construction of the temporary and final driveway crossovers, pedestrians will be directed around the construction site by the installation of temporary fencing and management of an accredited Traffic Controller.

The existing footpaths shall remain open at all times to ensure that the construction site does not interfere with pedestrians or cyclists, with efforts to minimise impacts where possible. This may include staged construction of driveway crossovers to maintain the availability of suitable pedestrian connectivity.

3.6 Public Transport

There is minimal existing public transport on surrounding roads. A single service travels between Campbelltown and Oran Park via Gregory Hills and is the 896 bus route. The frequency of this service runs between 20 minutes and 40 minutes during morning and evening periods, Monday to Friday.

The construction activities will have no impact on the existing public transport services with all bus services to continue as is.

4 Traffic Control

4.1 Traffic Control

The RMS guide “Traffic Control at Worksites” (TCAW) manual contains standard traffic control plans (TCPs) for a range or work activities, with the objective to maximise safety by ensuring traffic control at worksites complies with best practice. TCPs for the project developed by accredited Prepare a Work Zone Traffic Management Plan personnel are contained in Appendix B.

The RMS TCAW outlines the requirement for a Vehicle Movement Plan (VMP), where Heavy Vehicles movements exceed 20 in a single shift (or day), or 10 trucks per day (1 truck = 2 movements). A VMP is a diagram showing the preferred travel paths for vehicles associated with a work site entering, leaving or crossing the through traffic stream. A VMP should also show travel paths for trucks at key points on routes remote from the work site such as places to turn around, accesses, ramps and side roads. A VMP for the Site will be developed should the Heavy Vehicle movements exceed the thresholds.

4.2 Authorised Traffic Controller

An authorised Traffic Controller is to be present on-site throughout the construction stage of the project. Responsibilities include:

- Supervision of all construction vehicle movements into and out of site at all times,
- Supervision of all loading and unloading of construction materials during the deliveries in the construction phase of the project, and
- Pedestrian management, to ensure that adverse conflicts between vehicle movements and pedestrians do not occur, while maintaining radio communication with construction vehicles at all times.

5 Monitoring and Communication Strategies

5.1 Development of Monitoring Program

The development of a program to monitor the effectiveness of this CTPMSP shall be established by the lead contractor. It is not anticipated that the monitoring of the processes will have any material cost implications.

This CTPMSP shall be subject to ongoing review and will be updated accordingly. Regular reviews will be undertaken by the on-site coordinator. As a minimum, review of the CTPMSP shall occur monthly, however a weekly review is preferable.

- All and any reviews undertaken should be documented, however key considerations regarding the review of the CTPMSP shall be:
- Tracking deliveries against the estimated volumes.
- To identify any shortfalls and develop an updated action plan to address issues that may arise during construction (Parking and access issues)
- To ensure TCP's are updated (if necessary) by "Prepare a Work Zone Traffic Management Plan" card holders to ensure they remain consistent with the set-up on-site.
- Regular checks undertaken to ensure all loads are leaving site covered as outlined within this CTPMSP.

5.2 Communications Strategy

A communications strategy shall be prepared by the Head Contractor and will outline the most effective communication methods to ensure adequate information within the community and assist the project team to deliver the traffic changes with minimal disruption to the road network.

Surrounding residents and landowners shall be notified of any work that is deemed disruptive to the surrounding network prior to commencement. Ongoing communication is also proposed so that all key stakeholders are kept up to date of works and potential impacts.

Nearby property owners that may be affected directly by the construction works shall be included within the communications strategy.

6 Recommended Mitigation Measures

Referencing the above information, it is proposed that the following mitigation measures be undertaken in order to offset any construction impacts:

- Construction:
  - Planning of all appropriate routes to travel to and from site,
  - Discussions with Council and RMS will be undertaken to identify all (if any) roads of interest to be assessed in order to quantifiably measure the condition of the road before and after construction.
  - Providing options for workers to carpool to and from site,
  - Ensuring that gates to and from site are always locked outside of construction hours.
  - Continual review of the CTPMSP to identify any shortfalls and develop an updated action plan to address said issues.
- Road occupancy:
  - In order to reduce the impact on any and all roads, it is proposed to complete the work in the shortest reasonable duration,
  - To improve road safety, TCPs are to be prepared for all works to be undertaken that require signage or occupation of any part of the road reserve.
  - Prior to travel, drivers must be aware of the Driver Code of Conduct, which is to be handed to all construction employees,
  - Public roads and access points will not be obstructed by any materials, vehicles, skips or the like, under any circumstance,
  - All loads travelling to and from the site shall be covered at all times,
- Notification processes:
  - Notification of any adjoining residents or businesses will be undertaken prior to construction. It is proposed that all affected properties will be notified at least 14 days in advance of any impacts (including road closures),
  - Appropriate approvals must be obtained prior to construction in the relevant area from private residences, road authorities, utility providers and any other stakeholder requiring preapproved access.

7 Summary

Ason Group has been engaged by Hansen Yuncken (HY) to examine the access, traffic and parking characteristics for the main works of the New Catherine Field Primary School at Lot 1001, DP1234527 on O'Keefe Drive, Oran Park (the Site). The following is provided as a summary of our assessment:

- The construction staff arrival and departure periods (6:30-7:00AM and 6:00-6:30PM) represent the peak construction traffic periods and it is expected that the Heavy Vehicles would also generally arrive outside of peak periods, therefore not contribute to the estimated peak hour volumes.
- All construction vehicles will use dedicated construction routes between the site and the regional road network.
- With reference to all applicable road capacity guidelines, the introduction of the site construction traffic will have no significant impact on the operation or capacity of key regional, urban, local or unsealed roads and intersections providing access to the site.
- Appropriate mechanisms—including site-specific TCPs—have been established to monitor the condition of the roads providing access to the construction site such that access is maintained (for public and construction vehicles) at all times.
- All light and heavy vehicle parking throughout the construction phase will be provided on-site to minimise the impact to on-street parking.
- Appropriate management conditions can be introduced to ensure that all roads are maintained to an appropriate standard throughout and after construction.

Appendix A

Driver Code of Conduct

- Driver Code of Conduct -

Drivers Code of Conduct

Safe Driving Policy for Lot 1001, DP1234527 O'Keefe Drive, Oran Park.

Objectives of the Drivers Code of conduct

- To minimise the impact of earthworks and construction on the local and regional road network;
- Minimise conflict with other road users;
- Minimise road traffic noise; and
- Ensure truck drivers use project approved routes only

Code of Conduct

The code of conduct requires that while driving any vehicle for work-related purposes. Drivers are to be issues with a copy of the Drivers Code of Conduct, and must comply with all of the following:

- Demonstrate safe driving and road safety activities
- Abide by traffic, road and environmental legislations
- Follow site signage and instructions
- Drivers must only enter and exit the site via the approved entry and exit points and travel routes.

The below activities will be considered as a breach of conduct and will result in removal from site:

- Reckless or dangerous driving causing injury or death
- Driving whilst disqualified or not correctly licensed
- Drinking or being under the influence of drugs while driving
- Failing to stop after an incident
- Loss of demerit points leading to suspension of licence
- Any actions that warrant the suspension of a licence
- Exceeding the speed limit in place on any permanent or temporary roads

Driver Responsibilities

All Drivers on site must:

- Be responsible and accountable for their actions when operating a company vehicle or driving for the purposes of work.
- Display the highest level of professional conduct when driving a vehicle at all times.
- Ensure they have a current driver licence for the class of vehicle they are driving, and this licence is to be carried at all times
- Immediately notify their supervisor or manager if their drivers' licence has been suspended, cancelled, or has had limitations applied.
- Comply with all traffic and road legislation when driving.
- Assess hazards while driving.
- Undertake daily pre-start checks of oil, tyre pressures, radiator and battery levels of company vehicles they regularly used.
- Drive within the legal speed limits, including driving to the conditions.
- Not drive outside of the approved heavy vehicle routes. All drivers must obey weight, length and height restrictions imposed by the National Vehicle Regulator, and other Government agencies. Heavy Vehicles shall adhere to the applicable routes outlined prior to arrival to site
- Be cognisant of the noise and emissions requirements imposed within the EIS, and in a broader sense, the NSW/ Australian Road Rules. Works must be constructed with the aim of achieving the construction noise management levels detailed in the Interim Construction Noise Guideline.
- Do not queue on public roads unless a prior approval has been sought.
- Be aware that at no time may a tracked plant be permitted or required on a paved road.
- Never drive under the influence of alcohol or drugs, including prescription and over the counter medication if they cause drowsiness – to do so will merit disciplinary measures.
- All drivers to report to their supervisor if they have been prescribed medication prior to their shift.
- Wear a safety seat belt at all times when in the vehicle.
- Avoid distraction when driving – the driver will adjust car stereos/mirrors etc. before setting off, or pull over safely to do so.
- Report ALL near-misses, crashes and scrapes to their manager,
- Report infringements to a manager at the earliest opportunity.
- Report vehicle defects to a manager prior to the next use of the vehicle.

- Follow the approved site access/egress routes only.
- Follow speed limits as imposed within the estate.
- Keep loads covered at all times.

The Site Team Responsibilities

The Contractor is responsible to take all steps necessary to ensure company vehicles are as safe as possible and will not require staff to drive under conditions that are unsafe.

This will be achieved by undertaking the following:

- Ensuring all vehicles are well maintained and that the equipment enhances driver, operator and passenger safety by way of:
  - Pre-commencement checks for all new plant arriving on-site and prior to undertaking any work.
  - Daily prestart inspections for all plant, vehicles and equipment currently on-site.
  - All construction plant must be fitted with a flashing light, fire extinguisher and reverse alarms (or squawkers).
  - Ensure all operators onsite have a current verification of competency (VOC) for their current driver's licence of the appropriate class.
  - Ensure maintenance requirements are met and recorded.
- Identify driver training needs and arranging appropriate training or re-training. This may include providing the below:
  - Operator VOC assessment as part of all inductions.
  - Regular Toolbox discussions on safety features, managing fatigue, approved heavy routes, driver responsibility and drink-driving
- Encouraging Safe Driving behaviour by:
  - Ensuring the subcontractor is informed if their staff become unlicensed
  - Not covering or reimbursing staff speeding or other infringement notices
  - Ensuring Legal use of mobile phones in vehicles while driving only and that illegal use is not undertaken.
- Encouraging better fuel efficiency by:
  - Use of other transport modes or remote conferencing, whenever practical.
  - Providing training on, and circulating information about, travel planning and efficient driving habits.

Crash or incident Procedure

- Stop your vehicle as close as possible to the scene, making sure you are not hindering traffic. Ensure your own safety, then help any injured people and seek assistance immediately if required.
- Ensure the following information is noted:
  - Details of the other vehicles and registration numbers
  - Names and addresses of the other vehicle drivers
  - Names and addresses of witnesses
  - Insurers details
- Give the following information to the involved parties:
  - Name, address and company details
- If the damaged vehicle is not occupied, provide a note with your contact details for the owner to contact the company.
- Ensure that the police are contacted should the following circumstances occur:
  - If there is a disagreement over the cause of the crash.
  - If there are injuries.
- As soon as reasonably practical, report all details gathered to your manager.

Environmental Procedures.

A range of measures shall be implemented to ensure the following;

- No dirt or debris from the construction vehicles is tracked on to the public road network;
- Reduce the impacts to sensitive receivers, including, where practicable, starting noisy equipment away from sensitive receivers and implementing respite periods;
- Watering of dusty activities will be undertaken, or activities temporarily halted and then resumed once weather conditions have improved;
- Containment measures for spillages will be provided at appropriate locations and in close proximity to staff car park areas, dangerous goods stores areas and main Project work areas;
- All vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria, and
- Keep an accurate record which includes the range of measures undertaken to reduce environmental impacts.

Appendix B

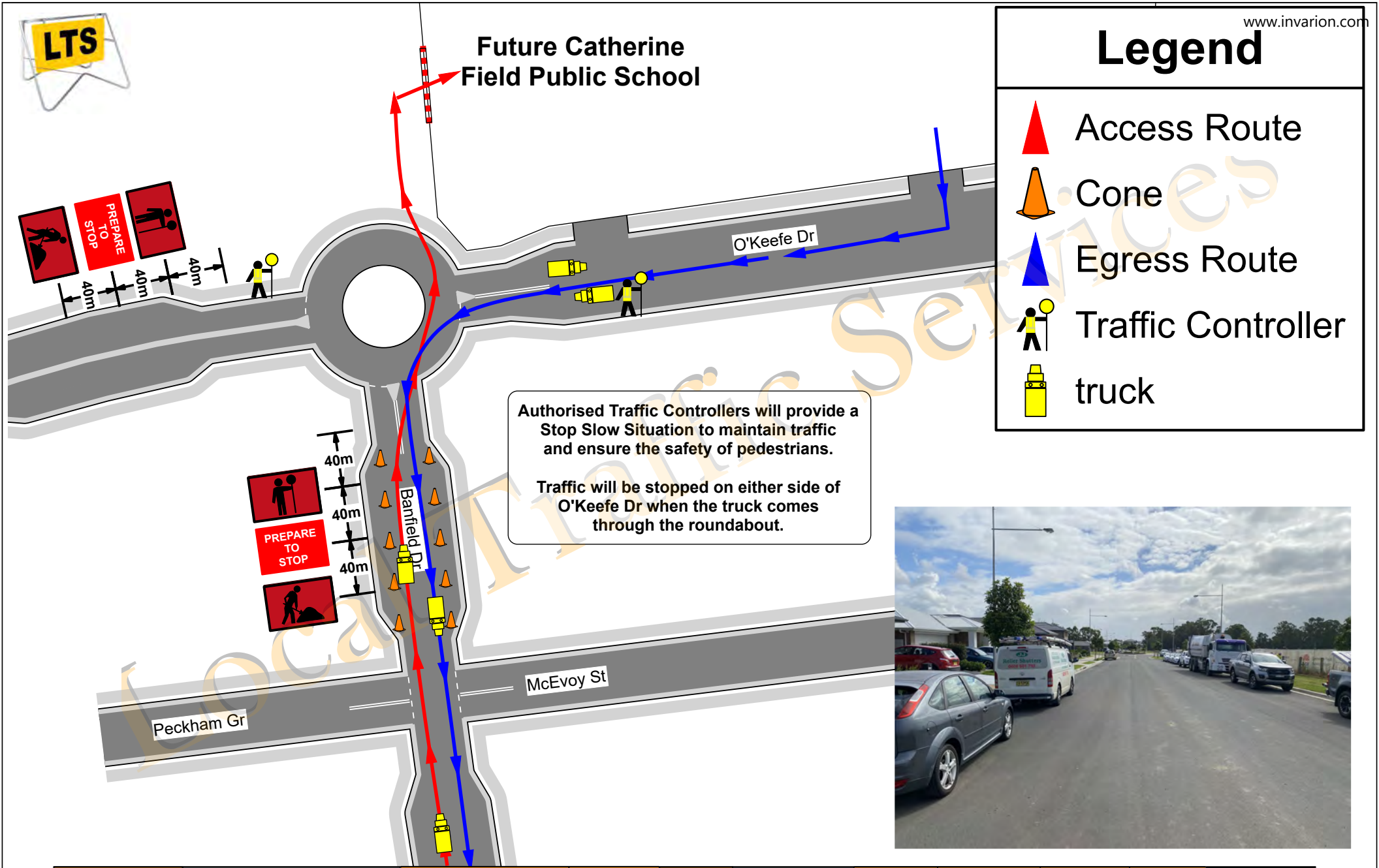
Traffic Control Plans

www.invarion.com

Future Catherine Field Public School

Legend

- Access Route
- Cone
- Egress Route
- Traffic Controller
- truck

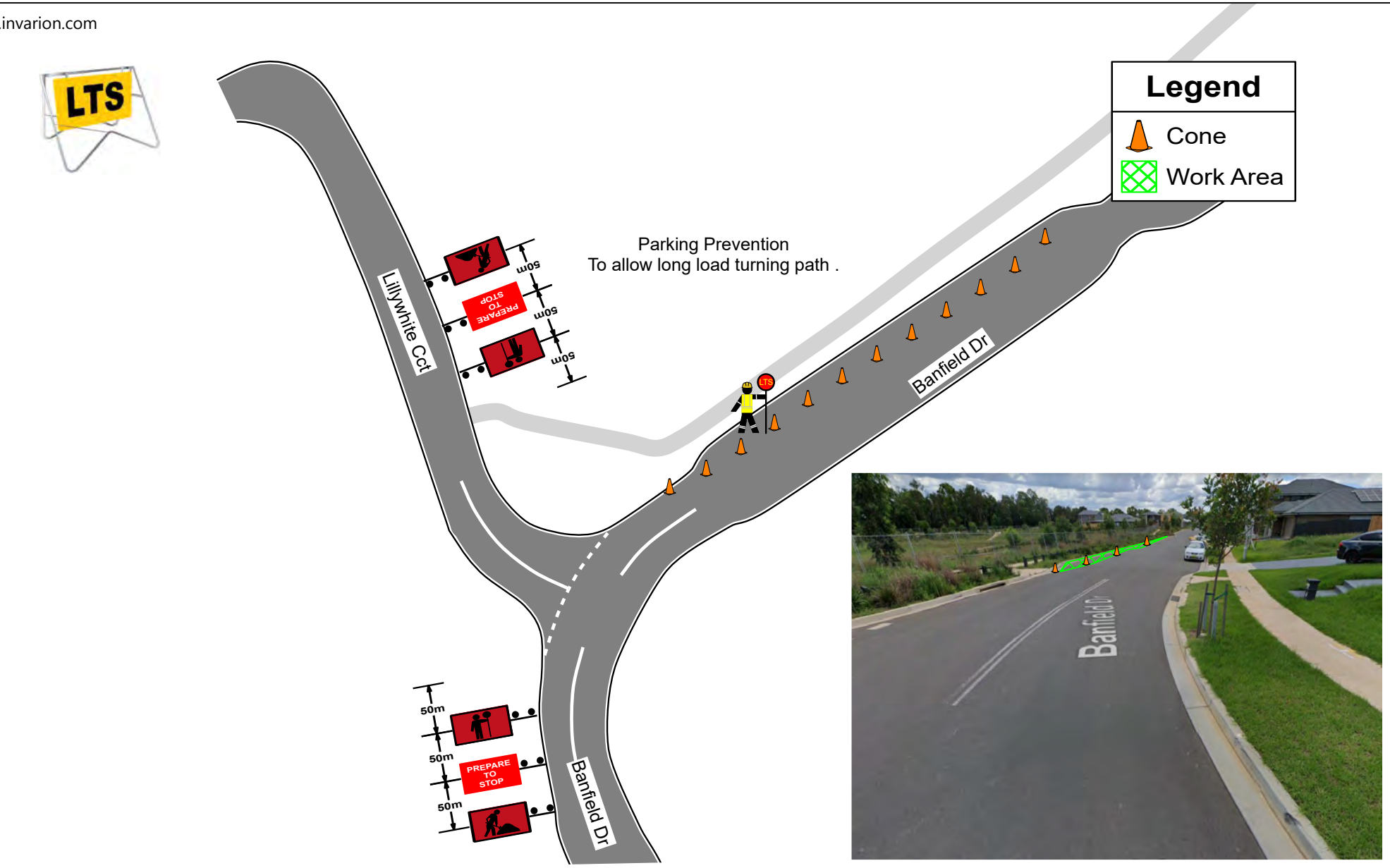


Authorised Traffic Controllers will provide a Stop Slow Situation to maintain traffic and ensure the safety of pedestrians.

Traffic will be stopped on either side of O'Keefe Dr when the truck comes through the roundabout.

Local Traffic Services	Client	Date	Plan No:	3176
Plan Drawn By	MBS modular building systems	09/07/20	Type Of Closure	Stop Slow
Danny Betts 0402 746 408 9603 8886	Location Of Work	UBD REF	On Site Contact	Tim Jack 0416 068 334
	O'Keefe Dr ORAN PARK	304 Q10		

Speed of traffic Km/h	Traffic controller at beginning of taper	Lateral Shift Taper	Merge Taper
45	15	0	15
46-55	15	15	30
56-65	30	30	60
66-75	N/A	70	115
76-85	N/A	60	130
86-105	N/A	90	145
Greater 105	N/A	100	160
	N/A	110	180



Local Traffic Services		Client	Date	Plan No:	3176-3	Speed of traffic Km/h	Traffic controller at beginning of taper	Lateral Shift Taper	Merge Taper	
Plan Drawn By	Transport NSW Roads & Maritime Services — Prepare a Work Zone Traffic Management Plan — Card No. 0051854994 — DANIEL BETTS — Expiry Date: 14/11/2021	MBS modular building systems	09/07/20	Type Of Closure	Parking Prevention	45 46-55 56-65 66-75 76-85 86-105 Greater 105	15 15 30 N/A N/A N/A N/A	0 15 30 70 60 90 100 110	15 30 60 115 130 145 160 180	N
Danny Betts 0402 746 408 9603 8886		Location Of Work	UBD REF	On Site Contact	Tim Jack 0416 068 334					
		O'Keefe Dr ORAN PARK	304 Q10							

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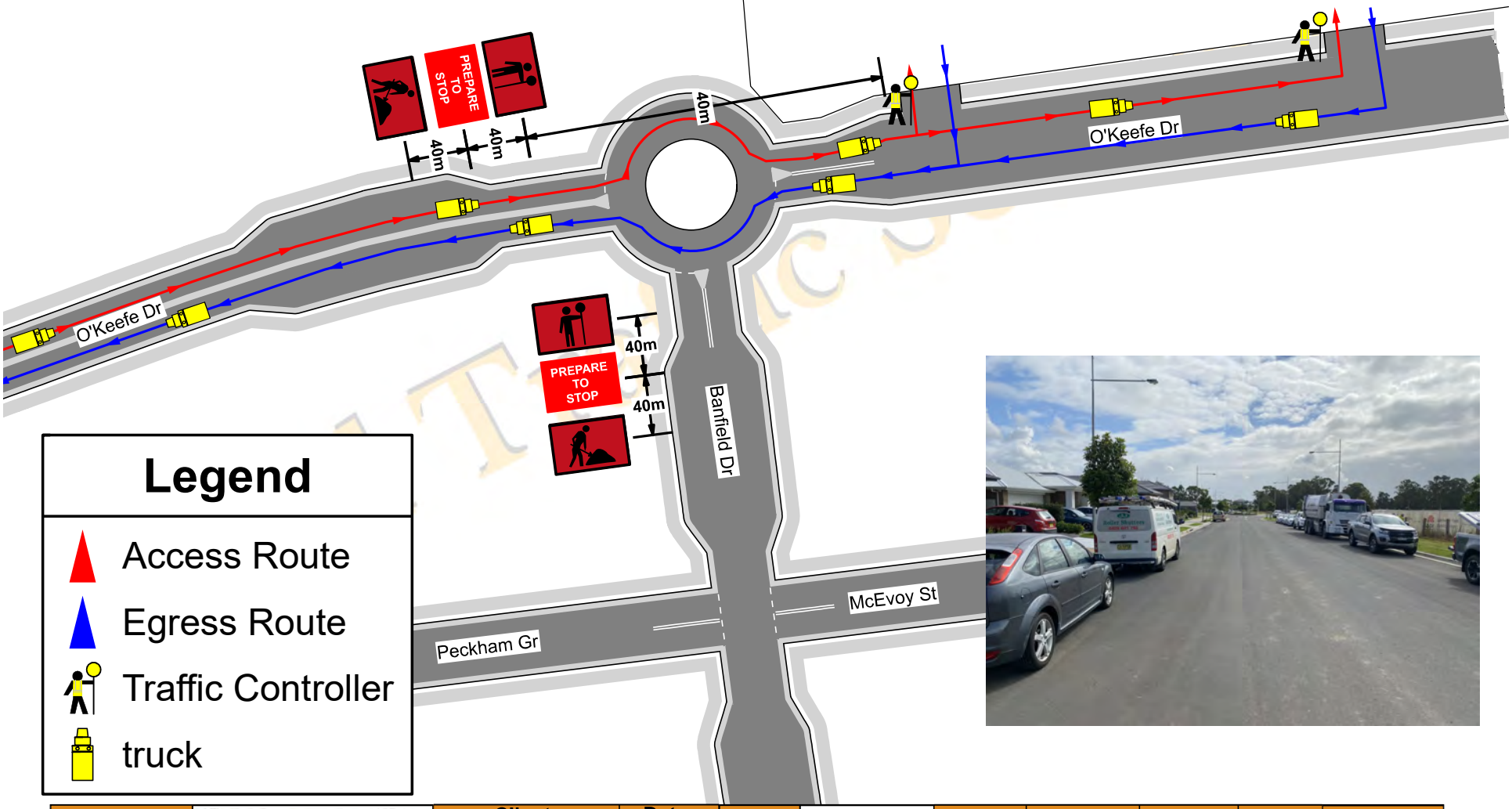
Site Entry & Exit - TC

Future Catherine Field Public School



Legend

- Access Route
- Egress Route
- Traffic Controller
- truck

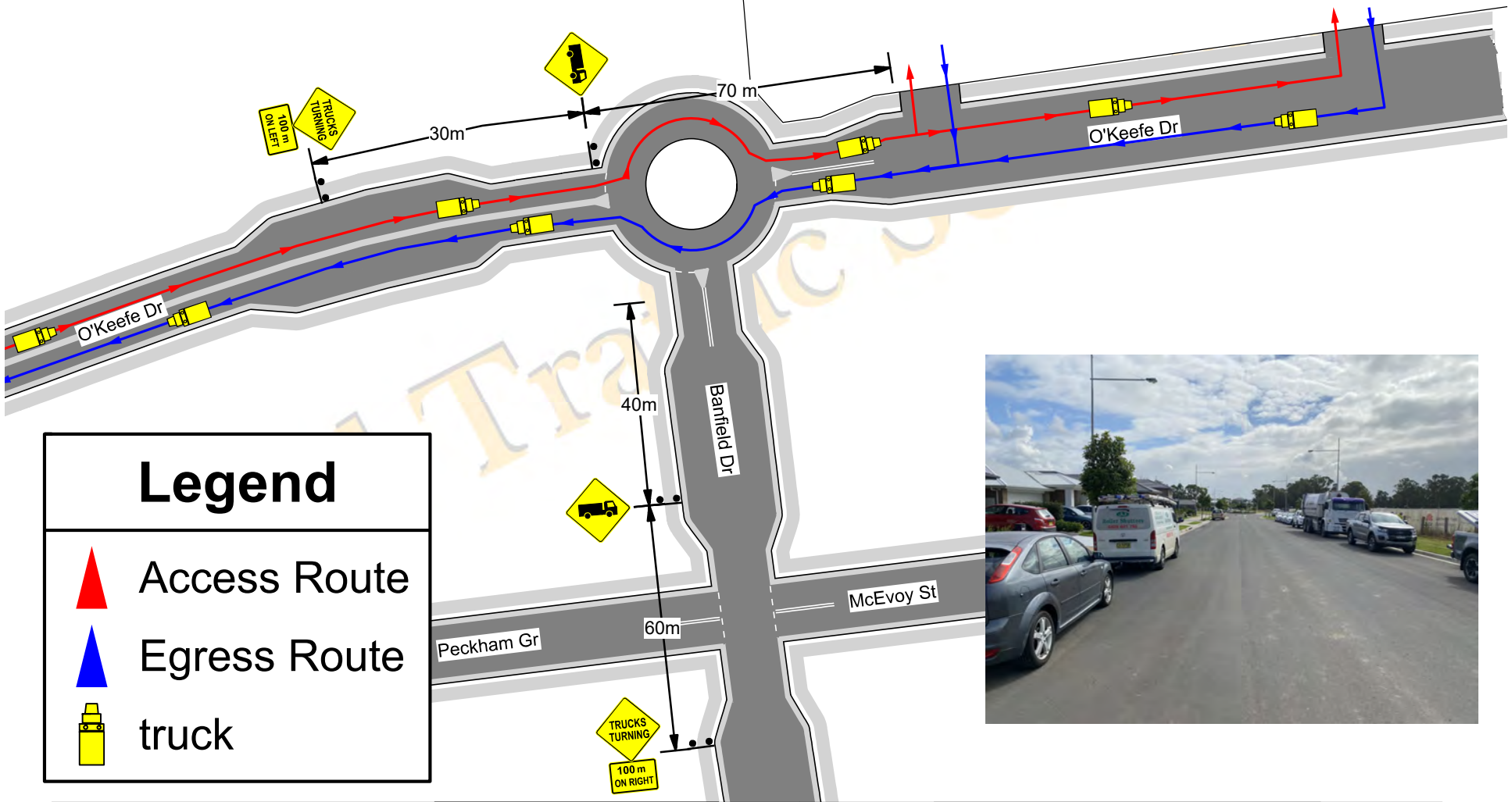
Local Traffic Services	Client	Date	Plan No:	3061-1
Plan Drawn By	HANSENYUNCKEN	29/04/20	Type Of Closure	Site Entry & Exit
Danny Betts 0402 746 408 9603 8886	Location Of Work	UBD REF	On Site Contact	Andrew Baker 0401 141 509
	O'Keefe Dr ORAN PARK	304 Q10		

Speed of traffic Km/h	Traffic controller at beginning of taper	Lateral Shift Taper	Merge Taper
45	15	0	15
46-55	15	15	30
56-65	30	30	60
66-75	N/A	70	115
76-85	N/A	60	130
86-105	N/A	90	145
Greater	N/A	100	160
105	N/A	110	180

www.invarion.com

Site Entry & Exit - No TC

Future Catherine Field Public School



Legend

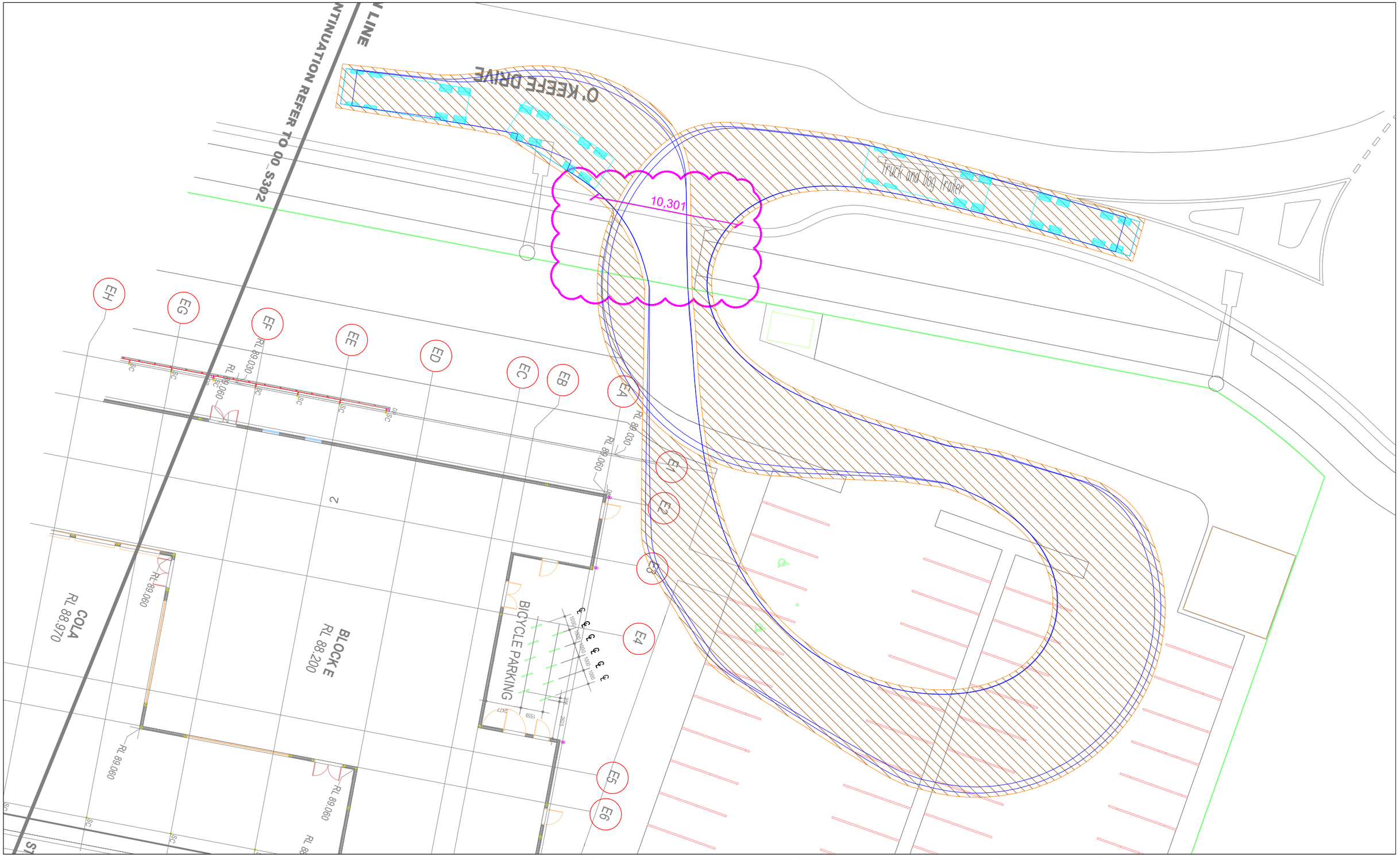
- Access Route
- Egress Route
- truck

Local Traffic Services	Client	Date
Plan Drawn By	HANSENYUNCKEN	29/04/20
Danny Betts 0402 746 408 9603 8886	Location Of Work	UBD REF
	O'Keefe Dr ORAN PARK	304 Q10

		Speed of traffic Km/h	Traffic controller at beginning of taper	Lateral Shift Taper	Merge Taper
Plan No:	3061	45	15	0	15
Type Of Closure	Site Entry & Exit	46-55	15	15	30
		56-65	30	30	60
On Site Contact	Andrew Baker 0401 141 509	66-75	N/A	70	115
		76-85	N/A	60	130
		86-105	N/A	90	145
		Greater 105	N/A	100 110	160 180

Appendix C

Swept Path Analysis



Notes:

This drawing is provided for information purposes only and should not be used for construction.

Document Info:
Drawn by: JamesLaidler
File name: 1047d03 Truck & Dog Access.dwg

Client:
Hansen Yucken

Project:
1047
Catherine Field Primary School

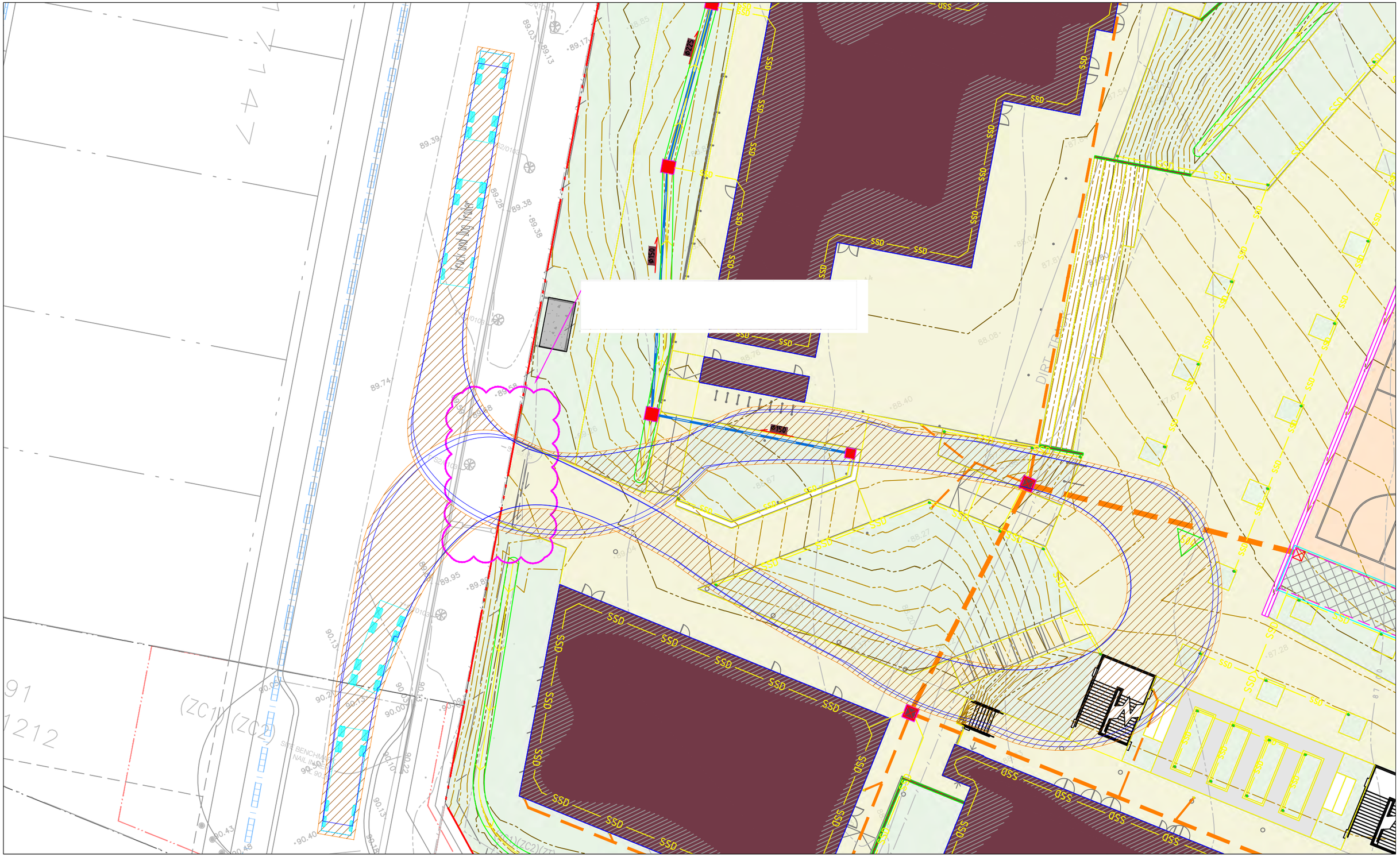
Drawing Title:
Swept Path Analysis
Truck and Dog

Date:
27/06/2019

Scale @ A3:
1:500

Drawing Number:
AG 01

asongroup
Suite 5.02, Level 5, 1 Castlereagh Street
Sydney NSW 2000
info@asongroup.com.au



Notes:

This drawing is provided for information purposes only and should not be used for construction.

Document Info:

Drawn by: JamesLaidler

File name: 1047d03v1 Truck & Dog Access.dwg

Client:

Hansen Yucken

Project:

1047

Catherine Field Primary School

Drawing Title:

Swept Path Analysis

Truck and Dog

Date:

27/06/2019

Scale @ A3:

1:500

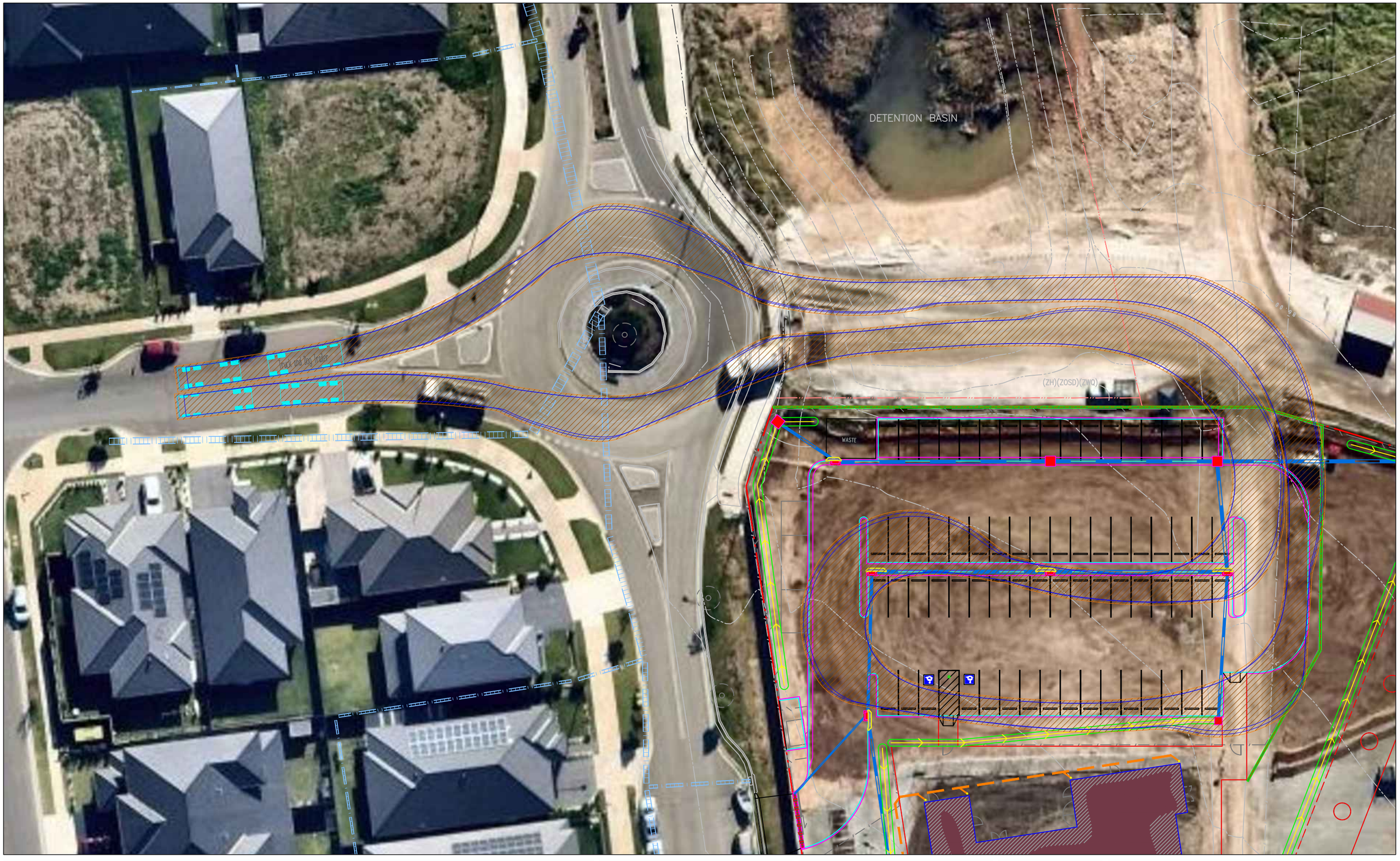
Drawing Number:

AG 01

asongroup

Suite 5.02, Level 5, 1 Castlereagh Street
Sydney NSW 2000

info@asongroup.com.au



Notes:
This drawing is provided for information purposes only and should not be used for construction.

Document Info:
Drawn by: JamesLaidler
File name: 1047d03 Truck & Dog Access.dwg

Client:
Hansen Yucken

Project:
1047
Catherine Field Primary School

Drawing Title:
Swept Path Analysis
Truck and Dog

Date:
27/06/2019

Scale @ A3:
1:500

Drawing Number:
AG 01

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Appendix D

Evidence of Consultation

NSW GOVERNMENT Education School Infrastructure

Post Approval Consultation Record

Identified Party to Consult:	Camden Council
Consultation type:	Email correspondence
When is consultation required?	Prior to commencement
Why	B14 – Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) must be prepared to achieve the objective of ensuring safety of the road network and address but not be limited to, the following: (b) Be prepared in consultation with council and TfNSW
When was consultation scheduled/held	11 December 2019, 13 February 2020, 01 May 2020, 15 May 2020, 16 June 2020 & 19 June 2020
When was consultation held	11 December 2019, 13 February 2020, 01 May 2020, 15 May 2020, 16 June 2020 & 19 June 2020
Identify persons and positions who were involved	Jordan Soldo, Senior Town Planner Mathew Rawson, Team Leader DA Assessments West
Provide the details of the consultation	28 November 2019 - Camden Council submitted comments on the SSD application, with 7 comments raised, all of which regard the use of roads once the project is complete and the facility is operational 13 February 2020 - Ason issued a technical note on 13 February 2020 addressing each of the items raised to a number of issues raised through the early phases of the project 01 May 2020 - CTPMSP for the EWDA was submitted for review from council and to confirm acceptance that the submitted plan satisfied the council requirements. The basis of this plan is the same as the one that would eventually be developed for the main works SSDA - No response/feedback was received on the plan 15 May 2020 - Response received to submitted documents, no comments made on the traffic management plan submitted 16 June 2020 - Revised CTPMSP for the SSDA main works was re-submitted to council for review and to confirm if council had any comments/ proposed changes that they wanted to make 19 June 2020

	- Council reinforced two items contained within the plan regarding access routes and site parking which was already contained within the plan. No other comments received.
What specific matters were discussed?	The email correspondences referenced in this consultation record outlined the submission of the sub-plan in accordance with the relevant development consent condition and provided the opportunity for council to make comments on the plans. Council confirmed that the plan was satisfactory and reinforced two items contained within regarding site parking and vehicle accessways.
What matters were resolved?	Council has been consulted during the development of the CTPMSP from the EWDA phase to the SSDA main works in line with condition B14. No specific issues were raised however two items of the plan were reinforced as being relevant to council.
What matters are unresolved?	Not applicable
Any remaining points of disagreement?	No
How will SINSW address matters not resolved?	Not applicable

28 November 2019

RPS Group Pty Ltd
Capital Centre Arcade L 13 255 Pitt St
SYDNEY NSW 2000

Dear Sir/Madam,

RE: Pre-Development Application Meeting PDM/2019/94/1

PROPERTY: C O'Keefe Drive ORAN PARK
LOT: 1001 DP: 1234527

I refer to the above pre-development application meeting which was held on 26 November 2019. I provide the following as a summary of the issues discussed at the meeting and as advice for your assistance.

This advice is based on the proposed development as described by you. Should the development or any relevant planning policy change in any way prior to the lodgement of a development application (DA) then this advice may no longer be fully accurate or complete.

Please note that this advice is preliminary in nature and that no detailed assessment of the site or proposed development has been undertaken. Following lodgement of the DA and a detailed assessment, additional issues may arise that are not detailed in this letter that may require the proposed development to be modified or additional information to be provided. Council may also determine that the proposed development cannot be supported on the site.

Proposed Development

1. The proposed development involves early works for Catherine Field Primary School consisting of bulk earthworks, site establishment and stock piling.

   Construction of buildings, hardstand areas including car park, footpaths and landscaping is the subject of a separate application.

Zoning/Permissibility

2. The site is zoned R2 Low Density Residential pursuant to State Environmental Planning Policy (Sydney Region Growth Centres) 2006.

   The proposed development is defined as 'earthworks' for a proposed 'educational establishments' Both land uses are permitted with consent in the zone.

Development Classification

3. The proposal will be classified as a Crown development application as the land is owned by the Minister for Education and the development application is therefore made by or on behalf of the Crown.

   The application will require determination by the Sydney Western City Planning Panel if the capital investment value exceeds $5 million.

Capital Investment Value

4. Any DA lodged with Council must clearly state the capital investment value (CIV) of the proposed development. Please refer to the Department of Planning, Industry and Environment's Planning Circular PS 10-008 which describes what items must be included and excluded when calculating the CIV for development. Depending upon this value the DA may be determined by the Sydney Western City Planning Panel (the Panel).

Town Planning Advice

5. A statement of environmental effects must be submitted with the DA that fully describes the proposed development and assesses it against all relevant environmental planning instruments, development control plans and plans applicable to the site and development. These include (but may not be strictly limited to):

   - State Environmental Planning Policy (Sydney Region Growth Centres) 2006;
   - State Environmental Planning Policy No 55—Remediation of Land;
   - Deemed SEPP Sydney Regional Environmental Plan No 20 – Hawkesbury-Nepean River (No 2 – 1997);
   - State Environmental Planning Policy (Infrastructure) 2007;
   - Camden Growth Centres Development Control Plan 2012;
   - Camden Development Control Plan 2019;
   - Greater Sydney Region Plan; and
   - Western City District Plan.

6. The statement of environmental effects must also clarify the proposed timing of the development in relation to adjoining approved development applications. DA/2018/147/1 approved the perimeter road to the east, earthworks (including fill over the subject site) and subdivision. DA/2017/491/1 (and modifications) approved the perimeter road to the south, earthworks (including fill over the subject site) and subdivision.

   The 'existing levels' shown on the engineering plans shall be amended to reflect the approved levels of these applications depending on proposed sequencing.

7. The finished levels are to be checked against the adjoining proposed subdivisions to ensure the final heights match one another. Significant level changes adjoining boundaries are unlikely to be supported.

   The difference in finished levels between the site and future roads in the south eastern corner of the site are not supported. The proposed fill and finished levels shall be reduced to minimise the adverse impacts created by the change in levels.

8. The bulk earthworks must not prejudice the outcome of the State Significant Development application (SSDA9477). The pad and associated batter provided for the future car park does not provide flexibility in the event that the design is modified.

9. Confirmation shall be provided that the easement for overhead powerlines 9 wide through the site has been extinguished. If not, a referral to Endeavour Energy is required by State Environmental Planning Policy (Infrastructure) 2007.

10. In addition to owner's consent for the subject site, owner's consent must also be provided for the relevant lot if any works or access is proposed on or from adjoining lots (rather than the road reserve).

11. The application will be notified in accordance with the Camden Development Control Plan 2019 for 14 days.

Engineering Advice

12. The entire development shall be designed and constructed in accordance with Council's Engineering Specifications.

13. Temporary site access locations are to be shown on the plans. Direct access off O'Keefe Drive is not supported due the potential impact created by turning truck movements in and out of the site close to residential houses. A temporary access point should be located at the southern end of O'Keefe Drive. This will also protect the existing kerb and gutter.

14. The bulk earthworks for the site should have batters between height differences and not vertical faces. All batter is to be a maximum of 1 in 4 (however visual impacts may require lesser gradients in visually prominent areas)

15. The bulk earthworks should ensure the site is able to drain to the temporary sediment basin without any trapped low points on site.

16. The existing onsite detention basin to the north of the site has an easement that appears to encroach into the proposed site. If this easement has already been extinguished, can evidence be provided demonstrating this.

17. All sediment and erosion controls to comply with relevant standards.

Environmental Health Advice

18. A copy of the environmental site assessment shall be lodged with the application.

19. A salinity management plan will be required based on the salinity results contained within the stage 2 environmental site assessment.

Documents to be Submitted with the DA

You must submit the following plans and reports with the DA:
- Completed development application form,
- Completed DA lodgement checklist 12,
- Statement of environmental effects,
- Survey plan (A3),
- Engineering plans (A3),

- Stormwater management report,
- Geotechnical report,
- Environmental site assessment,
- Salinity management plan,
- Contamination assessment,
- Acoustic report,
- Construction waste management plan,
- Traffic report,
- Cost of works estimate/quantity surveyor report,
- USB drive/CD containing all of the above information,
- Copy of this pre-DA advice letter.

Failure to submit the above information will result in Council refusing to accept the DA.

DA Fees

Prior to the lodgement of the DA, please contact Council's Customer Relations Team on (02) 4654 7777 to obtain a fee quote. A copy of this fee quote is to be provided with the DA.

All DA fees must be calculated and provided in accordance with the Department of Planning, Industry and Environment's Planning Circular PS 13-002. The circular requires that a cost estimate of the proposed development be submitted with the DA along with the methodology used to calculate it. Please note that for larger developments with costs greater than $3 million a detailed cost report must be prepared by a registered quantity surveyor and submitted with the DA.

Other Information

Council would welcome the opportunity to act as certifier for the proposed development. Should you choose this, please advise Council's customer service staff when lodging your DA to ensure that your application form is completed correctly and that the correct fees are paid for the required certificates and inspections.

Please note that following receipt and detailed assessment of the DA, additional issues may arise that are not detailed in this letter that may require the proposed development to be modified or additional information to be provided. Council may also determine that the proposed development cannot be supported on the site. You will be advised of this as soon as possible following the lodgement of the DA.

Any additional pre-DA meetings regarding the proposed development will attract a fee in accordance with Council's current fees and charges.

Should you have any enquiries in relation to this matter, please do not hesitate to contact the undersigned on (02) 4654 7613.

Yours sincerely,

Mr J Soldo
Senior Town Planner
(Planning and Environmental Services)

11 December 2019

David Way
Senior Planning Officer, School Infrastructure Assessments
NSW Department of Planning, Industry and Environment
(via e-mail to David.Way@planning.nsw.gov.au)

Dear Sir,

RE: Notice of Exhibition - New Catherine Field Primary School (SSD 9477)

PROPERTY: C O'Keefe Drive ORAN PARK
LOT: 1001 DP: 1234527

I refer to the above State Significant development application (DA) currently being assessed by your department and thank you for the opportunity to comment.

Council officers have undertaken a review of the DA and supporting information. This letter provides feedback on the DA for your consideration.

Of note, as the submission deadline concludes on Wednesday 11 December 2019, this submission has not been reported to Council for formal consideration and endorsement.

1. Planning

1.1 Sequencing with surrounding subdivision works

Clarification of the proposed timing of the development in relation to adjoining approved development applications is required. DA/2018/147/1 approved the perimeter road to the east, earthworks (including fill over the subject site) and subdivision. DA/2017/491/1 (and modifications) approved the perimeter road to the south, connection of O'Keefe Drive-North to O'Keefe Drive-South, earthworks (including fill over the subject site) and subdivision. It is noted that the drainage of the school site has been catered for in DA/2018/147 with the provision of drainage pipes and the basin has been designed to cater the school.

There should be restriction placed that the school cannot be opened until the southern and eastern perimeter roads, connection of O'Keefe Drive-North to O'Keefe Drive-South and the drainage / basin system are complete.

1.2 Easements – Water Detention and Transmission Lines

The existing temporary onsite detention basin to the north of the site has an easement that encroaches into the proposed site. The temporary basin should be decommissioned and the easement extinguished upon completion of final drainage solution. This should occur prior to the school's construction.

Confirmation shall be provided that the easement for overhead powerlines 9 wide through the site has been extinguished. If not, a referral to Endeavour Energy is required by State Environmental Planning Policy (Infrastructure) 2007.

1.3 Early Works

Camden Council has received a DA for early works consisting of bulk earthworks, site establishment and stock piling on the site. For Council's pre-DA advice in relation to this proposal please refer to the PDM/2019/94/1 advice attached separately.

The 'existing levels' shown on the engineering plans shall be amended to reflect the approved levels of previously approved applications (depending on proposed sequencing) as well as the proposed early works DA.

1.4 Northern Public Open Space – LS1

The land to the north will ultimately be a public reserve in Council's ownership, known as LS1. Any co-use proposal would require further detailed discussions with Council. Council recommends that the school provides sufficient on-site open space to cater for its own demands without needing to rely upon the adjoining public reserve which will be provided to meet the recreation needs of the wider community.

The development's interface with the future public open space to the north should be carefully considered. It is proposed for the site to undergo extensive earthworks which will result in a swale along the shared boundary with the open space. The proposed levels should be reviewed and changes from existing ground level minimised to improve this interface. This feedback should be read in conjunction with the feedback provided in the pre-DA advice provided for early works proposal as well as the "Engineering" section of this letter.

Council is in the early stages of planning for the embellishment of LS1 and an earlier concept plan is enclosed separately for the Department's information.

1.5 Interface – South-Eastern Corner

The development's interface with the public domain at the south-eastern corner of the site should be reviewed. As proposed this interface is defined by a large batter slope and relatively blank walls on the eastern façade. There is an opportunity to lower the finished floor levels of Blocks C and D to improve this interface whilst making the ramp down from Block B both longer and steeper (still maintaining accessibility). This will also assist with reducing the height of the buildings.

1.6 Construction Access

Direct access off O'Keefe Drive is not supported due the potential impact created by turning truck movements in and out of the site close to residential houses. A temporary access point should be located at the southern end of O'Keefe Drive. This will also protect the existing kerb and gutter. In addition to owner's consent for the subject site, owner's consent must also be provided for the relevant lot if any works or access is proposed on or from adjoining lots (rather than the road reserve).

1.7 Height

The proposed development is significantly over the height of development standard of 9 m.

1.8 Waste Pad

The design of the waste pad should be further detailed. Although labelled as a 'pad' the structure is shown to cast shadows. The waste pad is in a visually prominent location and it would be preferable for the waste area to be relocated to the south-eastern corner of the car park. The entrance gate for the staff car park can be moved to a more central location in the car park closer to space 60 (this gate could be potentially directly off a shared space catering to the required accessible spaces, discussed further in the 'Traffic' section of this letter).

1.9 Conditions

Once the proponent has addressed the issues outlined in this letter, and if approval is recommended, Council would welcome the opportunity to provide feedback on potential conditions of consent.

2. Engineering

Comments

1. Appendix A, in Key Issues states requirements of what needs to be supplied for Drainage in point 14 on page 6. Information responding to this could not be found.
2. Appendix A, in Plans & Documents, states what is required of the Site Survey Plan (page 7). Appendix C is just a deposited plan. There are no levels or features shown.
3. Appendix B shows the school site fronts three roads, of which only O'Keefe Drive on the western boundary has been built. The road to the south has been DA and CC approved via DA/2017/491 (Catherine Park Estate Stage 6) and the road to the east has been DA approved only via DA/2018/147 (Oran Park Tranche 33). The land to the north is yet to be developed. It is noted that the drainage of the school site has been catered for in DA/2018/147 with the provision of drainage

pipes and the basin has been designed to cater the school. *There should be restriction placed that the school cannot be opened until both roads and the drainage and basin system is complete*.

4. The DCP (Catherine Field Part Precinct) shows a short cul-de-sac road to the north of the site, which may provide alternate access to the school, especially for the proposed carpark and waste and other servicing activities.
5. Appendix T, in section 4.2.4 Stormwater states, 'no formal drainage on site' and 'towards bio-retention basin'. It does not indicate what is proposed or how it will connect to the basin.
6. Appendix X is a simple two paragraph statement stating a 100,000 L rainwater tank will be provided which will irrigate garden and oval. *This is considered inadequate. There are no plans showing where the tank will be located (above or below ground), how and what stormwater runoff will be collected and drained to the tank. It indicates two inclusions, yet the document only has one page?*
7. The comment in Section 3.9 of the EIS is noted about connection to the interim basin of Oran Park Tranche 33. It also claims the basin will be built first. Again, if it is not, then this development will need to provide a temporary OSD/WQ facility.
8. In the EIS, Table 8.0 (page 62) point 4.1.2 claims a cut fill plan is provided in Appendix G – it is not.
9. In the EIS Section 6.8 (page 74) states that Northrop has prepared a Concept Stormwater Design Report. Appendix G is just sediment and Erosion control plans. The statement saying "concluded that the site is not situated on flood prone" is not justifiable based on the documents supplied.

<u>Matters to be Addressed</u>

1. A concept drainage plan shall be provided for the development. The design shall comply with Council's Engineering Specification. Note the minor system design is considered to be a 10% AEP for a school site. A catchment plan shall be included. It shall also access the capacity of the connection point provided by the adjoining DA in the north eastern corner of the development. Should the capacity be inadequate, the design presented must show how this can cater for, by either, upgrading pipes or providing an on-site detention system.
2. A DRAINS model shall be supplied to support the design proposed.
3. A MUSIC model shall be provided for the development. Certification of the model shall be provided by using MUSIC-Link. A copy of the MUSIC link report shall be included.
4. A site plan shall be supplied that documents levels and grades across the site. In particular, the entrance driveway and access to the carpark shall be included. Sufficient details shall be supplied that show compliance with AS2890.
5. The site plan developed shall be consistent with the DA approvals issued for the adjoining roads and the bulk earthworks for the site.
6. A detail survey plan shall be supplied that conforms to the SEARs requirements.

7. A cut/fill plan for the proposed site is required.
8. Further justification is required that demonstrates that the site is not subject to flooding. And confirm that all proposed floor levels are at or above the FPL.

3. Traffic

1. Signage and line marking plans would need to be submitted and Local Traffic Committee concurrence sought.
2. The traffic report states that the disabled parking will be accommodated within the staff car park, which provides 68 spaces. Accessible spaces will impact on the number of spaces provided as shared spaces would need to be provided (as per AS289). This does not seem to have been considered in the car park layout. The number of accessible spaces provided shall be based on assessment of similar sites. It should also be specified if a special needs stream would be provided at this school.
3. A footpath should also be provided along the 'future road' on the eastern frontage. Particularly considering there is a gate access on that frontage.
4. Pedestrian crossings shall be provided. Locations shall be specified. Crossing points should be provided on O'Keefe Drive and crossing points on the southern boundary road.
5. The number of bus bays required has not been specified. The extent of the bus bay shall be based on anticipated demand and based on similar developments within the LGA. For example Gledswood Hills Public School (scheduled to open in Jan 2020) proposed three bus bays. Most other schools in the LGA have similar configurations.
6. Camden DCP rates were used to calculate parking rates - requiring 66 car parking spaces. The provision of 68 may be compromised upon provision of Disabled bays to accommodate the disabled pick-up and drop-off areas (as discussed in Point 2). The minimum required number of spaces shall be satisfied.
7. The distribution of peak hour traffic flow has not been discussed or justified.

4. Noise and Vibration

1. Trucks collecting waste and garbage should be limited to daytime operation (after 7am).
2. Noise from the proposed school bell and public address system should be controlled to not add to noise from children when they are outdoors.
3. There will be a significant exceedance of construction noise criteria and temporary acoustic fences of 2.4m high are recommended to mitigate this impact.
4. A construction noise management plan will be required to address noise.

5. Vibration is likely to cause discomfort for the closest residents who may only be 10m away from works during piling operations. A vibration management plan is recommended to address this impact.

5. Public Health

1. The proposed development is intended to cater for 1012 students and associated staffing.
2. The development includes both a canteen servicing the general school community and an "Out of School Hours" (OSHC) facility separately servicing the before and after school hours community. Both facilities provide food for sale and will be regulated under the provisions of the Food Act 2003.
3. OSHC services are generally operated separately to the school administration and are considered as stand-alone retail food premises.
4. Both the school canteen and the OSHC are required to comply with the Australia and New Zealand Food Standards Code and AS 4674-2004 "Design construction and fit-out of food premises".
5. Detailed plans and specifications for the proposed construction and fit-out of the food premises have not been provided. In the absence of plans and specifications the Applicant's particular attention is drawn to:

   i) Clause 2.1.3 of AS 4674-2004 which requires **adequate space** be provided on the premises for the following:

   Space shall be provided for-

   a) Food preparation and service;
   b) Separation, preparation and storage of raw food, from preparation and storage of cooked, and other ready to eat foods; and
   c) Washing and sanitizing operations for utensils and equipment.

   Space shall be provided for storage of-

   d) dry goods;
   e) chilled and frozen food;
   f) fresh fruit and vegetables;
   g) returned/recalled food;
   h) packaging material;
   i) utensils, equipment;
   j) cleaning equipment and chemicals;
   k) clothing and personal belongings of staff;
   l) garbage and recyclable material;
   m) hot water (and cold water if storing on site); and

n) any other goods or materials that are associated with operating the food business on the premises.

Cool room, refrigerator and freezer capacity (including display equipment) and storage and display capacity for hot food shall be adequate for the business.

ii) Clause 3.2.1 AS 4674-2004 - **solid wall construction**
iii) Section 4 AS 4674-2004 - provision of **sinks** including minimum double bowl sink for washing and sanitising of equipment, a separate sink for food preparation, facilities for cleaning premises (cleaners' sink or equivalent),
iv) Clause 4.4 - **handwashing facilities**.

6. Building Certification

1. The plans are not detailed enough to complete a thorough assessment but the application includes BCA capability statement and access report to demonstrate compliance with the BCA without the need for significant alterations.
2. This development will require an automatic fire suppression system and a fire hydrant system as well as a sub-station. This will likely require the provision of a sprinkler and hydrant pump room. These key pieces of infrastructure should be shown at DA stage to understand their location and any impacts upon the external appearance of the development.
3. The plans should be amended to detail accessible car parking spaces that comply with Part D3 of the BCA and AS 2890 to ensure that at least the minimum required car parking spaces are provided.

7. Landscaping

It is critical for the Eucalyptus species stock to be checked for any defects or poor branch formation. Such stock must be rejected to avoid future risk. This can be addressed via a condition of consent.

8. Conclusion

Should you have any enquiries in relation to this matter, please do not hesitate to contact the undersigned on 02 4654 7777.

Yours sincerely,

Mr M Rawson
Team Leader DA Assessments West
(Planning and Environmental Services)

info@asongroup.com.au
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TECHNICAL NOTE

Reference: P1047t02v01

13 February 2020

Hansen Yuncken
Bldg 1, L3, 75-85 O'Riordan Street
Alexandria NSW 2015

Response to Submissions

New Catherine Field Public School, O'Keefe Drive, Oran Park (SSD 9477)

Dear Paul,

I refer to recent correspondence in regard to the issues raised in the submission received in relation to the proposed New Public School, O'Keefe Drive, Oran Park SSD-9477 (the Proposal), and specifically the following submissions prepared by government agencies following exhibition of the Proposal:

- M. Rawson, Camden Council (Council), *Notice of Exhibition - New Catherine Field Primary School (SSD 9477)*, 11 December 2019 (Council Submission)
- Mark Ozinger, Transport for NSW (TfNSW), SSD - 9494 – Proposed New Primary School, Lot 1 Dp1253855, Estella Road, Estella, 4 December 2019 (TfNSW RTS)

The sections below provide a summary of the relevant issues raised in each of the responses to the submission and the Ason Group response to each issue. In preparing these responses, Ason Group has referenced the following documents:

- Ason Group, *Transport Impact Assessment, New Catherine Field Public School, O'Keefe Drive, Oran Park* (AGTIA); and
- Ason Group, *Construction Traffic Management Plan, New Catherine Field Public School, O'Keefe Drive, Oran Park* (AGCTMP)

Issues have also been labelled with the appropriate Ethos Urban reference number (EU) for ease of cross referencing.

Camden Council

1.6 Construction Access (EU 4x)

Direct access off O'Keefe Drive is not supported due the potential impact created by turning truck movements in and out of the site close to residential houses. A temporary access point should be located at the southern end of O'Keefe Drive. This will also protect the existing kerb and gutter. In addition to owner's consent for the subject site, owner's consent must also be provided for the relevant lot if any works or access is proposed on or from adjoining lots (rather than the road reserve).

Ason Group Response (EU 4x)

This comment appears to be offering conflicting advice—access off O'Keefe Drive is not supported, locate temporary access at southern end of O'Keefe Drive.

Notwithstanding, light vehicle traffic generation would be generally associated with construction staff movements to and from the Site. Staff would be comprised of project managers, various trades and general construction employees. Over the full period, the peak workforce represents the worst-case scenario for vehicle movements during the morning or evening road network peak hour. The workforce arrival and departure periods (6:30-7:00am and 6:00-6:30pm) represent the peak construction traffic periods.

It is expected that the heavy vehicles would generally arrive outside of peak periods, therefore not contribute to the estimated peak hour volumes and have minimal impact on local residents.

Whilst the construction traffic volumes are yet to be determined (these volumes will be finalised post SSD approval), it is expected that these volumes will not exceed to the proposed operational volumes. As mentioned in Section 2.4 of AGCTMP, any vehicles required to access the Site that do not comply with the mass, dimension or operating requirements as specified by the National Heavy Vehicle Regulator (NHVR) will need to apply for a class 1 Oversize Overmass (OSOM) or Special Purpose Vehicle (SPV) permit and comply with restrictions limiting access to the Site to reduce the impact on traffic management and safety.

O'Keefe Drive is 12.5 metres wide at the northern and southern ends adjacent to the site and the southern end has been identified as an emergency access. Accordingly, the access location shown in Figure 1 are deemed appropriate and acceptable.

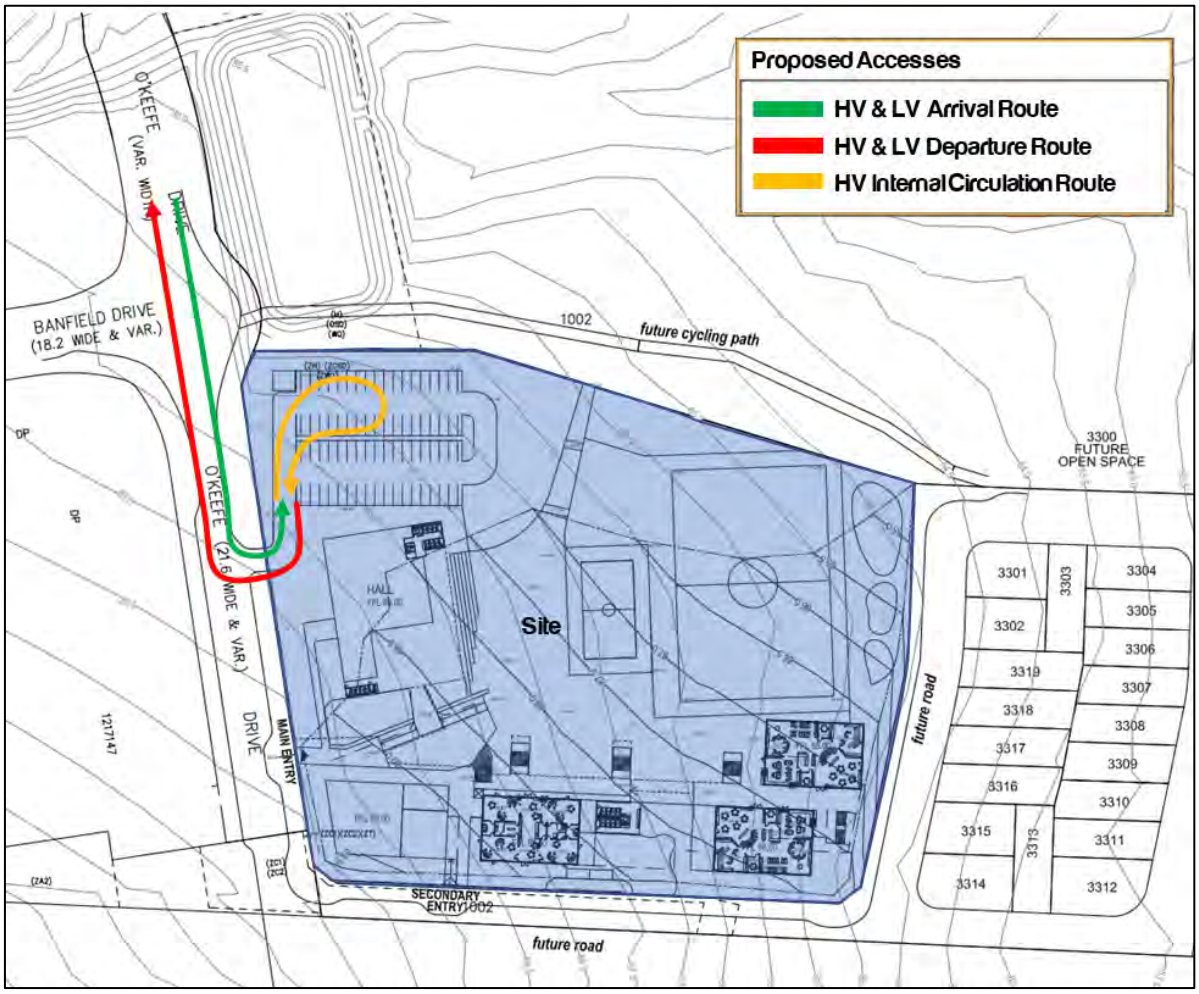


Figure 1: Construction Vehicle Routes

1.8 Waste Pad (EU 4z)

The design of the waste pad should be further detailed. Although labelled as a 'pad' the structure is shown to cast shadows. The waste pad is in a visually prominent location and it would be preferable for the waste area to be relocated to the south eastern corner of the car park. The entrance gate for the staff car park can be moved to a more central location in the car park closer to space 60 (this gate could be potentially directly off a shared space catering to the required accessible spaces, discussed further in the 'Traffic' section of this letter).

Ason Group Response (EU 4x)

The design and location of the waste pad is an issue for consideration and response by other consultants as access on O'Keefe Drive would not be effected. The entrance gate location is discussed in the Traffic section of this Technical Note.

Traffic 1 (EU 4kk)

Signage and line marking plans would need to be submitted and Local Traffic Committee concurrence sought.

Ason Group Response (EU 4kk)

This is a standard requirement and it is acknowledged that this would form a condition of consent.

Traffic 2 (EU 4kk)

The traffic report states that the disabled parking will be accommodated within the staff car park, which provides 68 spaces. Accessible spaces will impact on the number of spaces provided as shared spaces would need to be provided (as per AS289). This does not seem to have been considered in the car park layout. The number of accessible spaces provided shall be based on assessment of similar sites. It should also be specified if a special needs stream would be provided at this school.

Ason Group Response (EU 4kk)

All access, parking and servicing areas have been designed with reference to the appropriate Australian Standards, and specifically AS 2890.1 (with regard to access driveways and parking modules) and AS 2890.2 (with regard to service vehicles). It is expected that a Condition of Consent in any future approval will require that the final design provide full compliance with the Australian Standards, which would provide for any minor design revisions that may arise through to construction commencing.

The school does not have a Special Education requirement for the car park.

Traffic 4 (EU 4kk)

Pedestrian crossings shall be provided. Locations shall be specified. Crossing points should be provided on O'Keefe Drive and crossing points on the southern boundary road.

Ason Group Response (EU 4kk)

TfNSW has a reduced warrant for sites used predominantly by children and by aged or impaired pedestrians. If the crossing is used predominantly by school children, is not a suitable site for a children's crossing and in two counts of one hour duration immediately before and after school hours:

> *(a) the pedestrian flow per hour (P) crossing the road is greater than or equal to 30*
>
> *AND*
>
> *(b) the vehicular flow per hour (V) through the site is greater than or equal to 200*
>
> *a pedestrian (zebra) crossing may be installed. If at least 50% of pedestrians using the crossing are aged or impaired and for each three one hour periods in a typical day*
>
> *(a) P ≥ 30*
>
> *AND*
>
> *(b) V ≥ 200*
>
> *AND*
>
> *(c) PV ≥ 60,000*

a pedestrian (zebra) crossing may be installed.

The above criteria are not known for the school when it will be operational and, whilst the vehicle volumes can be forecast with relative accuracy and may exceed the requirement, the pedestrian volumes and desire lines may not. This is particularly relevant given that the number of possible directions and access desire lines—depending on specific enrolment locations within the catchment—is likely to significantly spread the concentration of pedestrians and therefore reduce the effectiveness and efficiency of a crossing.

Notwithstanding, indicative locations shown in have been shown on the drawings to demonstrate an appropriate and likely location should the warrants be met once the school is operational. The ultimate crossing location should be based on an assessment of enrolment spatial data with consideration of desire lines.

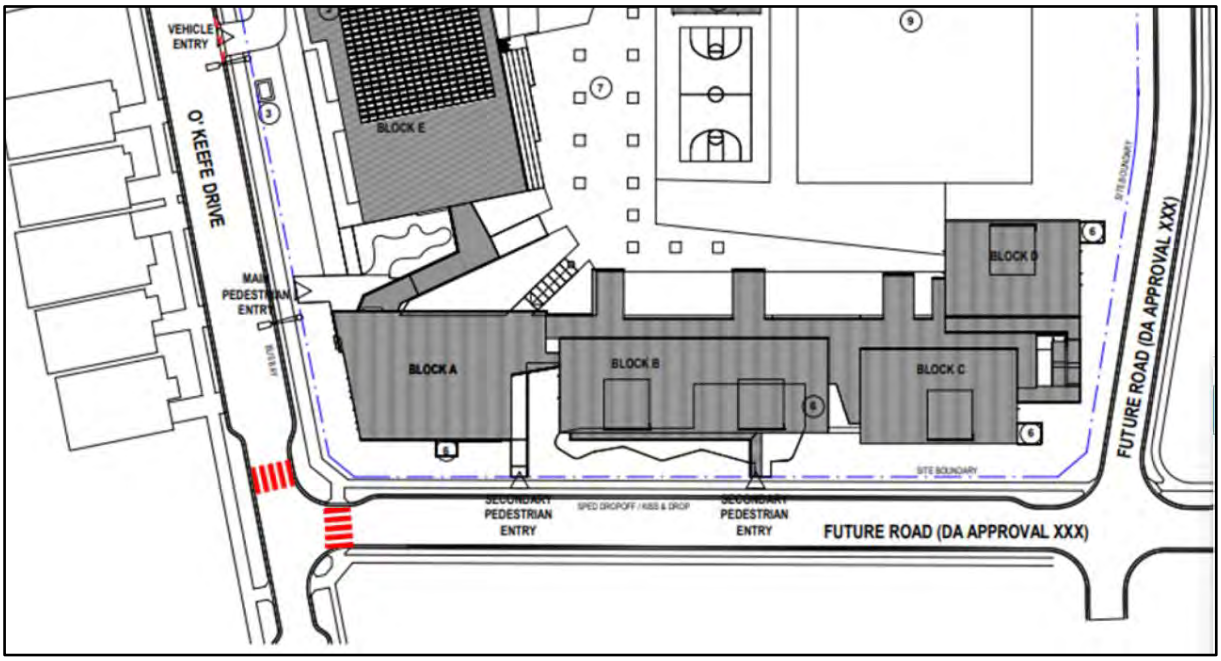


Figure 2: Indicative Pedestrian Crossing Locations

Traffic 5 (EU 4kk)

The number of bus bays required has not been specified. The extent of the bus bay shall be based on anticipated demand and based on similar developments within the LGA. For example Gledswood Hills Public School (scheduled to open in Jan 2020) proposed three bus bays. Most other schools in the LGA have similar configurations.

Ason Group Response (EU 4kk)

While there is an expectation that the local and district bus services will provide the coverage and capacity required to accommodate student travel to and from the School, dedicated school bus services could be introduced should demand exceed public bus capacity. However, in general students would be encouraged to travel on scheduled public transport routes.

O'Keefe Drive has been designated as a bus route corridor and as such has been / will be designed in accordance with the appropriate bus standards, including the provision of minimum 3.5m travel lanes and indented bus bays in the vicinity of the Site. Bus stops are expected to be provided approximately every 400m along all bus routes, noting that bus stops are proposed directly adjacent to the School in O'Keefe Drive.

The indented bus bay on O'Keefe Drive can accommodate three buses.

Traffic 6 (EU 4kk)

Camden DCP rates were used to calculate parking rates - requiring 66 car parking spaces. The provision of 68 may be compromised upon provision of Disabled bays to accommodate the disabled pick-up and drop-off areas (as discussed in Point 2). The minimum required number of spaces shall be satisfied.

Ason Group Response (EU 4kk)

Kerbside drop off and pick up will be accommodated at the appropriate location in the designated Drop Off Pick Up Zone (DOPUZ) to the south of the site on the Future Road, satisfying the requirement. Accordingly, the spaces will not be required in the car park which is a significant relative distance from designated buildings. Appropriate signage and provision of a minimum of two car spaces shall be provided in the DOPUZ.

Traffic 7 (EU 4kk)

The distribution of peak hour traffic flow has not been discussed or justified.

Ason Group Response (EU 4kk)

As discussed previously in AGTIA, the School is centrally located within the Catherine Field (Part) Precinct (CFPP), and the majority of students are expected to live within the CFPP. Consequently, student trips are expected to be distributed to the CFPP road network in accordance with residential densities (across the CFPP). This is entirely consistent with the analysis provided in the CFPP Social, Section 5.3.4 of which states:

> *"The population of the Precinct will warrant the provision of one government primary school, based upon the Department of Education and Communities (DEC) guideline of one primary school per 2,000-2,500 dwellings. The report has not identified how the high school needs of the precinct will be addressed.*
>
> *The DEC has confirmed that one primary school will be required in the precinct. This Precinct will provide a full catchment for a primary school (although it may take children from adjoining areas, as a holding school, until other new schools in the district are built). In the longer term, it is not intended that this school also meet demand from Oran Park or Gregory Hills, which will have their own primary schools."*

Student vehicle trips are expected to be evenly divided in the School peak periods between inbound and outbound trips.

As discussed previously in AGTIA, staff are expected to travel to/from the broader sub-region, with only a minority of trips generated within the CFPP. During the AM school peak period, all staff trips are expected to be arrival trips, while during the PM school peak period all staff trips are expected to be departure trips, though it is noted that the majority of departure trips would be later than the PM school peak period, i.e. coinciding more with the PM commuter peak period.

With reference to sections **Error! Reference source not found.** and **Error! Reference source not found.** of AGTIA, the trip generation of the School during the school peak periods has been assigned to the key intersections of O'Keefe Drive & Banfield Drive, and O'Keefe Drive and Road 610. The results of this assignment are provided in

Figure 3, while the total 2036 traffic flows at the intersections—using the base flows provided in the *Catherine Field (Part) Precinct Post-Exhibition Transport and Access Review (Addendum)* Aecom 2013 (CFPP TAR)—are shown in **Figure 4**.

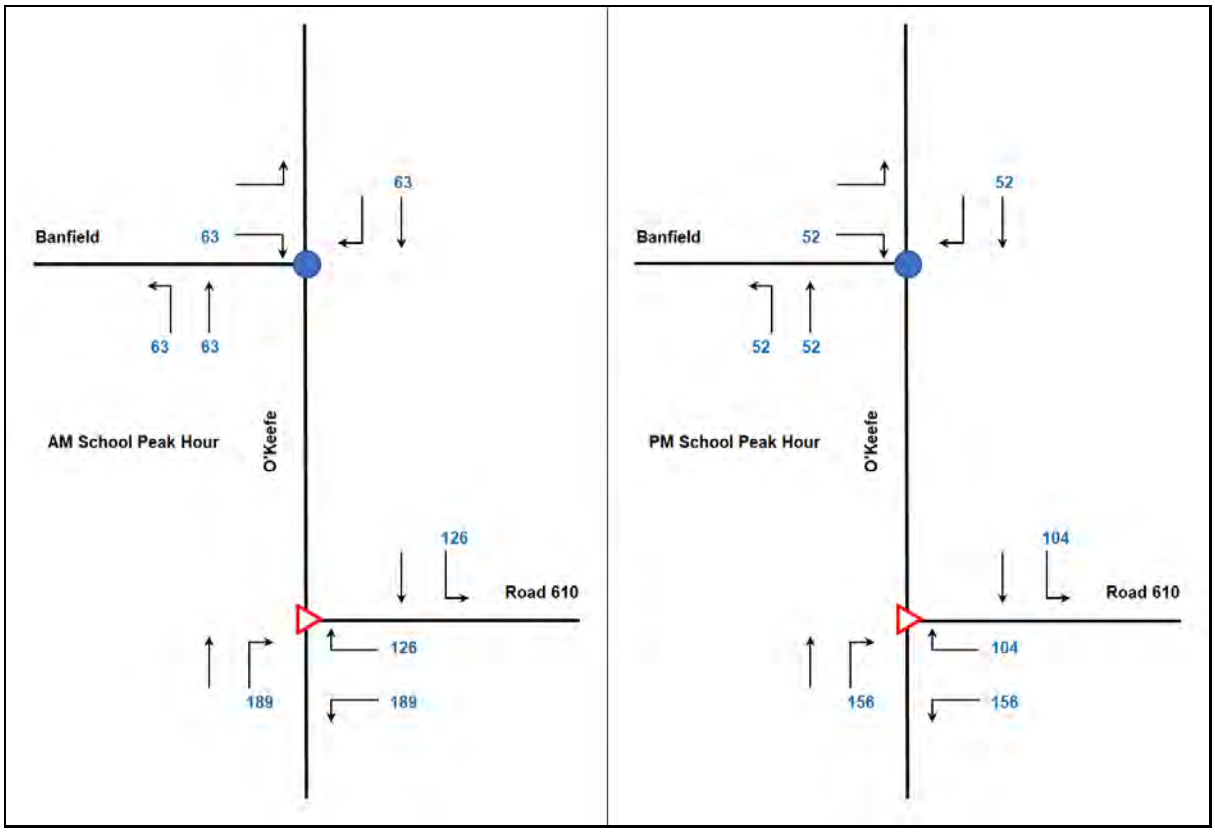


Figure 3: School Peak Period Traffic Generation

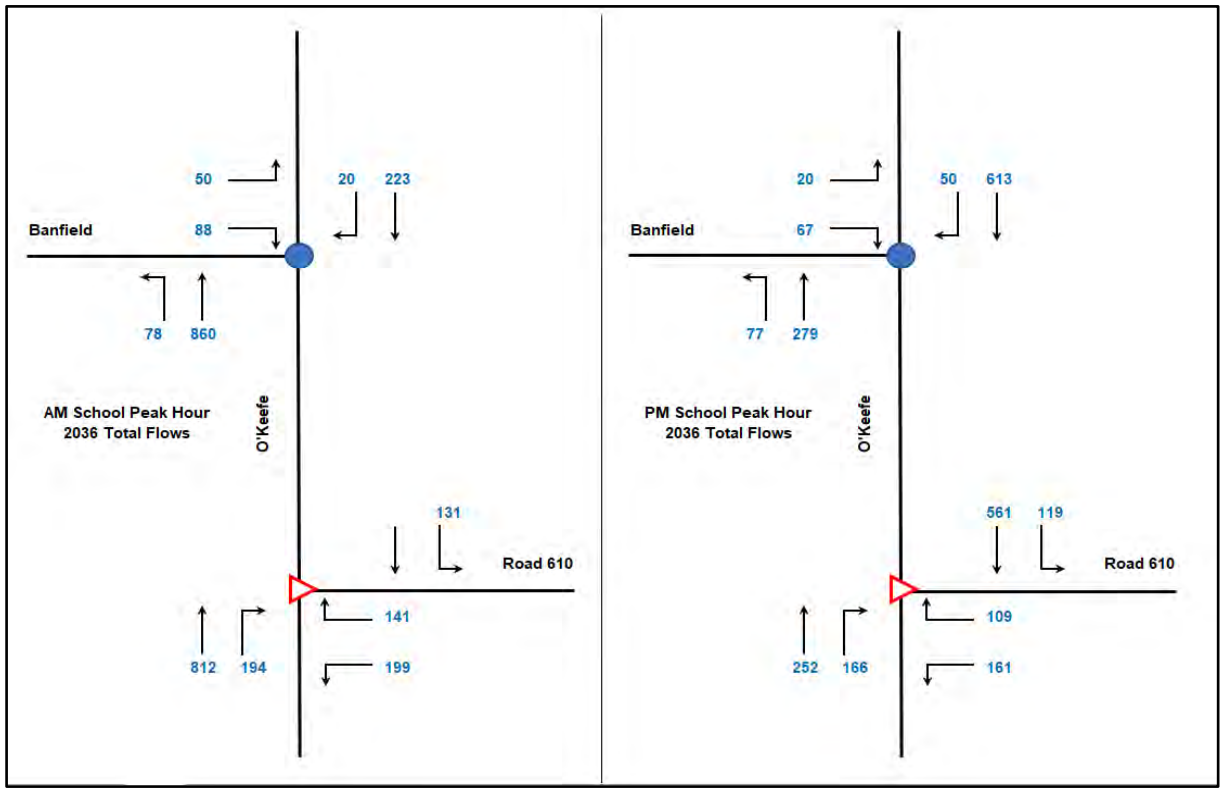


Figure 4: 2036 Total Traffic Flows

Transport for New South Wales

EU 7

Thank you for your correspondence via Major Projects Planning portal (ref: PAE-1101) on 8 November 2019, requesting Transport for NSW (TfNSW) to review and comment on the subject State Significant Development (SSD) Application. Legislation came into effect on the 1 December 2019 that brings Roads & Maritime Services and Transport for NSW together into one organisation. It is noted that a submission had been provided by the former Roads & Maritime Services and this letter represents the additional response of the new organisation.

The Transport Impact Assessment in support of the subject SSD has been reviewed and the comments are outlined as follows:

- *Proposed drop off and pick up (DOPU) facilities on O'Keefe Drive should give consideration to the role and function of O'Keefe Drive as identified in the DCP of Catherine Fields (Part) Precinct.*
- *Advice to be considered informing the final Green Travel Plan that is recommended to be in place prior to the issue of an Occupation Certificate.*

These comments have been expanded upon and are provided in TAB A. Suggested draft conditions are provided in TAB B.

Thank you again for the opportunity of providing advice for the above development application. If you require any further information, please don't hesitate to contact Billy Yung, Senior Transport Planner, via email at billy.yung@transport.nsw.gov.au. I hope this has been of assistance.).

Ason Group Response (EU 7)

Noted and discussed below.

EU 7a

The TIA report suggests that the proposed DOPU zone will be managed and time restricted to maximum 2 minutes. The report also acknowledges that a longer average standing time is required in the PM school peak as parents/carers would normally arrive prior to the end of school to wait for the students. It is evident that the analysis of DOPU movements is based on a 2-minute usage time over a 45 minute period without considering the demand of parents/carers waiting prior to end of school. It is also commonly observed at primary schools that some short-term parking demand would be generated by parents/carers of younger students who would stay till start of school in the AM school peak.

Recommendation

Further analysis should be provided in assessing the drop-off/pick-up demand, including short-term parking demand, around the school site and identify practical measures to alleviate the impact if necessary.

Ason Group Response (EU 7a)

The provision of DOPU spaces in Road 610 could provide the capacity required to accommodate peak demand, with an estimated peak queue of 33 vehicles, or a length of approximately 200m. This queue could be accommodated in Road 610 Street adjacent to the School, feeding DOPU spaces in the southern end of O'Keefe Drive adjacent to the School.#

The PM pick-up period is spread more than the AM due to staggered finish times, generates less traffic due to after hours school care and co-curricular activities, and does not align with the network peak. Therefore, queuing in the PM will be less than the AM.

Dwell times in the DOPUZ are subject to the Australian Road Rules no standing parking rule. Under the no parking rule, motorists cannot stop for longer than two minutes and cannot move more than three metres from their vehicle. These times have been used in calculating the requirements for the DOPUZ and the timing will be managed in the school's Traffic and Pedestrian Management Plan and enforced the same as all existing kerbside parking restrictions.

EU 7b

Construction Traffic Impact Comment

A high-level Construction Traffic Management Plan (CTMP) has been provided. Details in relation to swept path of the largest vehicles entering and exiting the site (in a forward direction) should be included.

Recommendation

Swept path analysis detailing the above comment should be included in the Response to Submissions.

Ason Group Response (EU 7b)

A swept path analysis is provided in Attachment A.

EU 7c

Bicycle Parking Comment

There is no indication of how many bicycle parking spaces will be provided for the proposed development.

Recommendation

The provision of bicycle parking rates should be considered in line with those outlined in the Cycling Aspects to Austroads Guidelines Appendix I. In addition, the proposed future use of the school hall and construction of a supporting car park to cater for over 450 visitors should include the provision of additional bicycle parking to further encourage residents/visitors to walk and cycle to the facility.

Ason Group Response (EU 7c)

Table H1 in Cycling Aspects of Austroads Guides (CAAG) gives an indication of the levels of bicycle parking needed to be provided for various land uses. These bicycle parking provision rates may be used to provide guidance if local standards or data are not available. It should be noted that the application of these types of provision rates needs to be undertaken with caution as local circumstances may often render them inappropriate. The bicycle parking provision required for primary schools from CAAG is 1 per 5 students over year 4. Accordingly, a suitable provision is considered between approximately 70 bicycle racks for students and staff, along with end of journey facilities including showers and lockers.

Provision of 45 additional bicycle racks to accommodate 10% of the proposed 450 visitors to the hall is considered acceptable.

EU 7d

Green Travel Plan Comment

A framework Green Travel Plan (GTP) has been prepared in associated with the transport assessment. The following items should be further considered:

• include a Transport Access Guide to staff, students and parent/carers about the range of travel modes, access arrangements and supporting facilities that service the site;

• identify which party is responsible for the delivery of each action in the GTP and advise when each action will be delivered;

• analyse the likely travel origins and modes of travel based on the school catchment and aggregate residential post code analysis of enrolled students, once known;

• liaise with TfNSW about any proposed transport service improvements in the area and/or the need for any additional services that may be required, based on the projected demand identified above.

Recommendation

Prior to the issue of an Occupation Certificate, the applicant prepare a comprehensive Travel Plan (or amend and expand the existing framework GTP) in consultation with TfNSW to address the above..

Ason Group Response (EU 7d)

It is expected that the provision of a TAG would be included as a Condition of Consent and developed once the required data is available.

EU 7e

School Zone signs and associated markings

The applicant must obtain written authorisation from Transport for NSW (TfNSW) to install School Zone signs and associated pavement markings, and/or remove/relocate any existing Speed Limit signs. To obtain authorisation, the applicant must submit the following for review and approval by TfNSW, at least eight (8) weeks prior to student occupation of the site:

a. A copy of development Conditions of Consent

b. The proposed school commencement/opening date

c. Two (2) sets of detailed design plans showing the following:

i. School property boundaries

ii. All adjacent road carriageways to the school property

iii. All proposed school access points to the public road network and any conditions imposed/proposed on their use

iv. All existing and proposed pedestrian crossing facilities on the adjacent road network

v. All existing and proposed traffic control devices and pavement markings on the adjacent road network (including School Zone signs and pavement markings).

vi. All existing and proposed street furniture and street trees.

School Zone signs and pavement marking patches must be removed and installed in accordance with TfNSW approval/authorisation, guidelines and specifications. All School Zone signs and pavement markings must be installed prior to student occupation of the site. The applicant must maintain records of all dates in relation to installing, altering, removing traffic control devices related to speed.

Following installation of all School Zone signs and pavement markings the applicant must arrange an inspection with TfNSW for formal handover of the assets to TfNSW. The installation date information must also be provided to Transport for NSW at the same time.

Note: Until the assets are formally handed-over and accepted by TfNSW, TfNSW takes no responsibility for the School Zones/assets.

Reason for condition

A significant number of vehicles and pedestrians will access the site at the start and end of the school day. School Zones must be installed along all roads with a direct access point (either pedestrian or vehicular) from the school. School Zones must not to be provided along roads adjacent to the school without a direct access point. Road Safety precautions and parking zones should be incorporated into the neighbouring local road network and 40km/hr School Zones are to be installed in accordance with the conditions above. The consent

authority should ensure that parking, drop-off and pick-up zones and bus zones are incorporated in accordance with TfNSW standards. TfNSW is responsible for speed management along all public roads within the state of New South Wales. That is, TfNSW is the only authorised organisation that can approve speed zoning changes and authorise installation of speed zoning traffic control devices on the road network within New South Wales.

Ason Group Response (EU 7e)

Noted and acknowledge that this post-determination process would be included as a Condition of Consent.

EU 7f

Car Parking

The layout of the proposed car parking areas associated with the subject development (including, driveways, grades, turn paths, sight distance requirements in relation to landscaping and/or fencing, aisle widths, aisle lengths, and parking bay dimensions) should be in accordance with AS 2890.1- 2004, AS2890.6-2009 and AS 2890.2 – 2002 for heavy vehicle usage.

Ason Group Response (EU 7f)

All access, parking and servicing areas have been designed with reference to the appropriate Australian Standards, and specifically AS 2890.1 and AS 2890.6 (with regard to access driveways and parking modules) and AS 2890.2 (with regard to service vehicles). It is expected that a Condition of Consent in any future approval will require that the final design provide full compliance with the Australian Standards, which would provide for any minor design revisions that may arise through to construction commencing.

The swept path analysis in Attachment B has been conducted using the largest proposed design vehicle.

Existing and future off-site infrastructure such as on-street parking lanes and bus capable streets has/will necessarily be constructed in accordance with the requirements of the Camden GCP DCP.

EU 7g

Construction Traffic Management Plan

A Construction Traffic Management Plan detailing construction vehicle routes, number of trucks, hours of operation, access arrangements and traffic control should be submitted to the relevant consent authority for approval prior to the issue of a Construction Certificate.

Swept path of the longest vehicle (including garbage trucks, building maintenance vehicles and removalists) entering and exiting the subject site, as well as manoeuvrability through the site, shall be in accordance with AUSTROADS. In this regard, a plan shall be submitted to Council for approval, which shows that the proposed development complies with this requirement..

Ason Group Response (EU 7g)

A detailed Construction Traffic Management Plan detailing construction vehicle routes, number of trucks, hours of operation, access arrangements and traffic control will be submitted to the relevant consent authority for approval prior to the issue of a Construction Certificate. It is acknowledged that this would be included as a Condition of Consent.

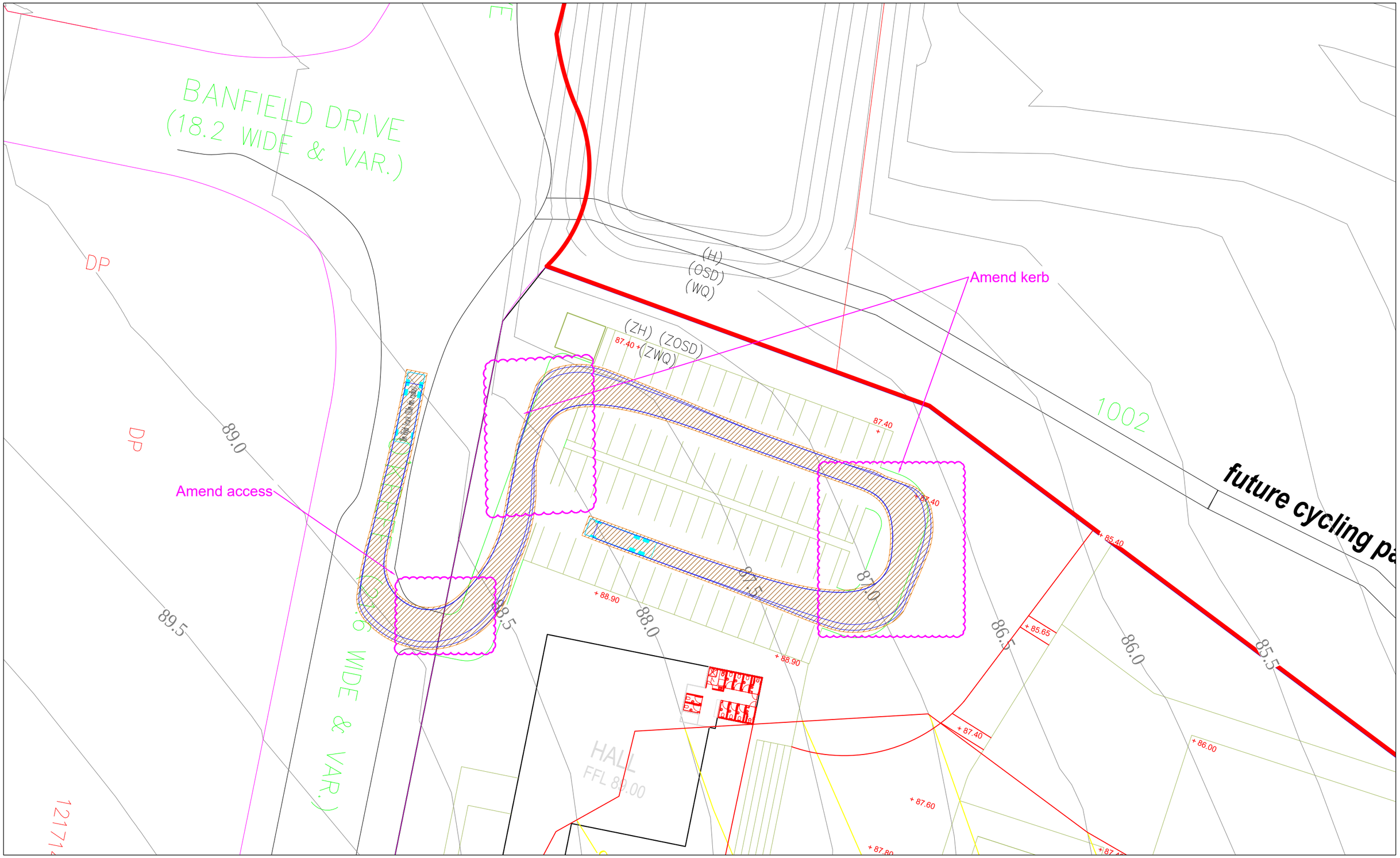
Finally, we trust the above information provides clarification and a greater appreciation of the issues identified in the RRTS. As always, please do not hesitate to contact the undersigned should you require any further information.

Yours sincerely,

Dan Budai
Senior Traffic Engineer – Ason Group
Email: dan.budai@asongroup.com.au

Attachment A

Swept Path Analysis



Notes:
This drawing is provided for information purposes only and should not be used for construction.

Document Info:
Drawn by: Rebecca BMadden
File name: 1047 Servcing Access.dwg

Client:
Hansen Yucken

Project:
1047
Catherine Field Primary School

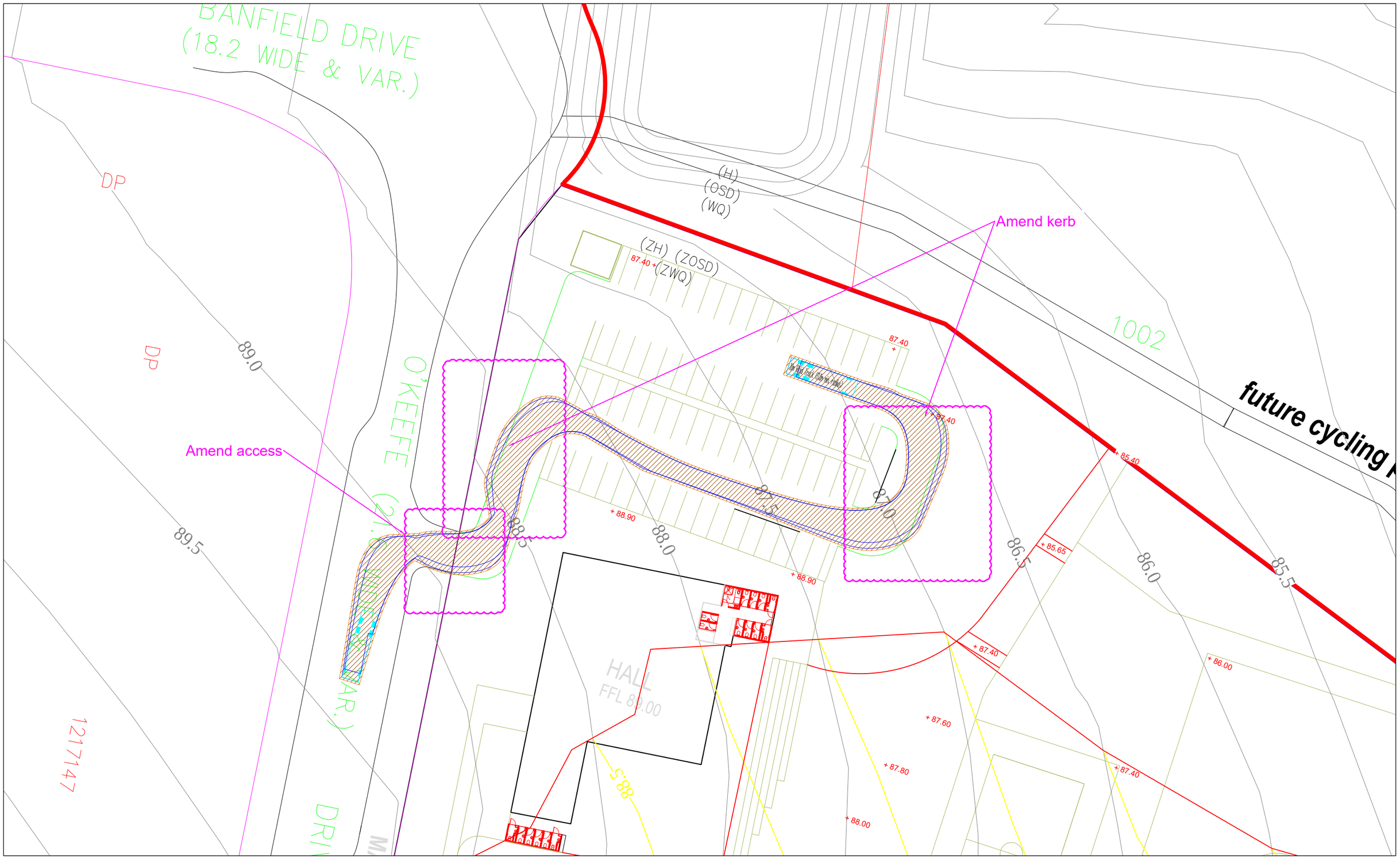
Drawing Title:
Swept Path Analysis
10m Waste Truck Entry

Date:
27/06/2019

Scale @ A3:
1:500

Drawing Number:
AG 01

asongroup
Suite 5.02, Level 5, 1 Castlereagh Street
Sydney NSW 2000
info@asongroup.com.au



Notes:

This drawing is provided for information purposes only and should not be used for construction.

Document Info:
Drawn by: Rebecca BMadden
File name: 1047 Servcing Access.dwg

Client:
Hansen Yucken

Project:
1047
Catherine Field Primary School

Drawing Title:
Swept Path Analysis
10m Waste Truck Exit

Date:
27/06/2019

Scale @ A3:
1:500

Drawing Number:
AG 02

asongroup
Suite 5.02, Level 5, 1 Castlereagh Street
Sydney NSW 2000
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Marco Beretta

From: Paul Todhunter
Sent: Tuesday, 16 June 2020 12:18 PM
To: Marco Beretta
Subject: FW: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions
Attachments: C2.0 (5) - Public Liability.zip; C2.0 (10) - Traffic Management Plan.zip; C2.0 (12) - Construction Noise Management Plan.zip; C2.0 (1) - Stormwater Detention and Water Quality.zip; C2.0 (2) Soil, Erosion, Sediment and Water Management.zip; C2.0 (11) - Environmental Management Plan.zip

Regards,

Paul Todhunter
Project Manager

HANSENYUNCKEN

Hansen Yuncken Pty Ltd
Sydney Corporate Park
Building 1, L3, 75-85 O'Riordan Street
Alexandria NSW 2015
PO Box 7002 Alexandria NSW 2015
ptodhunter@hansenyuncken.com.au
T 02 9770 7600 M 0400 841 276
hansenyuncken.com.au

From: Paul Todhunter
Sent: Friday, 1 May 2020 7:43 AM
To: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Cc: James Arnold <James.Arnold@rpsgroup.com.au>; Daniel Cini <Daniel.Cini@tsamgt.com>; Sarah Ng <Sarah.Ng@rpsgroup.com.au>; Lee Moran <LMoran@hansenyuncken.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Good morning Jordan,

I am with Hansen Yuncken and will be undertaking the works under the Early Works Development Application for Catherine Field Public School.

I have attached a few documents for your review and approval to satisfy the below listed conditions. I will send through the remainder of the *'2.0 Prior to Commencement of Works'* conditions progressively.

I also have a few questions regarding some of the conditions and the process in general which I have listed below. If you are able to review these items and provide clarification it would be appreciated.

Thanks, and please feel free to contact me any time by email or Mobile: 0400 841 276.

Attached Conditions for Review and Approval

- 2.0 (1) Stormwater Detention and Water Quality
- 2.0 (2) Soil, Erosion, Sediment and Water Management
- 2.0 (5) Public Liability Insurance
- 2.0 (10) Traffic Management Plan
- 2.0 (11) Environmental Management Plan
- 2.0 (12) Construction Noise Management Plan

Questions on Conditions

1. In regard to item 2.0 (1) 'Stormwater Detention and Water Quality'. The final solution for the development is for the storm water detention and quality to be managed on the adjacent site and therefore will not be a construction feature of this development. For these works appropriate Sediment and Erosion Controls are to be in place during construction to manage stormwater runoff – particularly during earthworks operations. I have also attached our Stormwater Design Report for the Early Works. Can you please confirm that this is sufficient?
2. For item 3.0 (20) 'Acoustic Hoarding Barrier' are we able to commence the erection of the hoarding now, or do we need to wait for DA approval before we can start?
3. For item 2.0 (3) 'Works in Road Reserves' we will not be cutting into the asphalt road at this stage however, for our temporary site access driveways we will be stripping a portion of the nature strip and placing and compacting road base to provide the temporary driveway. Do we require a road opening permit for these works?
4. My understanding is that we do not require a Construction Certificate, Crown Certificate, Private Certifier approval or the like as this has not been listed in the Conditions. My understanding is that once Council confirm that we have satisfied all of the items listed under 2.0 the Council will provide DA approval and we can commence works. Can you please confirm that this is correct?

Regards,

Paul Todhunter
Project Engineer

HANSENYUNCKEN

Hansen Yuncken Pty Ltd
Sydney Corporate Park

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From: Sarah Ng <Sarah.Ng@rpsgroup.com.au>
Sent: Thursday, 30 April 2020 4:02 PM
To: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Cc: James Arnold <James.Arnold@rpsgroup.com.au>; Paul Todhunter <PTodhunter@hansenyuncken.com.au>; Daniel Cini <Daniel.Cini@tsamgt.com>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Thanks Jordan. I have looped in Paul Todhunter who will be in contact with you.

Sarah

Sarah Ng
Planner
RPS | Australia Asia Pacific
T +61 2 8099 3200
E sarah.ng@rpsgroup.com.au

From: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Sent: Thursday, 30 April 2020 2:46 PM
To: Sarah Ng <Sarah.Ng@rpsgroup.com.au>
Cc: James Arnold <James.Arnold@rpsgroup.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Sarah,

Not a problem, feel free to pass my email/number on to the contractor.

Thanks,
Jordan

Jordan Soldo
Senior Town Planner

70 Central Avenue, Oran Park, 2570
(02) 4654 7613
www.camden.nsw.gov.au
PO Box 183, Camden NSW 2570
Jordan.Soldo@camden.nsw.gov.au

From: Sarah Ng <Sarah.Ng@rpsgroup.com.au>
Sent: Thursday, 30 April 2020 12:52 PM
To: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Cc: James Arnold <James.Arnold@rpsgroup.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Jordan Soldo,

The construction contractor had a few queries, do you mind if I share your contact details with him directly to ensure that their requests are clearly communicated across?

Let us know and I can e-introduce you?
Sarah

Sarah Ng
Planner
RPS | Australia Asia Pacific
T +61 2 8099 3200
E sarah.ng@rpsgroup.com.au

From: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Sent: Thursday, 30 April 2020 8:45 AM
To: Sarah Ng <Sarah.Ng@rpsgroup.com.au>

Cc: James Arnold <James.Arnold@rpsgroup.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Sarah,

I have attached the approved stamped plans and consent which were uploaded to the planning portal on 27/04.

Feel free to call/email if you have any questions.

Kind regards,

Jordan Soldo
Senior Town Planner

70 Central Avenue, Oran Park, 2570
PO Box 183, Camden NSW 2570
(02) 4654 7613
Jordan.Soldo@camden.nsw.gov.au
www.camden.nsw.gov.au

From: Sarah Ng <Sarah.Ng@rpsgroup.com.au>
Sent: Wednesday, 29 April 2020 2:16 PM
To: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Cc: James Arnold <James.Arnold@rpsgroup.com.au>
Subject: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Jordan

Hope you are well.

Maxim Evans unfortunately no longer works with us at RPS.

I understand Maxim was the applicant on this project and we were expecting final conditions from Council for DA 2019/928/1 – Lot 1001 DP 1234527 (O'Keefe Drive, Oran Park). Would you please be able to share them with James and I so we can forward onto School Infrastructure NSW?

Look forward to hearing from you
Sarah

Sarah Ng
Planner
RPS | Australia Asia Pacific
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Sydney NSW 2000, Australia
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D +61 2 8270 8335
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In response to COVID-19, RPS has adapted the way we work to ensure we remain connected with you and our colleagues, and continue to deliver good work.

We recognise that the months ahead will pose challenges for many of our clients and partners. We're here to help in any way we can. While COVID-19 might separate us physically in the short term, please know that we're here, we're with you and we're stronger together.

If you need support or would like to discuss your forward looking priorities, please get in touch. You can continue to contact me in the usual ways via phone and email, or we can set up a virtual meeting.

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Marco Beretta

From: Paul Todhunter
Sent: Tuesday, 16 June 2020 12:15 PM
To: Marco Beretta
Subject: FW: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Regards,

Paul Todhunter
Project Manager

HANSENYUNCKEN

Hansen Yuncken Pty Ltd
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PO Box 7002 Alexandria NSW 2015
ptodhunter@hansenyuncken.com.au
T 02 9770 7600 M 0400 841 276
hansenyuncken.com.au

From: Paul Todhunter
Sent: Friday, 15 May 2020 4:08 PM
To: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Thank you Jordan.

I appreciate the below response.

Regards,

Paul Todhunter
Project Manager

HANSENYUNCKEN

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T 02 9770 7600 M 0400 841 276
hansenyuncken.com.au

From: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Sent: Friday, 15 May 2020 3:35 PM
To: Paul Todhunter <PTodhunter@hansenyuncken.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Paul,

I've received and filed the following documents:

- Zoic letter, prepared by TSA, dated 11 May 2020;
- Waste Classification Certificate, prepared by Eiaustralia, dated 11 March 2020;
- Geotechnical Endorsement Proposed Imported Fill Material Catherine Field Public School, Prepared by JK Geotechnics, Dated 12 May 2020;
- Salinity Testing Shale Material, Prepared by Environmental Consulting Services, dated 11 May 2020.

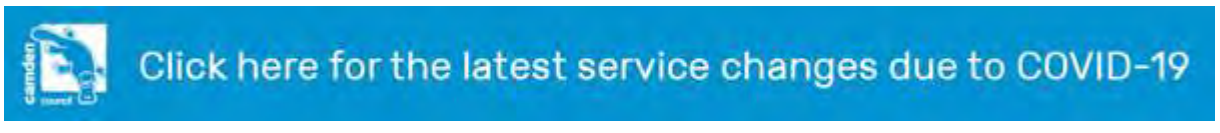
As discussed, Council's EHO has reviewed the level of testing carried out and can advise that the consent requires a minimum testing regime of 1 test per 1000m3 of material to be imported. If the waste classification only refers to 10 test pits (samples) then only 10000m3 of material can be imported. Specifically only the material that is the subject of the testing. If there is a requirement to bring additional material then additional testing will be required.

The salinity results have also been reviewed to check compliance with the salinity management plan provided for the site and conditioned in the consent. The results indicate that salinity in the fill material will be managed by the SMP.

Kind regards,

Jordan Soldo
Senior Town Planner

70 Central Avenue, Oran Park, 2570
(02) 4654 7613
www.camden.nsw.gov.au
PO Box 183, Camden NSW 2570
Jordan.Soldo@camden.nsw.gov.au



From: Paul Todhunter <PTodhunter@hansenyuncken.com.au>
Sent: Friday, 15 May 2020 10:11 AM
To: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Cc: Council Mailbox <Council.Mailbox@camden.nsw.gov.au>; 'Gavin Ng' <gavin.ng4@det.nsw.edu.au>; 'Lincoln Lawler' <Lincoln.lawler@det.nsw.edu.au>; 'Sarah Ng' <Sarah.Ng@rpsgroup.com.au>; 'Robert McKnight' <Robert.McKnight@tsamgt.com>; 'Daniel Cini' <Daniel.Cini@tsamgt.com>; Kevin Gomez <KGomez@hansenyuncken.com.au>; Council Mailbox <Council.Mailbox@camden.nsw.gov.au>; Andrew Baker <ABaker@hansenyuncken.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Jordan,

As discussed please see the attached correspondence from the site Auditor who has reviewed our proposed material and confirmed that it is acceptable for use at Catherine Field.

Can you please advise if this is sufficient?

Regards,

Paul Todhunter
Project Manager

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T 02 9770 7600 M 0400 841 276
hansenyuncken.com.au

From: Paul Todhunter
Sent: Wednesday, 13 May 2020 12:22 PM
To: 'Jordan Soldo' <Jordan.Soldo@camden.nsw.gov.au>
Cc: 'Council.Mailbox@camden.nsw.gov.au' <Council.Mailbox@camden.nsw.gov.au>; 'Gavin Ng' <gavin.ng4@det.nsw.edu.au>; 'Lincoln Lawler' <Lincoln.lawler@det.nsw.edu.au>; 'Sarah Ng' <Sarah.Ng@rpsgroup.com.au>; 'Robert McKnight' <Robert.McKnight@tsamgt.com>; 'Daniel Cini' <Daniel.Cini@tsamgt.com>; Kevin Gomez <KGomez@hansenyuncken.com.au>; 'mail@camden.nsw.gov.au' <mail@camden.nsw.gov.au>; Andrew Baker <ABaker@hansenyuncken.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Jordan,

As discussed please see the attached information on the Fill Material (VENM) to be imported to the site in accordance with Condition 3.0 (14).

Information regarding the classification (VENM), salinity characteristics and confirmation from a practicing engineer in accordance with the condition have been provided.

Can you please advise if you require anything further.

Thanks.

Regards,

Paul Todhunter
Project Manager

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ptodhunter@hansenyuncken.com.au
T 02 9770 7600 M 0400 841 276
hansenyuncken.com.au

From: Paul Todhunter
Sent: Wednesday, 6 May 2020 5:54 PM
To: 'Jordan Soldo' <Jordan.Soldo@camden.nsw.gov.au>
Cc: 'Council.Mailbox@camden.nsw.gov.au' <Council.Mailbox@camden.nsw.gov.au>; 'Gavin Ng' <gavin.ng4@det.nsw.edu.au>; 'Lincoln Lawler' <Lincoln.lawler@det.nsw.edu.au>; 'Sarah Ng' <Sarah.Ng@rpsgroup.com.au>; 'Robert McKnight' <Robert.McKnight@tsamgt.com>; 'Daniel Cini' <Daniel.Cini@tsamgt.com>; Kevin Gomez <KGomez@hansenyuncken.com.au>; 'mail@camden.nsw.gov.au' <mail@camden.nsw.gov.au>; Andrew Baker <ABaker@hansenyuncken.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Jordan,

Further to the below please see the attached Bank Guarantee and completed bond lodgment form for the damages bond.

Can you please review the attached and advise if there are any issues.

Regards,

Paul Todhunter
Project Manager

HANSENYUNCKEN

Hansen Yuncken Pty Ltd
Sydney Corporate Park
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Alexandria NSW 2015
PO Box 7002 Alexandria NSW 2015
ptodhunter@hansenyuncken.com.au
T 02 9770 7600 M 0400 841 276
hansenyuncken.com.au

From: Paul Todhunter
Sent: Wednesday, 6 May 2020 1:51 PM
To: 'Jordan Soldo' <Jordan.Soldo@camden.nsw.gov.au>
Cc: Council.Mailbox@camden.nsw.gov.au; Gavin Ng <gavin.ng4@det.nsw.edu.au>; Lincoln Lawler <Lincoln.lawler@det.nsw.edu.au>; 'Sarah Ng' <Sarah.Ng@rpsgroup.com.au>; Robert McKnight <Robert.McKnight@tsamgt.com>; Daniel Cini <Daniel.Cini@tsamgt.com>; Kevin Gomez <KGomez@hansenyuncken.com.au>; mail@camden.nsw.gov.au; Andrew Baker <ABaker@hansenyuncken.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Jordan,

Following our conversation earlier please see the attached completed road works application for the temporary construction access ways into the site.

I believe that someone from the Council will call me to organize payment.

If there are any issues please let me know.

Thanks.

Regards,

Paul Todhunter
Project Manager

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hansenyuncken.com.au

From: Paul Todhunter
Sent: Wednesday, 6 May 2020 9:39 AM
To: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Thanks Jordan,

Did you happen to look into whether we are required to submit a Driveway Application form to Council for the temporary access ways into our site?

The temp driveways are only required during construction and will be removed before the end of the project. We would preferably use concrete for these driveways and as they are not permanent it would be our preference not to have to submit the formal application and construct the driveways in accordance with the Council engineering requirements, etc.

If you could please advise whether we need to submit the form it would be appreciated. If we are required to submit the form and construct the driveway in accordance with the Council engineering specifications, are we able to have a temporary driveway constructed out of road base or similar into the site while we are waiting for the approval and construction of the official temporary driveway? As at the moment we have no access into the site and this is a big challenge for us.

Thanks.

Regards,

Paul Todhunter
Project Manager

HANSENYUNCKEN

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PO Box 7002 Alexandria NSW 2015
ptodhunter@hansenyuncken.com.au
T 02 9770 7600 M 0400 841 276
hansenyuncken.com.au

From: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Sent: Tuesday, 5 May 2020 2:32 PM
To: Paul Todhunter <PTodhunter@hansenyuncken.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Paul,

As discussed, the capital investment value figure that was provided for this application was $610,177.00.

Kind regards,

Jordan Soldo
Senior Town Planner

70 Central Avenue, Oran Park, 2570
(02) 4654 7613
www.camden.nsw.gov.au
PO Box 183, Camden NSW 2570
Jordan.Soldo@camden.nsw.gov.au

From: Paul Todhunter <PTodhunter@hansenyuncken.com.au>
Sent: Friday, 1 May 2020 7:43 AM
To: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Cc: James Arnold <James.Arnold@rpsgroup.com.au>; Daniel Cini <Daniel.Cini@tsamgt.com>; Sarah Ng <Sarah.Ng@rpsgroup.com.au>; Lee Moran <LMoran@hansenyuncken.com.au>
Subject: EDMS: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Good morning Jordan,

I am with Hansen Yuncken and will be undertaking the works under the Early Works Development Application for Catherine Field Public School.

I have attached a few documents for your review and approval to satisfy the below listed conditions. I will send through the remainder of the *'2.0 Prior to Commencement of Works'* conditions progressively.

I also have a few questions regarding some of the conditions and the process in general which I have listed below. If you are able to review these items and provide clarification it would be appreciated.

Thanks, and please feel free to contact me any time by email or Mobile: 0400 841 276.

Attached Conditions for Review and Approval

- 2.0 (1) Stormwater Detention and Water Quality
- 2.0 (2) Soil, Erosion, Sediment and Water Management
- 2.0 (5) Public Liability Insurance
- 2.0 (10) Traffic Management Plan

- 2.0 (11) Environmental Management Plan
- 2.0 (12) Construction Noise Management Plan

Questions on Conditions

1. In regard to item 2.0 (1) 'Stormwater Detention and Water Quality'. The final solution for the development is for the storm water detention and quality to be managed on the adjacent site and therefore will not be a construction feature of this development. For these works appropriate Sediment and Erosion Controls are to be in place during construction to manage stormwater runoff – particularly during earthworks operations. I have also attached our Stormwater Design Report for the Early Works. Can you please confirm that this is sufficient?
2. For item 3.0 (20) 'Acoustic Hoarding Barrier' are we able to commence the erection of the hoarding now, or do we need to wait for DA approval before we can start?
3. For item 2.0 (3) 'Works in Road Reserves' we will not be cutting into the asphalt road at this stage however, for our temporary site access driveways we will be stripping a portion of the nature strip and placing and compacting road base to provide the temporary driveway. Do we require a road opening permit for these works?
4. My understanding is that we do not require a Construction Certificate, Crown Certificate, Private Certifier approval or the like as this has not been listed in the Conditions. My understanding is that once Council confirm that we have satisfied all of the items listed under 2.0 the Council will provide DA approval and we can commence works. Can you please confirm that this is correct?

Regards,

Paul Todhunter
Project Engineer

HANSENYUNCKEN

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PO Box 7002 Alexandria NSW 2015
ptodhunter@hansenyuncken.com.au
T 02 9770 7600 M 0400 841 276
hansenyuncken.com.au

From: Sarah Ng <Sarah.Ng@rpsgroup.com.au>
Sent: Thursday, 30 April 2020 4:02 PM
To: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Cc: James Arnold <James.Arnold@rpsgroup.com.au>; Paul Todhunter <PTodhunter@hansenyuncken.com.au>; Daniel Cini <Daniel.Cini@tsamgt.com>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Thanks Jordan. I have looped in Paul Todhunter who will be in contact with you.

Sarah

Sarah Ng
Planner
RPS | Australia Asia Pacific
T +61 2 8099 3200
E sarah.ng@rpsgroup.com.au

From: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Sent: Thursday, 30 April 2020 2:46 PM
To: Sarah Ng <Sarah.Ng@rpsgroup.com.au>
Cc: James Arnold <James.Arnold@rpsgroup.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

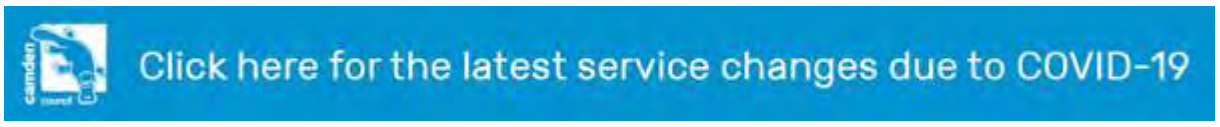
Hi Sarah,

Not a problem, feel free to pass my email/number on to the contractor.

Thanks,
Jordan

Jordan Soldo
Senior Town Planner

70 Central Avenue, Oran Park, 2570
PO Box 183, Camden NSW 2570
(02) 4654 7613
Jordan.Soldo@camden.nsw.gov.au
www.camden.nsw.gov.au



From: Sarah Ng <Sarah.Ng@rpsgroup.com.au>
Sent: Thursday, 30 April 2020 12:52 PM
To: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Cc: James Arnold <James.Arnold@rpsgroup.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Jordan Soldo,

The construction contractor had a few queries, do you mind if I share your contact details with him directly to ensure that their requests are clearly communicated across?

Let us know and I can e-introduce you?
Sarah

Sarah Ng
Planner
RPS | Australia Asia Pacific
T +61 2 8099 3200
E sarah.ng@rpsgroup.com.au

From: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Sent: Thursday, 30 April 2020 8:45 AM
To: Sarah Ng <Sarah.Ng@rpsgroup.com.au>
Cc: James Arnold <James.Arnold@rpsgroup.com.au>
Subject: RE: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Sarah,

I have attached the approved stamped plans and consent which were uploaded to the planning portal on 27/04.

Feel free to call/email if you have any questions.

Kind regards,

Jordan Soldo
Senior Town Planner

70 Central Avenue, Oran Park, 2570
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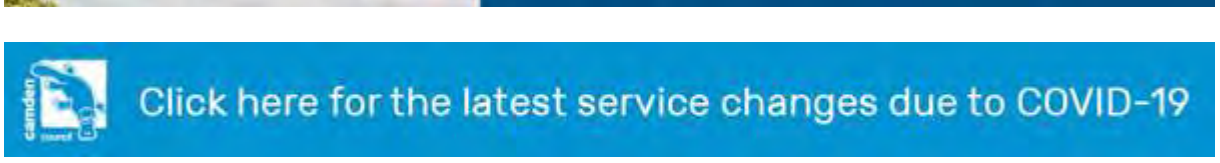

From: Sarah Ng <Sarah.Ng@rpsgroup.com.au>
Sent: Wednesday, 29 April 2020 2:16 PM
To: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>
Cc: James Arnold <James.Arnold@rpsgroup.com.au>
Subject: DA 2019/928/1 - Catherine Field Early Works DA - consent conditions

Hi Jordan

Hope you are well.

Maxim Evans unfortunately no longer works with us at RPS.

I understand Maxim was the applicant on this project and we were expecting final conditions from Council for DA 2019/928/1 – Lot 1001 DP 1234527 (O'Keefe Drive, Oran Park). Would you please be able to share them with James and I so we can forward onto School Infrastructure NSW?

Look forward to hearing from you
Sarah

Sarah Ng
Planner
RPS | Australia Asia Pacific
Level 13, 255 Pitt Street
Sydney NSW 2000, Australia
T +61 2 8099 3200 **F** +61 2 8099 3299
D +61 2 8270 8335
E sarah.ng@rpsgroup.com.au

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We recognise that the months ahead will pose challenges for many of our clients and partners. We're here to help in any way we can. While COVID-19 might separate us physically in the short term, please know that we're here, we're with you and we're stronger together.

If you need support or would like to discuss your forward looking priorities, please get in touch. You can continue to contact me in the usual ways via phone and email, or we can set up a virtual meeting.

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This communication (which includes any attachments) is confidential. If you are not the intended recipient (i.e. you have received this communication in error) you must not use or disclose this communication and we ask that you delete it. Hansen Yuncken Pty Ltd does not guarantee that this communication is virus free.

Marco Beretta

From: Mathew Rawson <Mathew.Rawson@camden.nsw.gov.au>
Sent: Friday, 19 June 2020 12:08 PM
To: Marco Beretta
Cc: Paul Todhunter
Subject: RE: SSD 9477 & SS/2019/3/1 - New Catherine Field Primary School

Hi Marco,

Further to my email below confirming receipt of the 2 Plans. I note that the Construction Traffic and Pedestrian Management Plan outlines that: *"At no time shall parking be permitted on the public roadway."* Council supports this measure to reduce the impact on the adjacent residences.

Additionally it is noted that the opportunity exists to make use of the temporary access to the subdivision site under construction to the east of the site. This is by way of an informal 4th leg off the O'Keefe Drive / Banfield Drive roundabout and also the southern end of O'Keefe Drive. Shared use of these construction access points should be continued where safe to do so and where permitted by the adjoining land owner as this will further reduce impacts on the adjacent residences.

Regards,

Mathew Rawson
Team Leader DA Assessments West

70 Central Avenue, Oran Park, 2570
(02) 4654 7980
www.camden.nsw.gov.au
PO Box 183, Camden NSW 2570
Mathew.Rawson@camden.nsw.gov.au

From: Mathew Rawson
Sent: Friday, 19 June 2020 11:57 AM
To: MBeretta@hansenyuncken.com.au
Cc: PTodhunter@hansenyuncken.com.au
Subject: RE: SSD 9477 & SS/2019/3/1 - New Catherine Field Primary School

Hi Marco,

I can confirm receipt of the Construction Traffic and Pedestrian Management Plan and Construction Soil and Water Management Plan.

However the link to the dilapidation report did not allow access. Please re-send.

Regards,

Mathew Rawson
Team Leader DA Assessments West

70 Central Avenue, Oran Park, 2570
(02) 4654 7980
www.camden.nsw.gov.au
PO Box 183, Camden NSW 2570
Mathew.Rawson@camden.nsw.gov.au

From: Council Mailbox <Council.Mailbox@camden.nsw.gov.au>
Sent: Tuesday, 16 June 2020 3:26 PM
To: Council Mailbox <Council.Mailbox@camden.nsw.gov.au>
Subject: FW: SSD 9477 & SS/2019/3/1 - New Catherine Field Primary School

From: Marco Beretta <MBeretta@hansenyuncken.com.au>
Sent: Tuesday, 16 June 2020 12:05 PM
To: Council Mailbox <Council.Mailbox@camden.nsw.gov.au>
Cc: Jordan Soldo <Jordan.Soldo@camden.nsw.gov.au>; Paul Todhunter <PTodhunter@hansenyuncken.com.au>
Subject: SSD 9477 & SS/2019/3/1 - New Catherine Field Primary School

Hi,

I am writing from Hansen Yuncken who will be undertaking the main works for SSD 9477 (New Catherine Fields Primary School). There are some SSDA conditions that relate to council from both a submission and consultation perspective, which is the purpose of this email. Please refer to the following for a list of items submitted along with the condition numbers they relate to (refer to the attached for the exact condition items):

- **B5 & B6** – the dilapidation report that was completed prior to the commencement of works can be viewed at the following link: https://hansenyuncken-my.sharepoint.com/:f:/g/personal/mberetta_hansenyuncken_com_au/EvR7HqsSYkFBvnvFo8t_NgUBe7Nt4dCuY7WVsVk4IhlrOg?e=X0hKAU
- **B14** – Construction Traffic and Pedestrian Management Plan – an earlier revision of this plan has been submitted on 01 May 2020 as part of the EWDA (email attached) with no return comments. Please refer to the attached for the updated report. Can you advise if there are comments that Council has on these plans by C.O.B. 18 June 2020.
- **B17** – Construction Soil and Water Management Plan – the ESCP was submitted to council on 01 May 2020 as part of the EWDA with no return comments. This has now been incorporated into a Management Plan which is attached for your reference. Can you advise if Council has any comments on these plans by C.O.B. 18 June 2020?

Regards,

Marco Beretta
Site Engineer

Hansen Yuncken Pty Ltd
Sydney Corporate Park (SCP)
Building 1, Level 3
75-85 O'Riordan Street
Alexandria NSW 2015
mberetta@hansenyuncken.com.au
T 02 9770 7614 M 0439 850 357
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Marco Beretta

From: Marco Beretta
Sent: Tuesday, 16 June 2020 12:05 PM
To: 'mail@camden.nsw.gov.au'
Cc: Jordan Soldo; Paul Todhunter
Subject: SSD 9477 & SS/2019/3/1 - New Catherine Field Primary School
Attachments: SSD 9477 - B14 - Construction Traffic & Pedestrian Management Plan - RPT - 04 Jun 2020.pdf; SSD-9477 DRAFT Conditions - Council Extracts.pdf; SSD 9477 - B17 - Soil and Water Management Plan - RPT - 16 Jun 2020.pdf

Hi,

I am writing from Hansen Yuncken who will be undertaking the main works for SSD 9477 (New Catherine Fields Primary School). There are some SSDA conditions that relate to council from both a submission and consultation perspective, which is the purpose of this email. Please refer to the following for a list of items submitted along with the condition numbers they relate to (refer to the attached for the exact condition items):

- **B5 & B6** – the dilapidation report that was completed prior to the commencement of works can be viewed at the following link: https://hansenyuncken-my.sharepoint.com/:f:/g/personal/mberetta_hansenyuncken_com_au/EvR7HqsSYkFBvnvFo8t_NgUBe7Nt4dCuY7WVsVk4IhlrOg?e=X0hKAU
- **B14** – Construction Traffic and Pedestrian Management Plan – an earlier revision of this plan has been submitted on 01 May 2020 as part of the EWDA (email attached) with no return comments. Please refer to the attached for the updated report. Can you advise if there are comments that Council has on these plans by C.O.B. 18 June 2020.
- **B17** – Construction Soil and Water Management Plan – the ESCP was submitted to council on 01 May 2020 as part of the EWDA with no return comments. This has now been incorporated into a Management Plan which is attached for your reference. Can you advise if Council has any comments on these plans by C.O.B. 18 June 2020?

Regards,

Marco Beretta
Site Engineer

HANSENYUNCKEN

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NSW GOVERNMENT Education School Infrastructure

Post Approval Consultation Record

Identified Party to Consult:	Camden Council
Consultation type:	Email correspondence
When is consultation required?	Prior to commencement
Why	B14 – Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) must be prepared to achieve the objective of ensuring safety of the road network and address but not be limited to, the following: (b) Be prepared in consultation with council and TfNSW
When was consultation scheduled/held	9th December 2019, 28th February 2020
When was consultation held	9th December 2019, 28th February 2020
Identify persons and positions who were involved	Mark Ozinga, Principal Manager, Land Use Planning & Development
Provide the details of the consultation	Email correspondences, response to SSD lodgement submissions
What specific matters were discussed?	9th December 2019 - TfNSW recommended that swept path analysis' be undertaken and included within the CTMP - Comment was made that the plan should include details of vehicle routes, hours of operation, access arrangements, traffic control, etc. - To close out the above comments, the recommendation was that the plan be submitted to council for approval 28th February 2020 - Ason issued a technical note addressing the comments made by TfNSW. - It was noted that the CTMP would be developed in consultation with council to addressed the comments made by TfNSW
What matters were resolved?	Swept path analysis was completed for both operation and construction and other comments regarding the application were addressed
What matters are unresolved?	Submission of a CTMP to council
Any remaining points of disagreement?	Nil
How will SINSW address matters not resolved?	HY has consulted with council regarding the development of the CTMP for the SSD main works (refer separate consultation form and correspondence for reference).

David Way
Department of Planning, Industry and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Mr. Way,

New Catherine Field Primary School (SSD 9477)

Thank you for your correspondence via Major Projects Planning portal (ref: PAE-1104) on 8 November 2019, requesting Transport for NSW (TfNSW) to review and comment on the subject State Significant Development (SSD) Application. Legislation came into effect on the 1 December 2019 that brings Roads & Maritime Services and Transport for NSW together into one organisation. This response represents the views of the new organisation.

The Transport Impact Assessment in support of the subject SSD has been reviewed and the comments are outlined as follows:

- Provide details of the future Road 610 and 3301 including design, responsible delivery party, expected completion date and interim accessibility measures (if required), as specified in the issued SEARs.
- Proposed drop off and pick up (DOPU) facilities on O'Keefe Drive should give consideration to the function and characteristic of O'Keefe Drive as identified in the DCP of Catherine Fields (Part) Precinct.

These comments have been expanded upon and are provided in **TAB A** and the recommended conditions of consent are provided in **TAB B**.

Thank you again for the opportunity of providing advice for the above development application. If you require any further information, please don't hesitate to contact Billy Yung, Senior Transport Planner, via email at billy.yung@transport.nsw.gov.au. I hope this has been of assistance.

Yours sincerely

9/12/2019
Mark Ozinga
Principal Manager, Land Use Planning & Development
Customer Strategy and Technology

CD19/09038

TAB A – Detailed Comments on State Significant Application SSD 9477

Future Roads 610 and 3301

Comment

As stipulated in the SEARS, *details of the future Road 610 and 3301 including design, responsible delivery part(ies), expected completion date and interim accessibility measure (if required)* should be provided in the EIS documents. There is inadequate information provided in this regard.

The current proposal provides transport facilities, i.e. DOPU and pedestrian entries that are essential to serve the school site, on these two future roads. It is necessary to provide the aforesaid information in support of the proposal.

Recommendation

The information as requested in the SEARs should be provided as part of the Response to Submissions for further assessment.

Proposed transport facilities on O'Keefe Road

Comment

As shown in the Development Control Plan (DCP) and Indicative Layout Plan (ILP) of Catherine Fields (Part) Precinct, O'Keefe Drive is identified as a major collector road within the precinct with proposed regional or district bus routes. The current proposal indicates several facilities, i.e. car park access, DOPU and school bus bays, to be provided at the school frontage on O'Keefe Drive.

Recommendation

Further consideration should be given to the functionality of O'Keefe Drive, in particular:

- School car park access is going through the indented parking lane. Clarification should be provided on how this access will be managed in relation to the parking lane which has already be built on site.
- Impact of DOPU activities during school peak hours occurring on key collector road with (future) regular bus services operating on it.
- Pedestrian connectivity in relation to accessing (future) bus stops on both sides of O'Keefe Drive, having regard to the school traffic and DOPU activities during school peak hours, should be further reviewed in respect to road safety.

DOPU demand

Comment

The TIA report suggests that the proposed DOPU zone will be managed and time restricted to maximum 2 minutes. The report also acknowledges that a longer average standing time is required in the PM school peak as parents/carers would normally arrive prior to the end of school to wait for the students. It is evident that the analysis of DOPU movements is based on a 2-minute usage time over a 45 minute period without considering the demand of parents/carers waiting prior to end of school. It is also commonly observed at primary schools that some short-term parking demand would be generated by parents/carers of younger students who would stay till start of school in the AM school peak.

Recommendation

Further analysis should be provided in assessing the drop-off/pick-up demand, including short-term parking demand, around the school site and identify practical measures to alleviate the impact if necessary.

Transport operation

Comment

The statement of "*This queue could be accommodated in Road 610 Street adjacent to the School, feeding DOPU spaces in the southern end of O'Keefe Drive adjacent to the School*." is noted.

Notwithstanding the earlier comment regarding DOPU demand, the above statement would mean DOPU traffic would first arrive on Road 610 for queuing and once school ends, make a U-turn on Road 610 and right turning onto O'Keefe Drive, U-turn at the roundabout on Benfield Drive to access the DOPU on the southbound of O'Keefe.

Recommendation

Further consideration should be provided to the practicality of such operations which would create significant circulation traffic. If the proposed operation is in place, clarification is needed on whether the traffic impact has taken into account this circulation traffic at the two assessed intersections. O'Keefe Drive will have regular bus service operation (including bus stops) and it is identified as a key collector road in the Catherine Fields (Part) Precinct ILP and DCP, which needs to be considered.

Traffic impact assessment

Comment

It is noted in Section 6.1.2 of the TIA report that only future intersection performance is shown.

Recommendation

A comparison of pre-development and post-development of intersection performance should be included in the TIA report to determine the impacts of the proposed development on the surrounding road network.

Construction traffic impact

Comment

A high-level Construction Traffic Management Plan (CTMP) has been provided. Details in relation to swept path of the largest vehicles entering and exiting the site (in a forward direction) should be included.

Recommendation

Swept path analysis detailing the above comment should be included in the Response to Submissions. The analysis should also be submitted for intersections involving O'Keefe Drive, Oran Park Drive, Peter Brock Drive, Camden Valley Way and the Northern Road.

TAB A – Detailed Comments on State Significant Application SSD 9477

Green Travel Plan

Comment

A framework Green Travel Plan (GTP) has been prepared in associated with the transport assessment. The following items should be further considered:

- include a Transport Access Guide to staff, students and parent/carers about the range of travel modes, access arrangements and supporting facilities that service the site;
- identify which party is responsible for the delivery of each action in the GTP and advise when each action will be delivered;
- analyse the likely travel origins and modes of travel based on the school catchment and aggregate residential post code analysis of enrolled students, once known;
- liaise with TfNSW about any proposed transport service improvements in the area and/or the need for any additional services that may be required, based on the projected demand identified above.

Recommendation

Prior to the issue of an Occupation Certificate, the applicant should prepare a comprehensive Travel Plan (or amend and expand the existing framework GTP) in consultation with TfNSW to address the above.

School Zone signs and associated markings

The applicant must obtain written authorisation from Transport for NSW (TfNSW) to install School Zone signs and associated pavement markings, and/or remove/relocate any existing Speed Limit signs. To obtain authorisation, the applicant must submit the following for review and approval by TfNSW, at least eight (8) weeks prior to student occupation of the site:

a. A copy of development Conditions of Consent
b. The proposed school commencement/opening date
c. Two (2) sets of detailed design plans showing the following:
    i. School property boundaries
    ii. All adjacent road carriageways to the school property
    iii. All proposed school access points to the public road network and any conditions imposed/proposed on their use
    iv. All existing and proposed pedestrian crossing facilities on the adjacent road network
    v. All existing and proposed traffic control devices and pavement markings on the adjacent road network (including School Zone signs and pavement markings).
    vi. All existing and proposed street furniture and street trees.

School Zone signs and pavement marking patches must be removed and installed in accordance with TfNSW approval/authorisation, guidelines and specifications. All School Zone signs and pavement markings must be installed prior to student occupation of the site. The applicant must maintain records of all dates in relation to installing, altering, removing traffic control devices related to speed.

Following installation of all School Zone signs and pavement markings the applicant must arrange an inspection with TfNSW for formal handover of the assets to TfNSW. The installation date information must also be provided to Transport for NSW at the same time.

Note: Until the assets are formally handed-over and accepted by TfNSW, TfNSW takes no responsibility for the School Zones/assets.

Reason for condition

A significant number of vehicles and pedestrians will access the site at the start and end of the school day. School Zones must be installed along all roads with a direct access point (either pedestrian or vehicular) from the school. School Zones must not to be provided along roads adjacent to the school without a direct access point. Road Safety precautions and parking zones should be incorporated into the neighbouring local road network and 40km/hr School Zones are to be installed in accordance with the conditions below. The consent authority should ensure that parking, drop-off and pick-up zones and bus zones are incorporated in accordance with TfNSW standards. TfNSW is responsible for speed management along all public roads within the state of New South Wales. That is, TfNSW is the only authorised organisation that can approve speed zoning changes and authorise installation of speed zoning traffic control devices on the road network within New South Wales.

Car Parking

The layout of the proposed car parking areas associated with the subject development (including, driveways, grades, turn paths, sight distance requirements in relation to landscaping and/or fencing, aisle widths, aisle lengths, and parking bay dimensions) should be in accordance with AS 2890.1- 2004, AS2890.6-2009 and AS 2890.2 – 2002 for heavy vehicle usage.

Construction Traffic Management Plan

A Construction Traffic Management Plan detailing construction vehicle routes, number of trucks, hours of operation, access arrangements and traffic control should be submitted to the relevant consent authority for approval prior to the issue of a Construction Certificate.

Swept path of the longest vehicle (including garbage trucks, building maintenance vehicles and removalists) entering and exiting the subject site, as well as manoeuvrability through the site, shall be in accordance with AUSTROADS. In this regard, a plan shall be submitted to Council for approval, which shows that the proposed development complies with this requirement.

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Suite 5.02, Level 5, 1 Castlereagh Street
Sydney, NSW 2000
www.asongroup.com.au

TECHNICAL NOTE

Reference: P1047t03v01

28 February 2020

Hansen Yuncken
Bldg 1, L3, 75-85 O'Riordan Street
Alexandria NSW 2015

Attention: Paul Nelson

Response to Submissions

New Catherine Field Public School, O'Keefe Drive, Oran Park (SSD 9477)

Dear Paul,

I refer to recent correspondence in regard to the issues raised in the submission received in relation to the proposed New Public School, O'Keefe Drive, Oran Park SSD-9477 (the Proposal), and specifically the recent submission prepared Mark Ozinger, Transport for NSW (TfNSW RTS).

The sections below provide a summary of the relevant issues raised in the response to the submission and the Ason Group response to each issue. In preparing these responses, Ason Group has referenced the following documents:

- Ason Group, *Transport Impact Assessment, New Catherine Field Public School, O'Keefe Drive, Oran Park* (AGTIA); and
- Ason Group, *Construction Traffic Management Plan, New Catherine Field Public School, O'Keefe Drive, Oran Park* (AGCTMP)

Issues have also been labelled with the appropriate Ethos Urban reference number (EU) for ease of cross referencing.

Proposed transport facilities on O'Keefe Road (EU 7i)

As shown in the Development Control Plan (DCP) and Indicative Layout Plan (ILP) of Catherine Fields (Part) Precinct, O'Keefe Drive is identified as a major collector road within the precinct with proposed regional or district bus routes. The current proposal indicates several facilities, i.e. car park access, DOPU and school bus bays, to be provided at the school frontage on O'Keefe Drive.

Recommendation

Further consideration should be given to the functionality of O'Keefe Drive, in particular:

- *School car park access is going through the indented parking lane. Clarification should be provided on how this access will be managed in relation to the parking lane which has already be built on site.*
- *Impact of DOPU activities during school peak hours occurring on key collector road with (future) regular bus services operating on it.*
- *Pedestrian connectivity in relation to accessing (future) bus stops on both sides of O'Keefe Drive, having regard to the school traffic and DOPU activities during school peak hours, should be further reviewed in respect to road safety.).*

Ason Group Response (EU 7i)

The western side of O'Keefe Drive existing residential housing with off- street parking in accordance with the DCP as well as supplementary on street parking. Therefore, it is unreasonable to provide both sides of the road to accommodate their parking requirements. It is assumed that the eastern side of O'Keefe Drive would accommodate the needs of the site on that side. Accordingly—since O'Keefe Drive has been designated as a bus route corridor and as such has been / will be designed in accordance with the appropriate bus standards, including the provision of minimum 3.5m travel lanes and indented bus bays—the indented bus bay on O'Keefe Drive is being provided to accommodate three buses.

In accordance with Section 3 of AS 2890.1, the access to the proposed off-street car park on O'Keefe Drive has been formed in such a way as to be clearly recognised by road users as an access driveway. Additionally, the appearance and character of the driveway is such that it will be clear to vehicle drivers that pedestrians and frontage road traffic have priority of movement.

The Category 2 access is not located in a prohibited location in accordance with AS2890.1, has satisfactory entering sight distance and clear sight lines for pedestrians for the design speed.

Transport Operation (EU 7j)

The statement of "This queue could be accommodated in Road 610 Street adjacent to the School, feeding DOPU spaces in the southern end of O'Keefe Drive adjacent to the School." is noted.

Notwithstanding the earlier comment regarding DOPU demand, the above statement would mean DOPU traffic would first arrive on Road 610 for queuing and once school ends, make a U-turn on Road 610 and right turning onto O'Keefe Drive, U-turn at the roundabout on Benfield Drive to access the DOPU on the southbound of O'Keefe.

Recommendation

Further consideration should be provided to the practicality of such operations which would create significant circulation traffic. If the proposed operation is in place, clarification is needed on whether the traffic impact has taken into account this circulation traffic at the two assessed intersections. O'Keefe Drive will have regular bus service operation (including bus stops) and it is identified as a key collector road in the Catherine Fields (Part) Precinct ILP and DCP, which needs to be considered.

Ason Group Response (EU 7j)

Student DOPU trips are expected to be concentrated over 30 – 45 minutes rather than a full hour in each School peak periods. Schools are required to use DOPU areas under the same conditions as No Parking zones, i.e. a maximum stay of 2 minutes, remaining in or within 3 metres of the vehicle. As such, an individual DOPU space could effectively serve approximately 15–20 vehicles across a 30–45 minute period. Further, the different characteristics of the drop-off trip against the pick-up trip have also been considered in the modelling.

Regarding bus movements, we have been advise that service operation details and bus stop locations have not been finalised for the route. Therefore, conservative assumptions have been made for the analysis with consideration of buses and heavy vehicles.

It is expected that the NSW Department of Education (DoE) will consult with Council and TfNSW in regard to appropriate sign-posting of set down and bus zones adjacent to the Site and that prior to opening, the DoE and the School will prepare a Traffic and Parking Plan (TPMP) to outline the strategies proposed to provide for safe and efficient operations on and off-site. The TPMP is expected to include operational strategies in regard to:

- The use of the staff car park;
- The use of the DOPU areas, including information in regard to length of stay and (for example) children's names on visors and staggered start and finish times to maximise the safety and efficiency of the DOPU areas;
- Bus loading and unloading; and
- Safe Routes to Schools measures, such as safe walking and cycle routes between the School and the surrounding residential areas.

Traffic impact assessment (EU 7k)

It is noted in Section 6.1.2 of the TIA report that only future intersection performance is shown.

Recommendation

A comparison of pre-development and post-development of intersection performance should be included in the TIA report to determine the impacts of the proposed development on the surrounding road network..

Ason Group Response (EU 4kk)

The proposed local road network in the vicinity of the school is not complete. However, Table 1 provides a summary of the future performance of the key intersections further to the SIDRA analysis.

Table 1: 2036 Intersection Operations

Intersection	Level of Service		Average Delay (s)		Worst Delay (s)		Degree of Saturation		95th% Queue (m)	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
O'Keefe Drive & Banfield Drive	A	A	5.3	5.0	15.4	10.1	0.598	0.475	17.4	11.2
O'Keefe Drive & Road 610	D	B	9.0	5.1	46.0	17.7	0.854	0.502	26.1	7.4

With reference to Table 1, the only current existing intersection is O'Keefe Drive / Banfield Drive which is forecast to operate at good levels of service during the school peak periods. Therefore—based on observations on site—it is reasonable to assume that the current operation is also a good level of service.

Finally, we trust the above information provides clarification and a greater appreciation of the issues identified in the RRTS. As always, please do not hesitate to contact the undersigned should you require any further information.

Yours sincerely,

Dan Budai
Senior Traffic Engineer – Ason Group
Email: dan.budai@asongroup.com.au

Appendix E

CV

Dan Budai

Senior Traffic Engineer – Ason Group

Email: dan.budai@asongroup.com.au
Phone: +61 2 9083 6601

Dan is an efficient and resourceful professional engineer with extensive experience in public sector traffic and transport planning. He has demonstrated expertise in the coordination and delivery of strategic advice and reporting in transport fields and for major infrastructure. He has delivered reliable operational assessments for major road projects in NSW that were capable of being used for major NSW Government investment decisions in a 16 year career with Roads and Maritime Services.

Past projects involved leading teams to ensure the planning, development, enhancement, delivery and support of Roads and Maritime's Intelligent Transport Systems, technologies and applications to improve the customer journey experience. At the local level, Dan has also made significant contributions to the development and implementation of Local Government delivery programs for traffic and transport infrastructure.

Dan has been trained in and worked with numerous transport planning models and this experience allows him to provide strategic and specialist advice on transport planning issues.

QUALIFICATIONS & EDUCATION

- Bachelor of Engineering (Civil)
- Associate Diploma in Civil Engineering
- Member AITPM

PROFESSIONAL BACKGROUND

- 2017-Current: Ason – Senior Traffic Engineer
- 2014 – 2017: CoN – Senior Traffic Engineer
- 2010 – 2014: RMS – Mgr Journey Information
- 2006 – 2010: RMS – Major Projects Liaison
- 1999 – 2006: RMS – Snr Transport Planner
- 1993 – 1999: GCC – Investigation and Planning

KEY SKILLS

- Traffic & Transport Planning
- Master Planning / Structure Planning
- Project Management
- Transport Modelling

KEY PROJECTS & EXPERIENCE

Residential, Commercial & Mixed Use Developments

- *Ivanhoe Estate, Macquarie Park* – Developed a Transport Management and Accessibility Plan to support a Concept DA for the Ivanhoe Estate Masterplan, a State Significant Development.

State Government

- *Journey Information Framework* – Utilised ITS and planning knowledge, skills and experience to design the journey information quality framework, resulting in the development of reliable, accurate data for stakeholders to make informed business decisions.
- *Major Projects Liaison* – Delivered reliable operational assessments for major road projects in NSW that were capable of being used for major NSW Government investment decisions.

Local Government

- *Newcastle Transport Strategy* – guide Council's transport-related decisions and actions to contribute, within the limits of its roles and responsibilities, to achieving the objectives of the Newcastle Community Strategic Plan.
- *LATMS* – Investigated and resolved road safety, traffic and parking issues and provide traffic facilities and guidance signage. Developed concept designs, undertook public consultation and provided detailed reports to Traffic Committee and Council.

James Laidler

Traffic Engineer – Ason Group

Email: james.laidler@asongroup.com.au
Phone: +61 2 9083 6601

James has a Bachelor of Civil Engineering and has been working in traffic engineering in the transport planning and transport construction industries for over eight years.

During this time, James has been involved in numerous projects for both private organisations and government agencies, including CPB Samsung John Holland Joint Venture (WestConnex M4 Extension project) and The Hills Shire Council.

James has demonstrated his ability across numerous areas of traffic engineering, transport construction, and transport planning and has been involved in many significant studies.

Past projects have ranged in size from detailed design advice in relation to intersection upgrades, the preparation of reviews and due diligence advice, to the preparation of Traffic Management Plans, Traffic Control Plans, and Traffic Impact Assessments for a large forward planning municipality infrastructure upgrade strategy for Council. While at The Hills Shire Council, James worked closely with Endeavour Energy for streetlighting feasibility and assessment studies and worked on the implementation of the Western Sydney Energy Efficient Streetlighting Program. James has undertaken internal road safety inspections post major road works, and has experience dealing with the Transport Management Centre to obtain Road Occupancy Licenses.

James has been trained in and worked with transport planning models and control plans, and this experience allows him to give specialist advice on transport planning and construction issues. These models and programs include AutoCAD Vehicle Tracking, SIDRA and Rapid plan.

QUALIFICATIONS & EDUCATION

- BE Civil Engineering (University of Technology, Sydney)
- Diploma in Engineering Practice (University of Technology, Sydney)
- RMS Prepare a Work Zone Traffic Management Plan Card (Combined orange and red card)
- WorkCover Occupational Health and Safety Construction Induction Card.
- Conduct Road Safety Audits

PROFESSIONAL BACKGROUND

- 2017 – Current: Ason Group
  Traffic Engineer
- 2016 – 2017: CPB Samsung John Holland Joint Venture (WestConnex M4 East)
  Traffic Engineer
- 2012 – 2016 The Hills Shire Council
  Trainee, Graduate, and Acting Traffic Engineer

KEY SKILLS

- Traffic Impact Assessments
- Master Planning & Feasibility Studies
- Sustainable Transport Planning
  (Green Travel Plans & Transport Access Guides)
- Transportation Modelling Analysis (SIDRA)
- Australian Standards (AS2890 & AS 1158) Compliance
- Construction Traffic Management Plans
- Traffic Control Plans (Rapid Plan)
- Streetlighting assessment and feasibility studies.

KEY PROJECTS & EXPERIENCE

Residential, Commercial & Mixed-Use Developments

- *Round Corner Dural – The Master Plan*
  Traffic Impact Assessment providing recommendations to improve traffic management measures resulting from the revitalisation and renewal of the Round Corner Town Centre.
- *Bondi Junction RSL redevelopment*
  Traffic Impact Assessment to provide guidance on the design of the internal parking scheme and loading dock design for the redevelopment of the Bondi Junction RSL. The TIA also identified and provided mitigating strategies to minimise impacts to the road network as a result of the redevelopment.

Transport Construction.

- *Closure of Concord Road Westbound on-ramp to the M4*
  Transport Management Plan with accompanying Traffic Control Plans to support the permanent closure of the Westbound M4 on-ramp at Concord Road to facilitate the construction of the Upgrade to the M4.
- *Long term closure of Powell St, North Strathfield.*
  Transport Management Plans with accompanying Traffic Control Plans to accommodate mass services relocation for the construction of WestConnex M4 East tunnels.
- *Oakdale South Masterplan S96.*
  Development of a Construction Traffic Management Plan to support the use of out-of-hours construction vehicles.

Tim Lewis

Principal Traffic Engineer – Ason Group

Email: tim.lewis@asongroup.com.au

Phone: +61 2 9083 6601

Tim has been working in the traffic engineering and transport planning industry for over 13years. During this time, Tim has undertaken numerous projects for both private developers and Government Agencies, including Councils and Transport for NSW across a range of industry sectors.

Tim has demonstrated ability in all areas of traffic engineering and transport planning, and has been involved in many significant studies. Tim is also an accredited Road Safety Auditor (Level 2) with the Register of Road Safety Auditors; and has represented on numerous occasions to the NSW Land & Environment Court as an Expert Witness.

Tim's projects have ranged in size from detailed design advice in relation to small residential developments with highly constrained access opportunities; to the preparation of Traffic Impact Assessment (TIA) and Transport Management and Accessibility Plans (TMAPs) for large Planning Proposal submissions.

Tim has been trained in and worked with numerous transport planning models and this experience allows him to provide strategic and specialist advice on transport planning issues. These models and programs include AutoCAD, AutoTrack, SIDRA, Quadstone Paramics and LinSig.

QUALIFICATIONS & EDUCATION

- BE Civil (Sydney University)
- Level 2 Road Safety Auditor
- Member AITPM
- Member Engineers Australia (incl. Transport Society)

PROFESSIONAL BACKGROUND

- 2016 - Present Ason Group
  Principal Traffic Engineer
- 2006 – 2015 TRAFFIX
  Associate / Senior Engineer

KEY SKILLS

- Traffic Impact Assessments
- Master Planning & Feasibility Studies
- Sustainable Transport Planning
- Green Travel Plans & Transport Access Guides
- Local Area Traffic Management (LATM) Plans
- Transportation Modelling Analysis
- Car Park & Loading Dock Design & Assessment
- Construction & Occupancy Certification
- Construction Traffic Management Plans
- Project Management

KEY PROJECTS

Residential, Commercial & Mixed-Use

Caerleon Residential Rezoning, Mudgee

Tim prepared a Traffic Impact Assessment in support of a Planning Proposal providing for some 2,200 dwellings across the rezoned site.

The assessment required an assessment of the internal and local road network, including detailed trip generation and distribution analysis, and the modelling of key intersections and roads to ensure they would accommodate future traffic volumes.

Edmondson Park Frasers Town Centre

The project required the delivery of the Edmondson Park Town Centre to provide for up to 3,500 dwellings and 40,000m^2 of commercial and retail floor space to the immediate south of Edmondson Park Railway Station.

As part of the Project Team, Tim prepared the relevant technical assessments and approval proves through the Planning and Assessment Commission.

Tim Lewis
Principal Traffic Engineer – Ason Group
Email: tim.lewis@asongroup.com.au
Phone: +61 2 9083 6601

This included Aimsun and Vissum modelling of the Town Centre; the design of both the road network and internal configuration of future buildings; and the management of integrated transport solutions to cater for the high pedestrian and non-car transport demands expected.

97 Waterloo Road, Macquarie Park

A commercial development comprising 120,000m^2 of Commercial GFA developed across up to six individual buildings, Ason Group was engaged to assist in the development of the master plan and manage the transport related issues through the approval process. The project is located within a highly congested network, subject to considerable change through new infrastructure.

As Project Manager, Tim oversaw the significant modelling of both vehicle and pedestrian impacts associated with the masterplan application using micro-simulation traffic and transport modelling for both the current and future horizon years.

Due to the complexity of the location of this Site, this also required significant engagement with RMS, TfNSW, the Sydney Coordination Office, the Department of Planning and Property NSW.

Mixed Use Development, Botany Road, Rosebery

To reduce traffic generation to a sustainable and acceptable (to Council) level, Tim prepared a detailed Green Travel Plan, including preparation of a Transport Access Guide, to be implemented at the Site. This included detailed public and active transport information and the provision of end of journey facilities.

Parramatta Square

Tim prepared the Traffic Impact Assessment for Stages 1 & 3 of the overall Parramatta Square precinct, in addition to preliminary traffic modelling to determine the most appropriate access sites for construction and operation. This focused not only on reducing general road network traffic impacts, but al minimising impacts on local business and general activity in the area.

North Belmont Supermarket

This project provided for the development of a new supermarket with access to be provided via the Pacific Highway, an already congested road with significant growth forecast for the future. At the same time, the trip generation of the supermarket itself needed to be assessed with regard to its location (as a stand alone store) and parking, given that the proposed supply of parking exceeded general DCP conventions.

Tim's management of the project required consultation with RMS and Council to ensure that the future base conditions were appropriately modelled such that the additional generation of the supermarket was not considered in and of itself the key driver for upgrades.

Industrial

Light Horse Interchange Industrial Hub

Tim has managed the traffic assessment process for the development of the Light Horse Interchange Business Hub on behalf of Western Sydney Property Trust.

A somewhat complicated project, requiring careful consideration of future network conditions while correctly apportioning the future Site traffic for potential contribution purposes; and juggling the difference access demands for the Site with the expectation of RMS.

Bungarribee Industrial Estate

Tim has prepared numerous Traffic Impact Assessment in support of site specific DAs within the Bungarribee Industrial Estate, as well as liaising with RMS in relation to B-Double route approvals to and through the Estate.

Road Safety Audits

Austral and Riverstone RSAs

Detailed design (pre-construction) audits of residential subdivision road works plans in Austral and Riverstone.

Woolworths Shopping Centre

Detailed design audits (pre-construction) of a proposed Woolworths shopping centre, including separate audits for internal car park and external road works.

A.6 Construction Noise and Vibration Management Sub-plan

NORTHROP

CONSTRUCTION NOISE MANAGEMENT PLAN

Catherine Field Public School

O'Keefe Drive, Oran Park NSW 2570

PREPARED FOR
Hansen Yuncken
Building 1, Level 3, 75-85 O'Riordan Street
Alexandria NSW 2015

Tel: 02 9770 7600

Ref: SY190518-02-AUR04
Rev: E
Date: 28.10.2020

Construction Noise Management Plan

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
8.04.2020	A	Preliminary	I. Adlington	
18.06.2020	B	Updated for Review	I. Adlington	J. Ameli
25.06.2020	C	Updated for Review	I. Adlington	J. Ameli
29.06.2020	D	Final issue	I. Adlington	J. Ameli
28.10.2020	E	Updated Final Issue	I. Adlington	J. Ameli

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1. Executive summary

Northrop Consulting Engineers Pty Ltd (Northrop) Acoustics have been engaged by Hansen Yuncken to provide a construction noise management plan for Catherine Field Public School to be located at O'Keefe Drive, Oran Park NSW 2570 (the Site).

A construction noise and vibration management plan is a site specific plan developed to ensure that appropriate work practices are implemented during the demolition, excavation and construction to minimise noise and vibration impact. This document provides a construction noise management plan so as to comply with the NSW Interim Construction Noise Guideline.

Procedures for neighbouring community engagement and keeping noise and vibration affected neighbouring community informed are addressed in this construction noise management plan. Procedures on dealing with community complaints are also outlined in this construction noise management plan.

The report has been completed to satisfy SSDA conditions B12 and B15.

2. Referenced documents

This assessment has been prepared considering the following documentation:

Consent authority, design guidelines and standards:

- *NSW Noise Policy for Industry* (NPfI), 2017, issued by NSW Environmental Protection Authority
- *Noise Guide for Local Government*, 2013, issued by NSW Environmental Protection Authority
- *NSW Interim Construction Noise Guideline* (ICNG), 2009, issued by NSW Department of Environment, Climate Change and Water
- AS 2436:2010: Guide to Noise and vibration control on construction demolition sites, 2010, issued by Standards Australia
- AS 2670:2001: Vibration and shock – Guide to the evaluation of human exposure to whole body vibration, 2001, issued by Standards Australia
- Update of Noise Data Base for the Prediction of Noise on Construction Sites, 2005, issued by UK Department for Environment Food and Rural Affairs

Project documents:

- *SY190518-02-AUR01-C Catherine Field Public School Acoustic Report for School Buildings,* issued by Northrop

3. Site description

The Site (shown in red) in Figure 1 is located at O'Keefe Drive, Oran Park NSW 2570. The nearest affected residential receivers are located on O'Keefe Drive, shown outlined in orange in Figure 1. Figure 1 also shows the locations of the long-term noise monitor, and the locations of the operator attended measurements.

The development site, as shown below, is bounded by O'Keefe Drive and two unformed future roads at Catherine Field as shown in Figure 1 below. The residences on O'Keefe Drive shown below are now completed while the residences facing the future road has not been built.

Figure 1: *Aerial view of site with nearest affected recievers and measurement locations*

4. Environmental noise criteria

Construction site operators must comply with construction noise and vibration control requirements of the NSW statutory requirements and the conditions set out in the NSW Critical State Significant Infrastructure Standard Secretary's Environmental Assessment Requirements (SEARs) 2015.

The Protection of the Environment Operations Act 1997 (NSW) Act is the key piece of environment protection legislation, and the Protection of the Environment Operations (Noise Control) Regulation 2008 (NSW) provides for inspection and testing of noise emissions.

The "Interim Construction Noise Guidelines" (2009) published by the NSW Environment Protection Authority (EPA), deals with the assessment of noise from construction activities and advises on best practice approaches to minimise noise impacts. It is aimed at managing noise from construction works regulated by Office of Environment and Heritage, and is used to set statutory conditions in licences or other regulatory instruments.

The "Assessing vibration: A Technical Guideline" (2006) published by the NSW EPA, is based on guidelines contained in BS 6472-1992, and presents preferred and maximum vibration values for use in assessing human responses to vibration and provides recommendations for measurement and evaluation techniques. It does not address motion sickness, occupational vibration, blasting vibration effects or vibration-induced damage to buildings or structures.

4.1 NSW EPA Interim Construction Noise Guideline

Construction noise is a major environmental noise issue in NSW and it is well accepted that this activity can adversely affect, sleep, concentration and learning performance and mental and physical health. While construction noise is temporary in nature, its impacts need to be controlled.

The NSW Interim Construction Noise Guideline (ICNG) is specifically aimed at managing noise from construction works. From a regulatory perspective, the local Council is the appropriate regulatory authority for non-scheduled construction activities.

Table 1: *IGCN noise criteria at residences, using quantitative assessment, L_{Aeq}*

Time of Day	Management Level – $L_{Aeq\ (15min)}$	How to apply
Recommended Standard Hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or public holidays	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured LAeq (15min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration as well as contact details.
	Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining, regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences) If the community is prepared to accept longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5 dB	A strong justification would typically be required for work outside the recommended standard hours The proponent should apply all feasible and reasonable work practices to meet the noise affected level Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community For guidance on negotiating agreements see Section 7.2.2 (NSW Interim Construction Noise Guideline)
Active Play Areas (Childcare Centres)	65 dB(A)	When in use

4.2 Construction Vibration Limits

The following criteria are considered applicable when assessing vibration emission levels from the construction works.

The effects of ground vibration on buildings near construction sites may be broadly defined by the following three categories:

1. Disturbance to building occupants - Vibration in which the occupants or users of the building are inconvenienced or possibly disturbed,
2. Effects on building contents - Vibration where the building contents may be affected, and,
3. Effects on building structures - Vibration in which the integrity of the building or structure itself may be prejudiced.

In general, vibration criteria for human disturbance (1) are more stringent than vibration criteria for effects on building contents (2) and building structural damage (3). Hence, compliance with the more stringent limits dictated by Category 1, would allow for compliance to be achieved for the other two categories.

4.2.1 Category 1 – Disturbance to Buildings Occupants

For disturbance to human occupants of buildings, we refer to the EPA's *'Assessing Vibration; a technical guideline'*, published in February 2006. This document provides criteria which are based on the British Standard BS 6472-1992, *'Evaluation of human exposure to vibration in buildings (1-80Hz)'*.

Vibration sources are defined as C*ontinuous, Impulsive or Intermittent.* Section 2 of the technical guideline defines each type of vibration as follows:

> ***'Continuous** vibration continues uninterrupted for a defined period (usually throughout the day-time and/or night-time).*
>
> ***Impulsive** vibration is a rapid build-up to a peak followed by a damped decay that may or may not involve several cycles of vibration (depending on frequency and damping). It can also consist of a sudden application of several cycles at approximately the same amplitude, providing that the duration is short, typically less than 2 seconds.*
>
> ***Intermittent** vibration can be defined as interrupted periods of continuous or repeated periods of impulsive vibration that varies significantly in magnitude'.*

The criteria are to be applied to a single weighted root mean square (rms) acceleration source level in each orthogonal axis. Section 2.3 of the guideline states:

> *'Evidence from research suggests that there are summation effects for vibrations at different frequencies. Therefore, for evaluation of vibration in relation to annoyance and comfort, overall weighted rms acceleration values of the vibration in each orthogonal axis are preferred (BS 6472).'*

Preferred and maximum values for continuous and impulsive vibration are defined in below in Table 2 extracted from "Table 2.2 of the guideline" and the values for residential type buildings are reproduced below.

***Table 2:** Preferred and Maximum Weighted RMS Values for Continuous and Impulsive Vibration Acceleration (m/s^2) 180Hz*

Location	Assessment period	Preferred values		Maximum values	
		z axis	x & y axis	z axis	x & y axis
Continuous vibration					
Residences	Daytime (7am-10pm)	0.010	0.0071	0.020	0.014
Impulsive vibration					
Residences	Daytime (7am-10pm)	0.30	0.21	0.60	0.42

Intermittent vibration is to be assessed using vibration dose values (VDVs). The VDV method is a fourth power approach which is more sensitive to peaks in the acceleration waveform and makes corrections to the criteria based on the duration of the source's operation.

The VDV can be calculated using the overall weighted rms acceleration of the vibrating source in each orthogonal axis and the total period during which the vibration may occur. Weighting curves are provided in each orthogonal axis in the guideline.

Preferred and maximum VDV values are defined in Table 3 below extracted from "Table 2.4 of the guideline" and VDV values for residential type buildings are reproduced below.

Table 3: *Preferred and Maximum VDV Values*

Location	Daytime (7am-10pm)		Night-time (10pm-7am)	
	Preferred values	**Maximum values**	**Preferred values**	**Maximum values**
Residences	0.20	0.40	0.13	0.26

4.3 Site measurements and background noise criteria

Measurements were undertaken as to determine the noise criteria as per the Noise Policy for Industry for the boundary of the nearest affected receiver. Details of the measurement results can be found in the Acoustic Report for State Significant Development Application prepared by Northrop entitled "*SY190518-02-AUR01-C Catherine Field Public School Acoustic Report for School Buildings*". Based on the measurements and assessment undertaken in accordance with NSW Industrial Noise Policy the project construction noise criteria at the boundary of the nearest affected residences at O'Keefe Drive are shown in Table 4 below.

Table 4: *Noise Criteria at boundary of nearest affected residences*

Location	Period	Rating Background Noise Level (RBL) – $L_{Aeq,15min}$, dB(A)	Construction Noise Criteria (RBL + 10) – $L_{Aeq,15min}$, dB(A)
L1	Day	45	55
L2	Day	47	57

Operator attended measurements were also undertaken at the site, the details and results of which can be found in the Acoustic Report for SSDA.

The second construction noise criteria is the Highly Noise Affected Level which is independent of background and has a constant level of 75.

5. Acoustic assessment

At this stage, the proposed nature of construction works and activity has not been finalised and will be subject to final input by the construction contractor. We have assumed typical plant and activity will entail the following stages and typical plant items as follows:

- Site establishment and excavation works – bump in, truck deliveries, site excavation works, spoil removal, screw piling;
- Structural works – main structural works, crane hoists, concrete pumps, concrete saws, grinding hammering;
- Fit out works – mainly enclosed finishing works. For the purposes of this assessment we have assumed a typical shielding loss of 20 dB.

Representative plant and plant sound power levels have been derived from the UK Department for Environment Food and Rural Affairs (DEFRA 2005) *'Update of Noise Data Base for the Prediction of Noise on Construction Sites'.*

The Interim Construction Noise Guideline proposes that noise levels not exceeding the Noise Affected Level i.e. background noise levels (RBL for day – see Table 4) by 10 dB are considered acceptable for construction works. However, for those exceeding the above or exceeding the Highly Noise Affected Level, mitigation measures will be required.

Table 5: Predicted construction noise from various works phases, $L_{Aeq,15minute}$ – dB(A)

Plant	Octave band centre frequency								dB(A)
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	
1. Site establishment and excavation works									
Excavator,5t	99	99	94	87	87	86	82	76	**93**
Screw piler	114	110	105	102	98	94	90	83	**104**
Truck delivery/spoil	104	101	90	94	90	86	82	77	**95**
Hammer	94	94	96	96	91	85	83	79	**97**
Angle grinder	85	79	80	88	98	105	101	101	**109**
2. Structural works									
Excavator	99	99	94	87	87	86	82	76	**93**
Truck delivery	104	101	90	94	90	86	82	77	**95**
Concrete pump, 25kW	99	99	94	87	87	86	82	76	**93**
Concrete saws, 3kW	110	110	100	99	97	96	90	92	**104**
Mobile crane	113	101	95	99	100	97	91	84	**104**
Angle grinder	85	79	80	88	98	105	101	101	**109**
Hammer	94	94	96	96	91	85	83	79	**97**
3. Fit out works									
Angle grinder	85	79	80	88	98	105	101	101	**109**
Hammer	94	94	96	96	91	85	83	79	**97**
Truck delivery	104	101	90	94	90	86	82	77	**95**

Table 6: *Predicted construction noise levels, $L_{Aeq\ 15minute}$ dB(A) during standard hours*

Residential receivers	Works phase		
	Site establishment and excavation works	Structural	Fit out
Typical operating distances, m	14		
Predicted construction noise levels, dB(A)	79	82	75
IGCN criteria, dB(A)	(45 + 10) = 55		
Complies?	No	No	No
Predicted exceedances	24	27	20

The above summary results indicate that construction noise levels will exceed both the Noise Affected Level and Highly Noise Affected level therefore mitigation measures as indicated in Table 1 will be required. Where noise levels exceed the Highly Noise Affected Level, the community will show a strong reaction to noise. For those cases a strong community liaison is required. All feasible and reasonable solutions must be implemented and the community must be given respite periods during the working day.

6. Construction noise mitigation recommendations

Information in Table 7 referenced from AS 2436:2010 details the potential noise reduction of standard engineering mitigation measures, typically utilised on construction and demolition sites.

Table 7: *AS 2436:2010 – Construction noise mitigation measures*

Noise mitigation measure	**Typical noise reduction, L_p – dB(A)**
Distance attenuation	6 dB per doubling of distance
Screening and barriers	Typically, 5 to 10 dB(A) maximum 15 dB(A)
Enclosure	Typically, 15 to 25 dB(A) maximum 50 dB(A)
Silencing	Typically, 5 to 10 dB(A) maximum 20 dB(A)

6.1 Temporary Sound Barrier Walls

It is recommended that a temporary sound barrier wall be installed on the O'Keefe Drive boundary of the construction site, along all boundaries to block the direct line of sight between the noise generating activities on site and the residences on O'Keefe Drive.

A suitable barrier shall have a minimum of 2.4 metre high and constructed using steel posts and 19mm thick plywood, with no gaps including to the ground. Alternative barriers are subject to approval by the acoustic consultant. The barrier shall be erected prior to commencement of earthworks.

7. Construction noise management recommendations

The highly noise affected level represents the point above which there may be strong community reaction to noise. The construction noise mitigation measures detailed in Section 6 above do not provide sufficient attenuation to achieve construction noise levels compliant with the ICNG criteria, therefore, noise from construction activity must be managed to minimise the temporary loss of acoustic amenity on the nearest affected receivers and surrounding community. Noise management can be achieved through: scheduling, community engagement and operational practices to minimise noise impact.

The Interim Construction Noise Guideline (2009) notes that there may be some community reaction to noise from major construction projects where this is more than 10 decibels above the background noise level for work during the daytime. This recognises that construction noise is generally temporary with the community having a slightly higher tolerance for it.

The best management practices involve adopting particular operational procedures that minimise noise while retaining production efficiency. Some common noise reduction strategies include:

- Changing the activity to reduce the noise impact or disturbance (e.g. reorganising the way the activity is carried out).
- Choosing a suitable time — schedule noisy activity to less sensitive times of the day. There are sensitive times of the day for different people, for example, residences during evenings, night and weekends. Where several noisy pieces of equipment are used, their operation should be scheduled to minimise impacts.
- Keeping neighbours informed of a planned noisy activity, its duration and the reasons for the activity. Neighbours may be more accepting of temporary noise if they know when and why the noise is happening, and how long it will last.
- Educating staff and contractors about noise and quiet work practices. This could include signage, for example, some construction sites have signs reminding contractors to consider neighbours and be quiet, and to not start noisy work too early (e.g. before 7.00 am).

Noise can be controlled in the transmission path by using separation distances, barriers and sound absorptive materials.

- Increasing the separation distance (distance attenuation) between the noise source and receiver reduces the noise level. As a rule of thumb, each doubling of the distance from a noise source equates to a reduction of sound pressure level of 6 dB (the inverse square law). This does not apply close to a loud noise source.
- Careful site selection for a new noisy activity can help minimise noise impacts where it is possible to provide adequate separation distances.
- Barriers are most effective when they are located close to the noise source and block the line of sight between the source and receiver. The amount of noise reduction achieved depends on the height and mass of the barrier and the frequency of the noise (barriers are less effective for low-frequency noise). Noise barriers should have no gaps. Use of absorptive material on the side of the barrier facing the noise source can also help to reduce noise levels by reducing noise reflections. Trees or other vegetation do not provide an effective noise barrier. Some limited attenuation may be gained where trees are densely planted but little attenuation is achieved for low frequencies.
- Sound-absorptive materials reduce the level of reflected sound. They are porous materials such as glass fibre, wool and mineral wool. Thin layers are capable of absorbing only high frequencies, whereas thicker layers can absorb a wider frequency range.

7.1 Standard Hours for Construction Work

The following are the permitted construction hours as recommended in the new Catherine Field Public School Development. Council will be advised and letters to affected residential receivers will be issued for any works occurring or trucks arriving outside of standard construction hours. The community will be consulted before and during the construction phase, and a dedicated phone line will be implemented for the handling of complaints.

- **Monday to Friday: 7.00am to 6.00pm**
- **Saturday: 8.00am to 1.00pm**
- **Sundays and Public Holidays: No work permitted.**

The recommended hours for blasting are as follows:

- **Monday to Friday: 9.00am to 5.00pm**
- **Saturday: 9.00am to 1.00pm**
- **Sundays and Public Holidays: No blasting permitted.**

Section 2.2 of the "DECC Interim Construction Noise Guideline" (2009) specifies five categories of work that might be taken outside the standard hours. The categories relevant to this project are:

- The delivery of oversized plant or structures that police or other authorities determine require special arrangements to transport along public roads.
- Emergency work to avoid loss of life or damage to property, or to prevent environmental harm.
- Maintenance and repair of public infrastructure where disruption to essential services and/or consideration of worker safety do not allow work within the standard hours.

Blasting during the construction work is not permitted for this project due to the proximity of residences and heritage buildings.

The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account:

- Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences)
- If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

7.2 Construction Work Schedule and Traffic Management

The builder will be required to provide a construction programme for the works, from site establishment and site works to practical completion. The noisy phases will be monitored so as to avoid and minimise potential complaints from neighbouring and other affected properties. The builder will be required to provide construction traffic routes, proposed frequency of vehicular movements and the estimated total gross weights of the vehicles to assess the traffic generated noise in the vicinity of the development. Traffic noise will be monitored where potentially noisy construction traffic movement periods could cause complaints to arise from the affected residential properties.

As per condition C14 it is recommended where practicable and without compromising the safety of construction staff or members of the public, the use of 'quacker' reverse alarms are used to ensure noise impacts on surrounding noise sensitive receivers are minimised.

7.3 Respite periods

The following construction-related noise-generating activities have been identified by the ICNG as having particularly annoying or intrusive characteristics

- Use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or
- Steel work
- Grinding metal, concrete or masonry
- Rock drilling
- Line drilling
- Vibratory rolling
- Jackhammering, rock hammering or rock breaking
- Impact piling

It is recommended that respite periods are exercised for the above activities such that:

- They are only undertaken after 8.00 am,
- They are only undertaken over continuous periods not exceeding 3 hours with at least a 1 hour respite every three hours ('Continuous' means any period during which there is less than an uninterrupted 60 minute respite between temporarily halting and recommencing any of the intrusive and annoying work referred to in section 4.5 of ICNG.)

7.4 Community engagement

The most impacted community during the construction phase of the new Catherine Field Public School Development are the residents on O'Keefe Drive facing the proposed construction site.

From a community point of view, there is a need for a range of actions and processes which are required by the guidelines of the Secretary's Environmental Assessment Requirements (SEARs) guidelines for the construction works that aim to reduce noise and vibration impacts from the construction activities while encouraging community involvement.

As a project moves towards the construction phase, further details normally become available on the planned work methods, scheduling, location of plant and equipment.

For the new Catherine Field Public School Development construction works, contact with the nearest affected community is desirable once approval has been given to commence works and should be undertaken prior to any work beginning. The type of community engagement should relate to the likelihood and extent of noise and vibration impacts from the construction works.

The aim of community engagement is to:

- Establish good working relationships between the development owner, builder, the community and other stakeholders in relation to the construction project
- Receive feedback on the project's environmental performance, discuss community concerns and identify opportunities for the resolution of community complaints and concerns
- Gain advice on how best to communicate relevant information on the project and its environmental performance to the broader community
- Work cooperatively towards outcomes of benefit to the project, immediate neighbours and the local and regional community.

The new Catherine Field Public School Development Project Manager shall nominate the construction site manager as a community liaison officer for the project as a point of contact for the community regarding issues related to the construction of the development, including issues relating to noise and vibration. Any formal complaints received regarding noise and vibration

matters at the construction site shall be passed on to the Project Manager for the complaints to be addressed and resolved.

7.4.1 Keeping the Noise Affected Community Informed

Being up-front with the noise affected community from the outset can assist in transferring information to the affected community. An example of being up-front is to present noise and vibration related information on the construction works to noise affected community before commencing works.

7.4.2 Dealing with Community and Public Complaints during Construction

Complaints from the community and public can arise when accidental or unintentional noise and/or vibration are generated due to unforeseen circumstances or error of judgement made by the construction team. The community and public generally understand when this happen once or not too often. The complaints must be handled in a serious and respectful way. The complaints should be recorded and logged in a noise and vibration complaints log book and followed up by the construction site manager. Noise monitoring may be an appropriate response to a compliant, to determine whether noise levels are consistently exceeding predicted noise levels. Noise and vibration monitoring details are provided in Section 7.7.

Following resolution of the noise or vibration problem, the complainant should be informed of the remedial actions taken before the complaint can be recorded as being resolved.

7.4.3 Community Consultation

Community consultation has been undertaken by Schools Infrastructure, details provided below and in Appendix 2:

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 2*

Consultation has been undertaken by providing the community the abovementioned 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.

7.4.4 Training

The site manager shall implement appropriate training and induction in the requirements of this construction noise management plan. All employees, contractors and utility staff working on site will undergo site induction training which includes Environmental Due Diligence Training. The induction will address:

- This Construction Noise Management Plan
- The existence of noise legislation and what this means for the project, i.e. OEH and Noise Management Levels
- Delivery hours and locations.

- Reporting and recording environmental incidents related to noise and vibration.
- Noise and vibration minimisation measures.
- The importance of regular maintenance noise and vibration generating plant.

Records will be kept of all personnel undertaking the site induction and training, including the contents of the training, date and name of trainer/s. Key staff will undertake more comprehensive training relevant to their position and/or responsibility. This training may be provided as "toolbox" talk training.

7.5 Operational practices to minimise construction noise impacts

The best management practices involve adopting particular operational procedures that minimise noise while retaining production efficiency. Some common noise reduction strategies include:

- Changing the activity to reduce the noise impact or disturbance (e.g. reorganising the way the activity is carried out).
- Choosing a suitable time — schedule noisy activity to less sensitive times of the day. There are sensitive times of the day for different people, for example, schools during the day, times of religious services, and residences during evenings and night. Where several noisy pieces of equipment are used, their operation should be scheduled to minimise impacts.
- Keeping neighbours informed of a planned noisy activity, its duration and the reasons for the activity. Neighbours may be more accepting of temporary noise if they know when and why the noise is happening, and how long it will last.
- Educating staff and contractors about noise and quiet work practices. This could include signage, for example, some construction sites have signs reminding contractors to consider neighbours and be quiet, and to not start noisy work too early (e.g. before 7.30 am).

7.6 Vibration management

The management objective for the site is to limit vibration from construction activities so as to avoid building damage and human discomfort associated with the construction works. It is noted that buildings in the vicinity of development are residential. Vibration impacts on the buildings and their occupants should be considered for the assessment of structural damage and human annoyance, respectively.

Typical vibration levels from construction plant equipment most likely to cause significant vibration are summarised in Table 8 below.

Table 8: *Typical ground vibration generated by construction plant*

Activity	Typical ground vibration
Bulldozers/ Excavators	Typical ground vibration from bulldozers range from 1mm/s to 2mm/s at distances of approximately 5m and at distances greater than 20m, vibration levels are usually below 0.2mm/s.
Jack Hammers	Typical ground vibrations from jack hammers are generally greater than 5mm/s at distances of 1m and no more than 2mm/s for distances of 5m or more.
Truck traffic	Typical vibration from heavy trucks passing over normal (smooth) road surfaces generate relatively low vibration in the range 0.01-0.2mm/s at the footings of buildings located 10-20m from a roadway. In general ground vibration from trucks is usually imperceptible in nearby buildings.

Therefore, vibration management strategies implemented on site shall consider these items of plant and construction activities involving these items of plant.

7.6.1 Buffer Distances for Vibration Control

The relationship between vibration and the probability of causing human annoyance or damage to structures is complex. This complexity is mostly due to the magnitude of the vibration source, the particular ground conditions between the source and receiver, the foundation-to-footing interaction and the large range of structures that exist in terms of design (i.e. dimensions, materials, type and quality of construction and footing conditions).

The intensity, duration, frequency content and number of occurrences of a vibration, all play an important role in both the annoyance caused and the strains induced in structures.

As the pattern of vibration radiation is very different to the pattern of airborne noise radiation, and is very site specific, below are some indicative minimum 'buffer' distances determined for some common construction plant with data available from recent projects, which assist to avoid human discomfort in terms of perceptible (or tactile) vibration during daytime construction hours.

Table 9: *Recommended Minimum Buffer Distances for Construction Plant*

Plant Item	Recommended Minimum Buffer Distance (m)
CFA (Continuous Flight Auger) Piling rig	10
Excavators	10
Jack hammers	5
Vibratory rollers	30

7.6.2 Vibration Management Measures

Where vibration generating equipment work occurs within the buffer distances, to ensure vibration impacts are minimised during the construction period, the following vibration management control measures are recommended:

1. The proper implementation of a vibration management plan is required to avoid adverse vibration disturbance to affected occupancies. Consultation with occupants and property owners is recommended and should be aimed at providing a communication path directly to the Project Manager.
2. A management procedure will be implemented to deal with vibration complaints. Each complaint will be investigated and where vibration levels are established as exceeding the set limits, appropriate amelioration measures shall be put in place to mitigate future occurrences
3. Where vibration is found to be excessive, management measures shall be implemented to ensure vibration compliance is achieved. Management measures may include modification of construction methods such as using smaller units, establishment of safe buffer zones and if necessary, time restrictions for the most excessive vibration activities. Time restrictions are to be negotiated with affected receivers.

7.7 Monitoring Program

Where noise or vibration impacts are likely to occur (i.e. vibration generating equipment working within the buffer distance), it is recommended that regular noise or vibration checks, monitoring or inspections are undertaken during the construction period. Where monitoring indicates that measured noise levels consistently exceed the predicted noise level by more than 3dB, additional mitigation measures will be implemented to reduce the noise levels.

Noise and vibration monitoring shall be undertaken by a suitably qualified acoustic consultant in accordance with Table 10. Reports shall be provided stating the measurement methodology and results of monitoring, and any recommendations for mitigation. Long term noise monitoring data shall be acquired over a period of minimum 10 days, excluding rain and excessive wind events using 15-minute A frequency weighted measurements and broadband levels for L_{Aeq}, L_{A10}, L_{A90}, L_{Amax} and L_{Amin} shall be recorded.

Spot checks using a hand-held Type 1 integrating sound level meter with octave band filters may be undertaken to check equipment noise levels against manufacturers specifications and to check worst-case noise impacts at the commencement of high noise generating activities. Operator attended measurements shall be 15-minute A frequency weighted measurements and record octave band levels for L_{Aeq}, L_{A10}, L_{A90}, L_{Amax} and L_{Amin}. Reports shall be provided stating the measurement methodology and results.

Table 10: *Recommended noise and vibration monitoring program*

Monitoring condition		**Frequency**	**Monitoring Location**
Noise monitoring	During high noise construction activities	Monthly	Nearest affected receiver
	Where a compliant has been received and monitoring is considered an appropriate response to determine whether noise levels are consistently exceeding predicted noise level by more than 3dB	As required	At address of complainant
Vibration monitoring	Vibration generating works undertaken at distances less than the buffer distances presented in Table 9	As required	Nearest affected receiver
	Where a compliant has been received and monitoring is considered an appropriate response to determine whether noise levels are consistently exceeding vibration criteria shown in Tables 2 and 3	As required	At address of complainant

8. Conclusion

This report forms part of the SSDA submission for the proposed development of Catherine Field Public School at O'Keefe Drive, Oran Park NSW 2570. Construction noise and vibration criteria were established, and construction noise predictions found that the criteria at the nearest affected receiver are likely to be exceeded. Noise mitigation and management strategies have been recommended for the excavation and construction phases of the project.

9. Appendix 1 – Author and verifier CVs

Isabella Adlington

Acoustics Consultant

MArchSc (Acoustics) BSc (Physics) AAS (Grad.)

Isabella contributes her skills in architectural and building acoustics to the Northrop team. Isabella takes an analytical approach to projects, with a focus on finding the best design solutions and outcomes that are both practical and cost-effective for the client's needs. Isabella seeks to combine both aesthetic and functional considerations in designs and enjoys the challenges of combining acoustical aspects with architectural vision, and integration with other building services and engineering disciplines.

Project Experience

Community
- USYD Chau Chak Wing Museum
- Sydney Dance Company
- Cooke Park Multipurpose Pavillion
- Darling Exchange Library
- Bowral Memorial Hall
- Granville Park Stadium
- Liverpool Baptist Church
- Senses Child Care Centre, Milson's Point
- Moree Civic Precinct

Commercial
- PTW Architects Office fit-out, Aurora Place Sydney
- Sydney Trains Central Hub fit-out, Clyde
- Sussex Street Hotel, Sydney
- Arthur J. Gallagher office fit-out, North Sydney
- Arthur J. Gallagher Melbourne
- Four Seasons Hotel, Sydney
- Instructure office fit-out, One Wharf Road, Sydney
- George Weston Foods office fit-out, North Ryde
- Plus Fitness Jordan Springs
- Langham Hotel Miller's Point
- The Highline – Bankstown
- Doltone House – Milperra
- Sutton's Motors Homebush

Residential
- St. Andrews College, University of Sydney
- 68A Queenscliff Road, Queenscliff
- 38 Stewart Street Wollongong
- 23-27 Harold Street North Parramatta
- Top Spring St. Leonards

Education
- St. Rita's College Performing Art's Building
- St. Mark's College Performing Arts Building
- Wagga Wagga, Catherine Fields and East Leppington Schools Package
- Western Sydney and Wollongong Schools Package
- Macquarie University Central Courtyard
- UTS Proto Space
- UTS Touring Hall, Powerhouse Museum
- WSU MARCS Institute BabyLab, Westmead
- WSU Chancellery Fit Out
- ACU North Sydney Campus Physio Laboratory
- UTS Graduate Research School
- TAFE Meadowbank
- Richmond High School Gymnasium and Hall
- Brigidine College, Randwick
- Loreto Normanhurst Library
- Lucas Gardens School
- Eileen O'Connor Catholic College, Lewisham
- UNSW Cliffbrook Campus, Coogee

Aged Care and Health
- RFBI Hawkins Village
- Minchinbury Manor Aged Care Facility, Rooty Hill
- Anglicare Nowra
- Casula Residential Aged Care Facility
- Uniting Aged Care Yamba
- Nepean Private Hospital
- Coffs Harbour Health Campus Upgrade

Jamshid Ameli

Senior Acoustics Consultant

BSc (Mech Eng) MSc (Noise & Vibrations) MAAS

Jamshid has a wealth of experience and has been in acoustic consulting for more than 10 years handling projects in environmental noise, transportation noise, mechanical noise and building acoustics. Jamshid enjoys working collaboratively with clients and his colleagues. He is focused on understanding the client needs for a project and delivering results, on time and on budget.

Jamshid has also worked as a noise and vibration engineer in the automotive industry and has skills in design and development. With a mechanical engineering background, he can extend his acoustic skills to integrate with other building services and engineering disciplines.

Project Experience

Community
- Community Centre, Jordan Springs
- West Sports Club, Croydon
- East Leagues Club, Bondi
- RSL Club, Parramatta
- RSL Club, North Ryde

Commercial
- WestPoint Shopping Centre, Blacktown
- ARB workshops, Wentworthville
- Barden Fresh Produce, Kemps Creek
- Kogarah golf club, Kogarah
- Gap Bluff Centre, Watson Bay
- Dan Murphy's, Mosman
- Service Station, Bourke St, Waterloo
- Tesla Service Centre, Alexandria

Residential
- Parks Apartments, Oxford Street, Darlinghurst
- Poly Horizon Apartments, Epping
- Dougherty Apartments, Chatswood
- Elaine estate, Point Piper
- Wrights Road Apartments, Drummoyne

Hospitality
- Karaoke bar, Church St, Parramatta
- Cake Wine bar, Redfern
- Huntsbury Hotel, Lewisham

Education
- Shirley St Childcare Centre, Wollstonecraft
- Little Giants Childcare centre, Oran Park
- Pymble Ladies College, Pymble
- Chabad North shore Childcare Centre, College Crescent, St Ives
- Fairfield Forum Childcare Centre, Fairfield

Aged Care and Health
- Presbyterian aged care, Thornleigh
- Prince Henry Hospital, Little Bay
- MRI rooms, Westmead Hospital
- Veterinary Hospital, Vineyard
- Nowra Regional Health, Nowra
- Twilight Glades Bay aged care, Gladesville

Infrastructure
- Wyong to Warnervale Pipeline, Warnervale
- Eastlakes shopping centre, Eastlakes
- Kangy Angy Rail Maintenance Facility

Industrial
- BOC gases, Lidcombe
- ACE cryogenic facility, Kings Park
- Joe White Malting, Minto
- Premier Mushrooms, Glossodia

10. Appendix 2 – Community Consultation

Artist impression of the new primary school in Catherine Field

New primary school in Catherine Field

Project Update

June 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 New South Wales. 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 on O'Keefe Drive to support the growing community. The school will include:

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

The new school has been designed to accommodate up to 1000 students from years K-6.

Modern construction techniques are being used in the build, including constructing school buildings offsite. This reduces the impact to local residents and saves time when compared to traditional builds.

Progress summary

The State Significant Development (SSD) application for this project has been fast tracked by the Department of Planning, Industry and Environment.

The SSD application is now approved. Main works construction will start in early July 2020. Early works are already underway at the site.

Construction

Work hours are 7:00am to 6:00pm Monday to Friday and 8:00am to 1:00pm Saturdays. There will be no work on Sundays or public holidays.

We will continue to work with the head contractor to ensure any disruption to our neighbours is kept to a minimum.

Keeping you updated

We are temporarily changing some of the ways that we keep you informed to account for social distancing measures.

Instead of community information sessions, we invite you to view more information about this project at https://www.schoolinfrastructure.nsw.gov.au/projects/c/catherine-field-new-primary-school.html

We will keep you updated and provide more information about the construction timetable in the coming months. You can speak with us using the information below.

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 July 2020, starting with installing the foundations of 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. This plan outlines how it will manage construction impacts on 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 https://www.schoolinfrastructure.nsw.gov.au/projects/c/catherine-field-new-primary-school.html.

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 Friday 26 June 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. ▪ The majority of buildings 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. ▪ An acoustic fence will be installed on O'Keefe Drive to mitigate noise impacts. ▪ 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 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 Catherine Field

Frequently asked questions

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.

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

The new primary school for Catherine Field is among the second wave of projects with assessments fast-tracked. Having the SSD application fast tracked 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.

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 https://education.nsw.gov.au/public-schools/going-to-a-public-school/enrolment.

Will there be any changes to surrounding school enrolment boundaries?

If changes to school catchment boundaries / enrolment areas are needed, the Department of Education would work closely with school staff and communities to inform them and help them plan for any boundary realignments.

How will parents be able to get involved in the project?

The NSW Department of Education is committed to working together with our school communities and other stakeholders to deliver the best possible learning facilities for students. There will be opportunities for parents to view plans for the school project and provide feedback as the project progresses.

A.7 Construction Soil and Water Management Sub-plan

NORTHROP

CIVIL ENGINEERING REPORT: SOIL & WATER MANAGEMENT PLAN

Catherine Field Public School

O'Keefe Drive, Catherine Field NSW

PREPARED FOR
Hansen Yuncken
B1 L3 75-85 O'Riordan Street

Alexandria NSW 2015
Tel: (02) 9770 7691

Ref: 190518-CF-CR02
Rev: 2
Date: 19.06.20

Civil Engineering Report: Soil & Water Management Plan

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
15.06.20	1	Draft	J. Gilligan	J. Gilligan
19.06.20	2	Final	J. Gilligan	J. Gilligan

Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

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Table of Contents

1. General

1.1 Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Hansen Yuncken to prepare the Civil Engineering design and documentation in support of a Construction Certificate for the proposed Catherine Field Public School development at O'Keefe Drive, Catherine Field.

This report covers the works shown as the Northrop Drawing Package required for the development of the site including:

- Erosion and Sediment control;

1.2 Related Reports and Documents

This report is to be read in conjunction with the following reports and documents:

1. Detailed Design Phase Civil Documentation prepared by Northrop:
   - NHQC2-CF-CV-S-DDC201.11 Specification Notes – Sheet 01
   - NHQC2-CF-CV-S-DDC201.13 Specification Notes – Sheet 03
   - NHQC2-CF-CV-S-DDC202.01 Sediment and Soil Erosion Control Plan
   - NHQC2-CF-CV-S-DDC202.11 Sediment and Soil Erosion Control Details
2. NSW Department of Housing Manual, "Managing Urban Stormwater Soil & Construction" 2004 (Blue Book)
3. Camden Council Engineering Design Specifications

1.3 The Development

1.3.1 Precinct and Surrounds

The site is located within the suburb of Catherine Field in the Camden Council Local Government Area (LGA). The site is approximately 2.08 hectares, which is bounded by O'Keefe Drive to the west, Future Roads to the east with future residential subdivision, designed by Calibre, known as Oran Park South Development Tranche 33. This greenfield site generally falls to the north eastern corner, where there is a stormwater connection from the Oran Park South Development Tranche 33. The proposed Catherine Fields Primary School is proposed with module classrooms and buildings with associated carparking and playing fields.

2. Erosion and Sediment Control

The objectives of the erosion and sediment control for the development site are to ensure:

- Adequate erosion and sediment control measures are applied prior to the commencement of construction and are maintained throughout construction; and
- Construction site runoff is appropriately treated in accordance with Camden Council requirements.

As part of the works, the erosion and sedimentation control will be constructed in accordance with Council requirements and the NSW Department of Housing Manual, “Managing Urban Stormwater Soil & Construction” 2004 (Blue Book) prior to any earthworks commencing on site. The Concept Sediment and erosion control measures are documented in Northrop’s detailed design drawings NHQC2-CF-CV-S-201.11, 201.13, 202.01, 202.11

2.1 Sediment Basin

A temporary sediment basin has been designed to capture site runoff during construction and has been located towards the north eastern side of the site, in the lowest point. The construction of the basin will be undertaken in stages to enable maximum runoff capture assisted by diversion swales and direct runoff to the basin.

Calculations to determine the concept design basin size have been based on available geotechnical information regarding soil types and through the use of the Soils and Construction Volume 1 Manual.

To ensure the sediment basin is working effectively it will be maintained throughout the construction works. Maintenance includes ensuring adequate settlement times or flocculation and pumping of clean water to reach the minimum storage volume at the lower level of the settling zone. The settling zone will be identified by pegs to clearly show the level at which design storage capacity is available.

The pumped water from the sediment basin can be reused for dust control during construction.

Overflow weirs are to be provided to control overflows for rainfall events in excess of the design criteria which caters for a storm event up to and including the 1% AEP storm event.

The concept sediment basin sizing is summarised in the table below. Detailed sediment basin sizing, configuration and location shall form part of the Construction Certificate application.

The sediment basin has been located for future conversion into the permanent water quality basin.

2.2 Sediment and Erosion Control Measures

Prior to any earthworks commencing on site, sediment and erosion control measure shall be implemented generally in accordance with the Construction Certificate drawings and the "Blue Book". The measures shown on the drawings are intended to be a minimum treatment only as the contractor will be required to modify and stage the erosion and sedimentation control measures to suit the construction program, sequencing and techniques. These measures will include:

- A temporary site security/safety fence is to be constructed around the site, the site office area and the proposed sediment basin;
- Sediment fencing provided downstream of disturbed areas, including any topsoil stockpiles;
- Dust control measures including covering stockpiles, installing fence hessian and watering exposed areas;
- Placement of hay bales or mesh and gravel inlet filters around and along proposed catch drains and around stormwater inlets pits; and
- The construction of a temporary sediment basin as noted above in Section 2.1;
- Stabilised site access at the construction vehicle entry/exits.

Any stockpiled material, including topsoil, shall be located as far away as possible from any associated natural watercourses or temporary overland flow paths. Sediment fences shall be installed to the downstream side of stockpiles and any embankment formation. All stockpiles and embankment formations shall be stabilised by hydroseeding or hydro mulching on formation.

2.3 Wet Weather Management

In circumstances of heavy rain sufficient to affect site access and ground conditions the Site Manager and Site HSE Committee representative should complete a site inspection before work commences. The inspection needs to focus on;

- The suitability of pedestrian access to the amenities and into the construction work areas
- The suitability of access for plant and equipment
- The suitability of ground conditions for plant and equipment to operate
- Nominate the construction zones suitable for work to commence
- Actions to remediate those areas not suitable for work to commence (de-water; prepare ground conditions and access ways etc.)

3. Further Commentary

3.1 SSD Conditions

The Minister for Planning and Open Spaces has provided Conditions of Consent (Application Number: SSD 9477) for the proposed development at O'Keefe Drive, Catherine Field. Conditions associated with the Construction Soil and Water Management Plan have been provided below with further commentary for consideration by School Infrastructure NSW and the Certifying Authority.

B17. Construction Soil and Water Management Sub-Plan (CSWMSP)

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

(a) be prepared by a suitably qualified expert, in consultation with Council;

(b) describe all erosion and sediment controls to be implemented during construction; as a minimum, in accordance with the publication Managing Urban Stormwater: Soils & Construction (4th edition, Landcom 2004) commonly referred to as the 'Blue Book'.

(c) include a Salinity Management Plan prepared in accordance with the recommendations of the Stage 2 Environmental Site Assessment prepared by Environmental Investigation Services dated 21 December 2018.

(d) provide a plan of how all construction works will be managed in a 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 5-year ARI.

Northrop Commentary

The following comments have been provided with respect to Condition B17 for consideration by School Infrastructure NSW and the Certifying Authority.

Northrop Commentary

(a) Please refer to the CV of the designer provided in Appendix D. The project design team have approached Camden Council to initiate discussions regarding the proposed measures to control soil erosion and sedimentation during construction including proposed methods of discharging stormwater from the site.

(b) Please refer to Section 2 of this report and associated Civil Engineering drawings NHQC2-CF-CV-S-201.11, 201.13, 202.01, 202.11

(c) With regards to Salinity Management a significant amount of material is being imported to site to lift the levels for the proposed development. The material proposed to be imported to site has relatively low salinity levels as advised by Environmental Consulting Services in correspondence date 11 May 2020. It is further noted that the stripped topsoil that is generally free of weeds is to be treated and reused on site in mass planting beds and under turf.

(d) Please refer to Civil Engineering drawing NHQC2-CF-CV-S-202.01

(e) Clean water from the Sediment Basin is discharged to a level spreader in the neighbouring property which travels overland towards South Creek

(f) Please refer to Section 2 of this report and associated Civil Engineering drawings NHQC2-CF-CV-S-201.11, 201.13, 202.01, 202.11. The erosion and sediment control plans have been designed in accordance with the requirements of NSW Department of Housing Manual, “Managing Urban Stormwater Soil & Construction” 2004 (Blue Book) and Camden Council Engineering Design Specifications

Appendix A – Soil & Water Management Plans

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH CAMDEN COUNCIL DEVELOPMENT GUIDELINES .THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

ACCESS AND SAFETY

1. THE CONTRACTOR SHALL COMPLY WITH ALL STATUTORY AND INDUSTRIAL REQUIREMENTS FOR PROVISION OF A SAFE WORKING ENVIRONMENT INCLUDING TRAFFIC CONTROL.
2. THE CONTRACTOR SHALL PROVIDE TRAFFIC MANAGEMENT PLANS FOR THE PROPOSED WORKS COMPLETED BY A SUITABLY QUALIFIED PERSON AND APPROVED BY COUNCIL / REGULATORY AUTHORITY. WORK IS NOT TO COMMENCE ON SITE PRIOR TO APPROVAL OF TRAFFIC MANAGEMENT SCHEME.
3. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES ACCESS TO BUILDINGS ADJACENT THE WORKS IS NOT DISRUPTED.
4. WHERE NECESSARY THE CONTRACTOR SHALL PROVIDE SAFE PASSAGE OF VEHICLES AND/OR PEDESTRIANS THROUGH OR BY THE SITE.
5. THE CONTRACTOR SHALL ENSURE PUBLIC ACCESS EXTERNAL TO THE SITE IS IN ACCORDANCE WITH COUNCILS / AUTHORITY / SITE MANAGERS REQUIREMENTS.

TREE PROTECTION

1. REFER TO LANDSCAPE / ARCHITECTS/NORTHROPS PLAN FOR TREES TO BE RETAINED AND PROTECTED.
2. ANY EXISTING/PROPOSED TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY;
   - 2.1. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE.
   - 2.2. ENSURING THAT NOTHING IS NAILED TO ANY PART OF THE TREE.
   - 2.3. CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY. COUNCILS AND/OR INDEPENDENT ARBORISTS TO BE CONSULTED WHERE TREE ROOTS ARE TO BE REMOVED AND/OR CUT.

SEDIMENT AND SOIL EROSION

1. THE SEDIMENT & EROSION CONTROL PLAN PRESENTS CONCEPTS ONLY. THE CONTRACTOR SHALL AT ALL TIMES BE RESPONSIBLE FOR THE ESTABLISHMENT & MANAGEMENT OF A DETAILED SCHEME MEETING COUNCILS AND OTHER REGULATORY AUTHORITY REQUIREMENTS AND MAKE PAYMENT OF ALL FEES.
2. THE CONTRACTOR SHALL INSTIGATE ALL SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH STATUTORY REQUIREMENTS AND IN PARTICULAR THE 'BLUE BOOK' (MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION), PRODUCED BY THE DEPARTMENT OF HOUSING AND COUNCILS POLICIES. THESE MEASURES ARE TO BE INSPECTED AND MAINTAINED ON A DAILY BASIS.
3. THE CONTRACTOR SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS INSTRUCTED IN THE DRAWINGS AND ADHERE TO ALL REGULATORY AUTHORITY REQUIREMENTS.
4. THE CONTRACTOR SHALL INFORM ALL SUB CONTRACTORS OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSTREAM LANDS AND WATERWAYS.
5. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE SHALL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE;
   - 5.1. CONSTRUCT TEMPORARY STABILISED SITE ACCESS INCLUSIVE OF SHAKE DOWN / WASH PAD.
   - 5.2. INSTALL ALL TEMPORARY SEDIMENT FENCES AND BARRIER FENCES. WHERE FENCES ADJACENT EACH OTHER, THE SEDIMENT FENCE CAN BE INCORPORATED INTO THE BARRIER FENCE.
   - 5.3. INSTALL SEDIMENT CONTROL MEASURES AS OUTLINED ON THE APPROVED PLANS.
6. UNDERTAKE SITE DEVELOPMENT WORKS SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF MINIMUM WORKABLE SIZE.
7. AT ALL TIMES AND IN PARTICULAR DURING WINDY AND DRY WEATHER, LARGE UNPROTECTED AREAS WILL BE STABILISED / KEPT MOIST (NOT WET) TO KEEP DUST UNDER CONTROL ENSURING CONFORMITY TO REGULATORY AUTHORITY REQUIREMENTS.
8. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) SHALL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
9. WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS THE CATCHMENT AREA HAS BEEN STABILISED AND/OR ANY LIKELY SEDIMENT BEEN FILTERED OUT.
10. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES SHALL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE STABILISED / REHABILITATED.
11. ALLOW FOR GRASS STABILISATION OF EXPOSED AREAS, OPEN CHANNELS AND ROCK BATTERS DURING ALL PHASES OF CONSTRUCTION.
12. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED TO ENSURE THAT THEY OPERATE EFFECTIVELY. REPAIRS AND/OR MAINTENANCE SHALL BE UNDERTAKEN REGULARLY AND AS REQUIRED, PARTICULARLY FOLLOWING RAIN EVENTS.
13. RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER SHALL BE DISPOSED OF IN ACCORDANCE WITH REGULATORY AUTHORITY REQUIREMENTS. CONTRACTOR TO PAY ALL FEES AND PROVIDE EVIDENCE OF SAFE DISPOSAL.
14. IF A TEMPORARY SEDIMENT BASIN IS REQUIRED, ENSURE SAFE BATTER SLOPES IN ACCORDANCE WITH THE GEOTECHNICAL REPORT. MAINTAIN ADEQUATE STORAGE VOLUME IN ACCORDANCE WITH PLANS. TEMPORARY PUMP 'CLEAN FLOCCULATED' WATER TO AUTHORITIES STORMWATER SYSTEM. ENSURE WHOLE DISTURBED SITE RUN-OFF IS DIRECTED TO TEMPORARY SEDIMENT BASIN.

EXISTING SERVICES

1. ALL UTILITY SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DIG SEARCHES, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY. NOTE SERVICE AUTHORITY REQUIREMENTS FOR LOCATING OF SERVICES PRIOR TO COMMENCEMENT OF WORKS.
2. CARE TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER COMMUNICATION, GAS OR ELECTRICAL SERVICES. HAND EXCAVATION ONLY IN THESE AREAS.
3. THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING SERVICES THAT ARE TO BE RETAINED IN THE VICINITY OF THE PROPOSED WORKS. ANY AND ALL DAMAGE TO THESE SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT AT THE CONTRACTORS EXPENSE.
4. THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE ADJUSTMENT (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS.
5. THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE CAPPING OFF, EXCAVATION AND REMOVAL (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS UNLESS DIRECTED OTHERWISE ON THE DRAWINGS OR BY THE SUPERINTENDENT.
6. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS ARE NOT AFFECTED BY THE WORKS AND ARE MAINTAINED AND NOT DISRUPTED.
7. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN APPROVAL OF THE PROGRAM FOR THE RELOCATION AND/OR CONSTRUCTION OF TEMPORARY SERVICES AND FOR ANY ASSOCIATED INTERRUPTION OF SUPPLY.
8. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
9. THE CONTRACTOR IS TO ALLOW TO POTHOLE ANY SERVICES WITHIN A PUBLIC RESERVE WITHIN THE EXTENT OF WORKS (E.G. STORMWATER CROSSINGS).

EARTHWORKS

1. AT THE COMMENCEMENT OF FILLING OPERATIONS FOR BULK EARTHWORKS A GEOTECHNICAL ENGINEER IS TO VISIT THE SITE & CONFIRM THE SUITABILITY OF THE METHODOLOGY OF ACHIEVING THE REQUIRED COMPACTION EARTHWORKS REQUIREMENTS.
2. STRIP TOPSOIL, VEGETABLE MATTER AND RUBBLE TO EXPOSE NATURALLY OCCURRING MATERIAL AND STOCKPILE ON SITE AS DIRECTED BY THE SUPERINTENDENT.
3. WHERE FILLING IS REQUIRED TO ACHIEVE DESIGN SUBGRADE, PROOF ROLL EXPOSED NATURAL SURFACE WITH A MINIMUM OF TEN PASSES OF A VIBRATING ROLLER (MINIMUM STATIC WEIGHT OF 10 TONNES) IN THE PRESENCE OF THE SUPERINTENDENT OR CERTIFYING ENGINEER.
4. THE CONTRACTOR IS TO ALLOW FOR A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO PROVIDE ADVICE AND CERTIFICATION OF ANY WORKS ASSOCIATED WITH TREATING OR MANAGING UNSUITABLE GROUND CONDITIONS THROUGHOUT THE CONTRACT (e.g. STABILITY OF EXCAVATIONS, POOR SUBGRADE, THE EXISTING QUARRY AREA etc).
5. ALL SOFT, WET OR UNSUITABLE MATERIAL IS TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS BELOW.
6. PROVIDE CERTIFICATES VERIFYING THE QUALITY OF IMPORTED MATERIAL FOR THE SUPERINTENDENTS APPROVAL.
7. ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200mm THICK LAYERS (LOOSE) AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289.2.1.1, AS1289.5.7.1 AND AS1289.5.8.8 OF NOT LESS THAN THE FOLLOWING STANDARD MINIMUM DRY DENSITY;

LOCATION	COMPACTION REQUIREMENT
LANDSCAPED AREAS	98% SMDD
ROADS	100% SMDD (IN ACCORDANCE WITH
COUNCIL SPECIFICATIONS)	
PAVED AREAS	100% SMDD (IN ACCORDANCE WITH
COUNCIL SPECIFICATIONS)	

8. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED N.A.T.A. REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE UNLESS AGREED DIFFERENTLY WITH THE PRINCIPAL.
9. ALLOW THE FOLLOWING COMPACTION TESTING BY N.A.T.A. REGISTERED LABORATORY FOR PLATFORMS AND FILL LAYERS IN ACCORDANCE WITH THE LATEST VERSION OF AS3798. (MINIMUM 3 TESTS PER LAYER) OR 1 TEST PER MATERIAL TYPE PER 2500sq.m OR 1 TEST.
10. WHERE TEST RESULTS ARE BELOW THE SPECIFIED COMPACTION, RECOMPACT (TYNING FIRST AS NECESSARY) AND RETEST UNTIL SPECIFIED COMPACTION STANDARDS ARE ACHIEVED, OTHERWISE SUBGRADE REPLACEMENT IS REQUIRED IF COMPACTION STANDARDS ARE NOT ACHIEVED.
11. ALLOW FOR EXCAVATION IN ALL MATERIALS AS FOUND U.N.O. NO ADDITIONAL PAYMENTS WILL BE MADE FOR EXCAVATION IN WET OR HARD GROUND.

EARTHWORKS (cont)

12. WHERE THERE IS INSUFFICIENT EXCAVATED MATERIAL SUITABLE FOR FILLING OR SUBGRADE REPLACEMENT, THE CONTRACTOR IS TO ALLOW TO IMPORT FILL. IMPORTED FILL SHALL COMPLY WITH THE FOLLOWING;
   - 1.1. BE OF VIRGIN EXCAVATED NATURAL MATERIAL OR
   - 1.2. CONTRACTOR TO PROVIDE EVIDENCE IMPORT IS SUITABLE FOR USE
   - 1.3. PLASTICITY INDEX BETWEEN 2-15% AND CBR > 8
   - 1.4. FREE FROM ORGANIC AND PERISHABLE MATTER
   - 1.5. MAXIMUM SIZE 50mm, PASSING 75 MICRON SIEVE (<25%)
2. THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLERS MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED AT THEIR COST.
12. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE AND MAINTAIN THE INTEGRITY OF ALL SERVICES, CONDUITS AND PIPES DURING CONSTRUCTION, SPECIFICALLY DURING THE BACKFILLING AND COMPACTION PROCEDURE. ANY AND ALL DAMAGE TO NEW OR EXISTING SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST.

DEEP EXCAVATIONS

13. PRIOR TO THE COMMENCEMENT OF EXCAVATION WORKS GREATER THAN 1.5m IN DEPTH, THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER TO DETERMINE THE STABILITY OF MATERIAL BEING EXCAVATED AND BENCHING REQUIREMENTS / MINIMUM BATTER SLOPES.
14. THE CONTRACTOR MUST PROVIDE THE SUPERINTENDENT AND OR THE DESIGN ENGINEER WITH A COPY OF THE GEOTECHNICAL ENGINEERS REPORT PRIOR TO PRACTICAL COMPLETION.
15. THE CONTRACTOR IS TO PROVIDE SAFETY BARRIERS, FENCING AND THE LIKE IN ACCORDANCE WITH OH&S AND REGULATORY AUTHORITY REQUIREMENTS AND TO ENSURE THE WORK SITE IS SAFE AT ALL TIMES.

SITEWORKS

1. ALL WORKS TO BE IN ACCORDANCE WITH RELEVANT LOCAL COUNCIL / REGULATORY AUTHORITIES REQUIREMENTS, ALL SPECIFICATIONS AND AUSTRALIAN STANDARDS. CONFLICTS BETWEEN SAID DOCUMENTS SHALL BE REFERRED TO THE SUPERINTENDENT FOR DIRECTION.
2. THE CONTRACTOR IS TO REVIEW THE DRAWINGS PRIOR TO PRICING AND COMMENCEMENT AND REPORT ANY DISCREPANCIES TO NORTHROP
3. ANY PRODUCTS SPECIFIED OR USED TO BE VERIFIED BY THE CONTRACTOR AS BEING SAFE AND APPROPRIATE FOR USE. NORTHROP DO NOT TAKE ANY RESPONSIBILITY FOR THE USE OF UNSAFE PRODUCTS
4. THE CONTRACTOR IS TO DESIGN, OBTAIN APPROVALS AND CARRY OUT REQUIRED TEMPORARY TRAFFIC CONTROL PROCEDURES DURING CONSTRUCTION IN ACCORDANCE WITH ALL REGULATORY AUTHORITIES, INCLUSIVE OF LOCAL COUNCIL REGULATIONS AND REQUIREMENTS.
5. THE CONTRACTOR IS TO OBTAIN ALL AUTHORITY APPROVALS AS REQUIRED PRIOR TO COMMENCEMENT OF WORKS.
6. RESTORE ALL PAVED, COVERED, GRASSED AND LANDSCAPED AREAS TO THEIR ORIGINAL CONDITION OR AS DIRECTED BY THE SITE SUPERINTENDENT ON COMPLETION OF WORKS. WHERE PLANTING OF NEW GRASS IS NECESSARY REFER TO LANDSCAPE ARCHITECT AND / OR ARCHITECT DOCUMENTATION.
7. ON COMPLETION OF ANY TRENCHING WORKS, ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR AS DIRECTED BY THE SITE SUPERINTENDENT, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL, GRASSED AREAS AND ROAD PAVEMENTS.
8. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR PRIOR TO COMMENCEMENT OF WORKS.THE CONTRACTOR IS TO ENSURE THAT SURVEY BOUNDARIES ARE DERIVED FROM A CADASTRAL SURVEY RATHER THAN A DETAIL SURVEY.
9. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING LEVELS ONSITE PRIOR TO LODGMENT OF TENDER AND ONSITE WORKS. THE PRICE AS TENDERED SHALL BE INCLUSIVE OF ALL WORKS SHOWN ON THE TENDER PROJECT DRAWINGS. ADDITIONAL PAYMENTS FOR WORKS SHOWN ON THE TENDER PROJECT DRAWINGS WILL NOT BE APPROVED.
10. DO NOT OBTAIN DIMENSIONS BY SCALING DRAWINGS.
11. IN CASE OF DOUBT OR DISCREPANCY REFER TO SUPERINTENDENT FOR CLARIFICATION OR CONFIRMATION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
12. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED. MAKE SMOOTH TRANSITION TO EXISTING FEATURES AND MAKE GOOD WHERE JOINED.
13. TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE AND A MIN 50mm IN BITUMINOUS PAVING.
14. ALL CIVIL ENGINEERING DESIGN HAS BEEN DOCUMENTED UNDER THE ASSUMPTION THAT ALL NECESSARY SITE CONTAMINATION REMEDIATION WORKS HAVE BEEN SATISFACTORILY COMPLETED (IF APPLICABLE) AND THAT THE SITE IS NOT AFFECTED BY ANY SOIL STRATA OR GROUNDWATER TABLE CONTAMINATION.
15. NOTES ON DETAILS PROVIDED TAKE PRECEDENCE OVER SPECIFICATION NOTES UNLESS IN CONTRADICTION WITH COUNCIL/AUTHORITY SPECIFICATIONS/DETAILS. CONTRACTOR TO CONSULT WITH NORTHROP FOR ANY DISCREPANCIES.
16. IF THE CONTRACTOR DISCOVERS HAZARDOUS/CONTAMINATED MATERIAL THE CONTRACTOR SHALL CONSULT WITH AN ENVIRONMENTAL SPECIALIST.
17. THE CONTRACTOR IS RESPONSIBLE FOR DEALING WITH COMMUNITY COMPLAINTS ASSOCIATED WITH THE WORKS UNDER THE CONTRACT AND TO COMPENSATE FOR/RECTIFY ANY DAMAGE REASONABLY CAUSED BY THE CONTRACTOR.
18. THE TERM 'MAKE GOOD' OR 'MAKE NEAT' IS IN REFERENCE TO THE SATISFACTION OF NORTHROP OR CERTIFYING ENGINEER. THE CONTRACTOR IS TO SEEK CLARIFICATION FROM NORTHROP OR THE CERTIFYING ENGINEER IF NECESSARY

TOLERANCES TO BE IN ACCORDANCE WITH COUNCIL/AUTHORITY REQUIREMENTS.

SERVICE TRENCHES

19. SAWCUT EXISTING SURFACES PRIOR TO EXCAVATION. BACKFILL ALL TRENCHES UNDER EXISTING ROADS, PAVEMENTS AND PATHS WITH STABILISED SAND 5% CEMENT OR DGS40 MATERIAL (5% CEMENT) COMPACTED IN 200mm THICK LAYERS TO 98% MMDD TO UNDERSIDE OF PAVEMENT.

BACKFILL ALL TRENCHES NOT UNDER ROADS, PAVEMENTS, PATHS AND BUILDINGS WITH APPROVED EXCAVATED OR IMPORTED MATERIAL COMPACTED TO 95% SMDD.

STORMWATER DRAINAGE

1. ALL PIPES SHALL BE CLASS 2 RUBBER-RING JOINTED RCP U.N.O. WHERE uPVC PIPES HAVE BEEN SPECIFIED, THE FOLLOWING CLASS PIPEWORK IS TO BE ADOPTED U.N.O. Ø100mm OR LESS TO BE CLASS 'SN10' AND ABOVE Ø100mm TO BE CLASS 'SN8'. CLASS 4 PIPES ARE TO BE USED WHERE COVER OVER THE PIPE IS BELOW 600mm AND BENEATH A TRAFFICABLE PAVEMENT.
2. uPVC STORMWATER LINES PASSING UNDER FLOOR SLABS TO BE CONCRETE ENCASED.
3. FRC PIPES EQUAL TO THAT OF THE STEEL REINFORCED CONCRETE PIPE CLASS SPECIFIED ON THE DRAWINGS MAY BE USED SUBJECT TO APPROVAL FROM THE SUPERINTENDENT.
4. ALL PIPE ARE TO BE LAID AT 1.0% MIN GRADE U.N.O.
5. COVERS
   - 5.1. USE HOT DIPPED GALVANISED COVERS AND GRATES COMPLYING WITH RELEVANT COUNCIL AND AUSTRALIAN STANDARDS.
   - 5.2. ALL COVERS AND GRATES TO BE POSITIONED IN A FRAME AND MANUFACTURED AS A UNIT.
   - 5.3. ALL COVERS AND GRATES TO BE FITTING WITH POSITIVE COVER LIFTING KEYS
   - 5.4. OBTAIN SUPERINTENDENTS APPROVAL FOR THE USE OF CAST IRON SOLID COVERS AND GRATES. CAST IRON SOLID COVERS (IF APPROVED) TO CONSIST OF CROSS-WEBBED, CELLULAR CONSTRUCTION WITH THE RIBS UPPERMOST TO ALLOW INFILLING WITH CONCRETE. INSTALL POSITIVE COVER LIFTING KEYS AND PLASTIC PLUGS.
   - 5.5. UNLESS DETAILED OR SPECIFIED OTHERWISE, COVERS AND GRATES TO BE CLASS 'D' IN VEHICULAR PAVEMENTS AND CLASS 'B' ELSEWHERE.
   - 5.6. ALL GRATED TRENCH DRAINS SHOULD BE 'CLASS D' CAST IRON WITHIN VEHICULAR PAVEMENTS AND CLASS 'B' HEEL SAFE WITHIN PEDESTRIAN PAVEMENTS.
6. ALL PIPE BENDS, JUNCTIONS, ETC ARE TO BE PROVIDED USING PURPOSE MADE FITTINGS OR STORMWATER PITS.
7. ALL CONNECTIONS TO EXISTING DRAINAGE STRUCTURES SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
7. ENSURE PIPEWORK DOES NOT PROTRUDE BEYOND THE INSIDE FACE OF THE PIT WALL. PIPEWORK IS TO FINISH FLUSH WITH INTERNAL WALL (UNLESS OTHERWISE NOTED OR DETAILED). CONNECTION TO BE RENDERED AND MADE NEAT ON THE INSIDE FACE OF THE PIT
8. THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
9. U.N.O. MATERIAL USED FOR BEDDING OF PIPES SHALL BE APPROVED NON-COHESIVE GRANULAR MATERIAL HAVING HIGH PERMEABILITY AND HIGH STABILITY WHEN SATURATED AND FREE OF ORGANIC AND CLAY MATERIAL.
10. BEDDING SHALL BE U.N.O TYPE HS2 UNDER ROADS AND H2 UNDER GENERAL AREAS IN ACCORDANCE WITH CURRENT RELEVANT INDUSTRY STANDARDS AND GUIDELINES.
11. THE CONTRACTOR SHALL ENSURE AND PROTECT THE INTEGRITY OF ALL STORMWATER PIPES DURING CONSTRUCTION. ANY AND ALL DAMAGE TO THESE PIPES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT AND AT NO EXTRA COST TO THE CONTRACT.
12. NOTE THAT THE PIT COVER LEVEL NOMINATED IN GUTTERS ARE TO THE INVERT OF THE GUTTER WHICH ARE 40mm LOWER THAN THE PAVEMENT LEVEL AT LIP OF GUTTER. REFER KERB DETAILS FOR CONFIRMATION.

SUBSOIL DRAINAGE

13. Ø100mm SUBSOIL DRAINAGE LINES WITH NON-WOVEN GEOTEXTILE FILTER SOCK SURROUND SHALL BE CONNECTED TO A STORMWATER DRAINAGE PIT (AT MIN 1% LONGITUDINAL GRADE) AND PROVIDED IN THE FOLLOWING LOCATIONS;
   - 13.1. THE HIGH SIDE OF PROPOSED TRAFFICKED PAVEMENT AREAS.
   - 13.2. ALL PLANTER AND TREE BEDS PROPOSED ADJACENT TO PAVEMENT AREAS.
   - 13.3. BEHIND RETAINING WALLS (IN ACCORDANCE WITH RETAINING WALL DETAILS).
   - 13.4. UPSTREAM OF STORMWATER PITS
   - 13.5. BENEATH FLEXIBLE PAVEMENT ALONG A SAG PROFILE
   - 13.6. ALL OTHER AREAS SHOWN ON DRAWINGS.
   - 13.7. CONTRACTOR IS TO MAKE ALLOWANCE IN BOTH TENDER AND CONSTRUCTION COSTING TO ALLOW FOR SUBSURFACE DRAINAGE BEHIND ALL RETAINING WALLS / ABOVE LOCATIONS AND TO MAKE CONNECTION TO STORMWATER SYSTEM.
14. WHERE SUBSOIL DRAINAGE PASSES BENEATH BUILDINGS / PAVED AREAS AND/OR PAVEMENTS. CONTRACTOR TO ENSURE Ø100mm CLASS 'SN10' uPVC DRAINAGE LINE IS USED AND THAT PROPRIETARY FITTINGS ARE USED TO RECONNECT SUBSOIL DRAINAGE LINE.
15. THE CONTRACTOR SHALL INSTALL INSPECTION OPENINGS / CLEAROUTS TO ALL SUBSOIL DRAINAGE LINES AND DOWNPIPE LINES AS SPECIFIED ON DRAWINGS AND IN ACCORDANCE WITH COUNCIL SPECIFICATIONS. HOWEVER AS A MINIMUM THEY ARE TO BE PLACED AT MAXIMUM 30m CENTRES AND AT ALL UPSTREAM ENDPOINTS.
16. PROVIDE 3.0m LENGTH OF Ø100 SUBSOIL DRAINAGE LINE WRAPPED IN NON-WOVEN GEOTEXTILE FILTER FABRIC TO THE UPSTREAM SIDE OF STORMWATER PITS, LAID IN STORMWATER PIPE TRENCHES AND CONNECTED TO DRAINAGE PIT.
17. IN AREAS WHERE DUMPED / HAND PLACED ROCK IS USED AS A MEANS OF SCOUR PROTECTION, CONTRACTOR IS TO EXCAVATE A MINIMUM OF 100mm FROM PROPOSED SURFACE, LEVEL AND COMPACT SUBGRADE AS SPECIFIED. ROCK TO THEN BE PLACED ON GEOTEXTILE FILTER FABRIC A34.
18. THE CONTRACTR IS TO ENSURE THAT A MINIMUM 150mm CLEARANCE IS PROVIDED BETWEEN THE INTERNAL FACE OF PIPE AND ADJACENT INTERNAL PIT WALLS
19. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN 50mm CONCRETE BED (OR 75mm THICK BED OF 12mm BLUE METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK. (E.G. CLEAN 5-12mm AGGREGATE)

PRECAST STORMWATER PITS

1. THE USE OF PRE-CAST STORMWATER DRAINAGE PITS IS NOT ACCEPTED WITHOUT CONFIRMATION BETWEEN NORTHROP ENGINEERS AND THE CONTRACTOR REGARDING QUALITY CONTROL AND CERTIFICATION OF FINISHES.
2. REFER MANUFACTURERS SPECIFICATIONS FOR INSTALLATION GUIDELINES.
3. PRECAST PIT TO BE PLACED ON MINIMUM 150mm THICK CONCRETE PAD AND BED MINIMUM 50mm WHILST CONCRETE IS STILL PARTIALLY WET.
4. ENSURE PENETRATION IS CORED THROUGH PIT FACE TO ALLOW CONNECTION AND IS NOT OVERSIZED.
5. ENSURE A SEALED FINISH AT PIPE CONNECTIONS BY HAND-APPLYING MINIMUM 150mm THICK CONCRETE AROUND PIPE AT THE EXTERNAL FACE OF THE PIT. ENSURE CONCRETE DOES NOT AFFECT THE INTEGRITY OF THE SUBSOIL DRAINAGE CONNECTED TO THE PIT.
6. 5.ENSURE A SMOOTH SEALED FINISH AT PIPE CONNECTIONS BY HAND APPLYING CONCRETE AROUND THE PIPE ON THE INTERNAL FACE OF THE PIT TO FILL IN ANY VOIDS CREATED WHEN PENETRATION FOR THE PIPE WAS CORED.
7. ENSURE PIPEWORK DOES NOT PROTRUDE BEYOND THE INSIDE FACE OF THE PIT WALL. PIPEWORK IS TO FINISH FLUSH WITH INTERNAL WALL (UNLESS OTHERWISE NOTED OR DETAILED). CONNECTION TO BE RENDERED AND MADE NEAT ON THE INSIDE FACE OF THE PIT.
8. ENSURE THE OUTLET PIPE IS CONNECTED AT THE INVERT LEVEL OF THE PIT TO DRAIN. ALTERNATIVELY FILL THE BASE OF THE PIT WITH MASS CONCRETE (MIN 50mm THICK) OR APPROVED GROUTING COMPOUND (LESS THAN 50mm THICK) TO DRAIN.
9. PROVIDE CONCRETE BENCHING TO SIDES OF PIT TO SUIT PIPE DIAMETER. HEIGHT TO MATCH MINIMUM 1/3 PIPE DIAMETER.

RAINWATER REUSE

1. PROVIDE RAINWATER RE-USE SYSTEM TO SUPPLY WATER FOR IRRIGATION OR FOR OTHER USES AS NOTED.
2. GUTTER GUARD TO BE INSTALLED ON ALL EAVES GUTTERS.
3. PRESSURE PUMP / TAP TO BE PROVIDED FOR THE REUSE OF CAPTURED TANK WATER.
4. A PERMANENT SIGN IS TO BE LOCATED IN THE VICINITY OF THE TANK STATING THE WATER IS "NON POTABLE WATER" WITH APPROPRIATE HAZARD IDENTIFICATION.
5. ALL RAINWATER SERVICES SHALL BE CLEARLY LABELED "NON POTABLE WATER" WITH APPROPRIATE HAZARD IDENTIFICATION.
6. PIPEWORK USED FOR RAINWATER SERVICES SHALL BE COLOURED LILAC IN ACCORDANCE WITH AS1345.
7. ALL VALVES AND APERTURES SHALL BE CLEARLY AND PERMANENTLY LABELED WITH SAFETY SIGNS TO COMPLY WITH AS1319.
8. AN AIR GAP OR RPZD MUST BE INSTALLED TO ENSURE BACKFLOW PREVENTION (IF MAINS 'TOP UP' / BYPASS UTILISED)
9. RAINWATER TANK RETICULATION SYSTEM AND MAINS WATER BYPASS ARRANGEMENT TO BE INSTALLED IN ACCORDANCE WITH AS/NZS 3500.1.2-2003 AND THE NSW CODE OF PRACTICE - PLUMBING AND DRAINAGE.
10. A FIRST FLUSH FILTRATION DEVICE IS REQUIRED TO BYPASS THE FIRST 1mm OF RAINWATER.

SIGNAGE AND LINEMARKING

1. ALL SIGNAGE TO BE INSTALLED IN ACCORDANCE WITH AUSTRALIAN STANDARDS 1742 / RMS STANDARDS AND SPECIFICATIONS.
2. LINE MARKING AND PAINT SHALL BE IN ACCORDANCE WITH AS1742.3 AND RMS STANDARDS.
3. PAINT SHALL BE TYPE 3 CLASS 'A' AND THE COLOUR SHALL BE WHITE AND NOT SUBJECT TO DISCOLOURATION BY BITUMEN FROM ROAD SURFACE. ALL PAINT TO BE APPLIED BY MECHANICAL SPRAYER. LINE MARKING SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm AND 0.40mm
4. PAINT SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm AND 0.40mm.
5. CARPARK LINEMARKING TO BE 80mm WIDE.
6. WHEEL STOPS TO BE PROVIDED FOR PARKING SPOTS ADJACENT TO A WALL WITHIN 1.1m OF THE FACE OF KERB IN ACCORDANCE WITH AS1428.1
7. REFER TO AUSTROADS FOR REMOVAL OF LINEMARKING.

LANDSCAPING

1. REFER TO DRAWINGS BY OTHERS FOR DETAILS OF PROPOSED LANDSCAPING TREATMENT.
2. IF NO LANDSCAPING PLANS EXIST OR PLANS DO NOT SPECIFY GENERAL SURFACE STABILISATION THEN ALL DISTURBED SURFACE TO BE TEMPORARILY STABILISED WITH HYDROMULCH UPON COMPLETION OF WORKS. A 500mm STRIP OF TURF (CT2 COUCH) IS TO BE PLACED BEHIND ALL NEW KERB.

FOR CONSTRUCTION

Date :18.06.2020 6:33 PM Plotted By : JO Found : C:_NE_jobs_home\NE_OneDrive\Northrop Consulting Engineers\SY Project Drive - 190518 - NHQC2\02-CF\D-Drawings\D-Northrop\C-CIVIL\2-CAD\2-CAD FILES\2-DD\NHQC2-CF-CV-S-DDC201.11.dwg

DRAWN: J. O DESIGNED: T. BUGAEV JOB MANAGER: N. SUTHERLAND VERIFIER: J. GILLIGAN

AMMENDMENTS

REV	BY	DATE	DESCRIPTION
A	JO	18.06.20	ISSUED FOR CONSTRUCTION

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.

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PERUMAL PEDAVOLI ARCHITECTS

CATHERINE FIELD PRIMARY SCHOOL
NEW HIGH QUALITY CLASSROOMS

DRAWING NAME
SPECIFICATION NOTES - SHEET 01

PROJECT NORTH

DRAWN	CHECKED	VERIFIED	DATE
JO	JG	JG	16.06.20

DRAWING NUMBER
PROJECT CODE SCH.REF. DISC. TYPE SERIES#
NHQC2-CF-CV-S-DDC201.11

REVISION
A

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH CAMDEN COUNCIL DEVELOPMENT GUIDELINES .THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

ENGINEERING CERTIFICATION

1. TO CERTIFY THE CONSTRUCTED CIVIL WORKS, A QUALIFIED EXPERIENCED ENGINEER IS TO VISIT THE SITE TO OBSERVE CONSTRUCTION TECHNIQUES AND VARIOUS ELEMENTS THAT MAY BE CONCEALED WHEN THE WORKS ARE COMPLETE.

2. THIS SPECIFICATION ALLOWS FOR CERTIFICATION OF WORKS CONTROLLED BY A PRIVATE CERTIFIER FOR LAND DEVELOPMENT WORKS. THIS SPECIFICATION DOES NOT COVER CERTIFICATION REQUIREMENTS FOR AUTHORITIES SUCH AS COUNCIL, RMS OR OFFICE OF WATER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND PROVIDE ALL PROJECT SPECIFIC CONSTRUCTION COMPLIANCE (WORKS AS EXECUTED) INFORMATION TO THE SATISFACTION OF THE STAKEHOLDER / AUTHORITY. DISCREPANCIES BETWEEN THIS SPECIFICATION AND SPECIFICATIONS OF OTHER EXTERNAL STAKEHOLDERS / AUTHORITIES IS TO BE REPORTED TO THE SUPERINTENDENT FOR CLARIFICATION.

3. THE CONTRACTOR IS TO AGREE WITH THE ENGINEER AN APPROPRIATE SITE VISIT SCHEDULE AND FEE ARRANGEMENT PRIOR TO COMMENCEMENT OF THE WORKS. THE CONTRACTOR SHALL ENSURE THAT THE ENGINEER CAN SAFELY ACCESS ALL CIVIL ELEMENTS TO BE REVIEWED. SITE VISITS ARE CONDUCTED DURING NORMAL BUSINESS HOURS. WE REQUIRE TWO (2) WORKING DAY NOTICE FOR ANY SITE VISIT.

4. TO PROVIDE CERTIFICATION THE ENGINEER MUST VISIT THE SITE TO OBSERVE.
   - 4.1. PAVEMENTS
     - 4.1.1. POOR SUBGRADE CONDITIONS
     - 4.1.2. PROOF ROLLING OF SUB-GRADE
     - 4.1.3. PLACEMENT OF SUB-BASE COURSE, BASE COURSE AND WEARING COURSE.
     - 4.1.4. PLACEMENT OF STEEL REINFORCEMENT , DOWELS AND JOINT CRADLES PRIOR TO POURING OF CONCRETE
   - 4.2. EARTHWORKS
     - 4.2.1. TOPSOIL STRIP
     - 4.2.2. EARTHWORKS BATTER
     - 4.2.3. FILLING
   - 4.3. STORMWATER DRAINAGE
     - 4.3.1. DRAINAGE TRENCHES PRIOR TO BACKFILLING
     - 4.3.2. LEGAL POINT OF CONNECTION PRIOR TO BACKFILLING
     - 4.3.3. ANY OTHER DRAINAGE STRUCTURE THAT MAY BE CONCEALED DURING THE COURSE OF THE WORKS
   - 4.4. CONCRETE STRUCTURES
     - 4.4.1. PLACEMENT OF ANY STEEL REINFORCEMENT PRIOR TO CONSTRUCTION.

5. THE CONTRACTOR SHALL PROVIDE SURVEYED LEVELS, PREPARED BY A QUALIFIED SURVEYOR FOR SUBGRADE, SUB-BASE COURSE, BASE COURSE AND WEARING COURSE.

6. THE CONTRACTOR SHALL PROVIDE WORKS AS EXECUTED (WAE) DOCUMENTATION PREPARED BY A QUALIFIED PRACTISING SURVEYOR. THE WAE DRAWINGS SHALL CLEARLY SHOW, STORMWATER GRATE/ COVER LEVELS, STORMWATER PIT INVERT LEVELS AND CORRESPONDING INVERT LEVELS OF ANY INCOMING OR OUTGOING PIPES, DIAMETER OF ALL PIPES, DIMENSIONS AND VOLUME OF ON-SITE DETENTION FACILITIES, INVERT LEVELS OF ORIFICE PLATES, OVERFLOW WEIRS, BASE OF TANK FINISHED LEVELS OF PAVEMENTS. THE WAE SHALL SHOW WHERE THE SIZE OR ALIGNMENT OF CIVIL ENGINEERING ELEMENTS WHEN THEY DEVIATE FROM THE DESIGN DOCUMENTATION.

7. THE WAE DRAWINGS SHALL BE STAMPED WITH THE FOLLOWING STATEMENT "THESE WAE DRAWINGS HAVE BEEN PREPARED BY [COMPANY NAME] AND ARE A TRUE AND ACCURATE REPRESENTATION OF THE CONSTRUCTED WORKS". EACH DRAWING SHALL BE SIGNED AND DATED BY THE SURVEYOR WHO PREPARED THE DRAWINGS.

THESE WAE DRAWINGS HAVE BEEN PREPARED BY [COMPANY NAME} AND ARE A TRUE AND ACCURATE REPRESENTATION OF THE CONSTRUCTED WORKS.

SIGNED..... DATE.....

NAME.....

POSITION.....

8. WAE SHALL BE PROVIDED IN BOTH AUTOCAD AND PDF FORMAT. NORTHROP CONSULTING ENGINEERS WILL PROVIDE ENGINEERING PLANS TO THE CONTRACTOR IN AUTOCAD FORMAT TO AID PREPARATION OF WAE DOCUMENTATION.

9. IF THE WORKS ARE SUBJECT TO APPROVAL BY THE UPPER PARRAMATTA RIVER CATCHMENT TRUST (UPRCT) THE CONTRACTOR IS TO ABIDE BY THE UPRCT APPROVAL CHECKLIST.

10. CONTRACTOR IS TO UNDERTAKE A CCTV INSPECTION OF ALL STORMWATER DRAINAGE PIPELINES AND PROVIDE TO THE ENGINEER FOR APPROVAL.

11. THE CONTRACTOR SHALL PROVIDE ALL RELEVANT TEST CERTIFICATES PROGRESSIVELY THROUGHOUT THE DURATION OF THE WORKS. ALL TEST CERTIFICATES SHALL BE PREPARED BY A NATA REGISTERED LABORATORY. TEST CERTIFICATES ARE REQUIRED FOR PROOF ROLLING, SUBGRADE COMPACTION, COMPACTION OF PAVEMENT LAYERS, COMPACTION OF FILLING OPERATIONS, CONCRETE SLUMP TEST, AND CONCRETE STRENGTH TESTS. THE CONTRACT SHALL PROVIDE ALL RELEVANT VALIDATIONS BY A GEOTECHNICAL ENGINEER FOR ALL IMPORTED FILL

12. EACH TEST CERTIFICATE WILL NOMINATE THE DATE AND TIME OF THE TEST AND PROVIDE A LOCATION OF WHERE THE TEST SAMPLE WAS TAKEN FROM.

13. THE CONTRACTOR SHALL ARRANGE FOR THE ENGINEER TO CONDUCT A FINAL VISIT TO REVIEW OF THE CONSTRUCTED WORKS. THIS WILL REVIEW WILL NOT TAKE PLACE UNTIL THE WAE DOCUMENTATION AND RELEVANT TEST CERTIFICATES HAVE BEEN RECEIVED.

14. IF DEFECTIVE OR INCOMPLETE WORK IS FOUND DURING THE FINAL INSPECTION ANOTHER INSPECTION MAY BE REQUIRED AT THE CONTRACTORS EXPENSE TO VERIFY THE RECTIFICATION WORKS HAVE BEEN COMPLETED.

ASPHALTIC CONCRETE

1. GENERAL
   - 1.1. ALL ASPHALTIC CONCRETE (AC) WORK TO BE PREPARED AND CARRIED OUT IN ACCORDANCE WITH GOOD ASPHALTIC PAVING PRACTICE AS DESCRIBED IN AS2150-2005 "ASPHALT (HOT-MIXED) PAVING - GUIDE TO GOOD PRACTICE" AND CURRENT RMS SPECIFICATIONS.

2. PAVEMENT PREPARATION
   - 2.1. THE FINISHED PAVEMENT SURFACE TO BE SEALED SHALL BE WITHIN +/- 2% OF THE OPTIMUM AND BROOMED BEFORE COMMENCEMENT OF WORK TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL FOREIGN MATTER.
   - 2.2. PRIME ALL SURFACES TO BE SEALED. ALLOW PRIME TO SETTLE FOR A MINIMUM OF 3 DAYS BEFORE APPLYING TACK COAT AND ASPHALT.
   - 2.3. SWEEP PRIMED SURFACES BEFORE APPLYING TACK COAT.
   - 2.4. ALL DEPRESSIONS OR UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT UP TO GENERAL LEVEL OF PAVEMENT WITH ASPHALTIC CONCRETE BEFORE LAYING OF MAIN COURSE.
   - 2.5. ALL DEFECTS IN THE BASE COURSE INCLUDING CRACKS, SURFACE DEFORMATION AND THE LIKE SHALL BE REPAIRED AS DIRECTED BY THE SUPERINTENDENT PRIOR TO PLACEMENT OF TACK COAT AND/OR AC COURSES.

3. PLACEMENTS
   - 3.1. ALL ASPHALT SHALL BE PLACED UTILISING APPROVED MECHANICAL PAVING MACHINES. DO NOT HAND PLACE ASPHALT WITHOUT PRIOR APPROVAL FROM ENGINEER.

4. JOINTS
   - 4.1. THE DENSITY AND SURFACE FINISH AT JOINTS SHALL BE SIMILAR TO THOSE OF THE REMAINDER OF THE LAYER.

5. COMPACTION
   - 5.1. ALL COMPACTION SHALL BE UNDERTAKEN USING SELF PROPELLED ROLLERS.
   - 5.2. INITIAL ROLLING SHALL BE COMPLETED BEFORE THE MIX TEMPERATURE FALLS BELOW 105°C USING A STEEL DRUM ROLLER HAVING A MINIMUM WEIGHT OF 8 TONNES AND A MAXIMUM UNIT LOAD ON THE REAR DRUM EQUIVALENT TO 55kN/m WIDTH OF DRUM.
   - 5.3. SECONDARY ROLLING SHALL BE COMPLETED BEFORE THE MIX TEMPERATURE FALLS BELOW 80°C USING A PNEUMATIC TYRED ROLLER OF AT LEAST 10 TONNES MASS. A MINIMUM TYRE PRESSURE OF 550kPA AND A MINIMUM TOTAL LOAD OF 1 TONNE ON EACH TYRE.
   - 5.4. ROLLED SURFACES SHALL BE SMOOTH AND FREE OF UNDULATIONS. BONY AND/OR UNEVEN SURFACES WILL BE REJECTED.
   - 5.5. PROVIDE 2 No. MINIMUM COMPACTION TESTS.

6. FINISHED SURFACE PROPERTIES
   - 6.1. FINISHED SURFACES SHALL BE SMOOTH, DENSE AND TRUE OF SHAPE AND SHALL NOT VARY MORE THAN;
     - 6.1.1. 3mm FROM THE SPECIFIED PLAN LEVEL AT ANY POINT.
     - 6.1.2. 3mm FROM THE BOTTOM OF A STRAIGHT EDGE LAID TRANSVERSELY.
     - 6.1.3. 5mm FROM THE BOTTOM OF A STRAIGHT EDGE LAID LONGITUDINALLY.
     - 6.1.4. MINUS 0 TO PLUS 2mm ADJACENT TO OTHER ELEMENTS SUCH AS KERBS AND THE LIKE TO AVOID POOLING OF SURFACE WATER.
     - 6.1.5. MINUS 0 FROM THE SPECIFIED THICKNESS.

7. DO NOT STORE PLANT EQUIPMENT OR TRAFFIC NEWLY LAID ASPHALTIC CONCRETE PAVEMENTS WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

8. DO NOT APPLY MARKING PAINTS UNTIL ASPHALT HAS CURED IN ACCORDANCE WITH PAINT MANUFACTURERS SPECIFICATIONS.

CONCRETE PAVEMENTS

1. THIS SECTION REFERS TO CIVIL CONCRETE WORKS AND DOES NOT INCLUDE STRUCTURAL ELEMENTS SUCH AS BUILDINGS, BELOW GROUND STRUCTURES OR RETAINING WALLS.

2. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS

3. CONCRETE QUALITY AND REINFORCING COVER
   ALL REQUIREMENTS OF THE CURRENT ACSE CONCRETE SPECIFICATION DOCUMENT 1 SHALL APPLY TO THE FORMWORK, REINFORCEMENT AND CONCRETE UNLESS NOTED OTHERWISE.

ELEMENT	CONCRETE STRENGTH f'c (MPa)	SPECIFIED SLUMP	NOMINAL AGGREGATE SIZE	MAX. 56 DAY DRYING SHRINKAGE	COVER (mm)
KERBS AND PATHS	25	60	20	650microns	TOP 40
PITS AND VEHICULAR PAVEMENTS	32	80	20	650microns	TOP 40

4. CONCRETE PROPERTIES SHALL BE VARIED FROM NORMAL CLASS AS FOLLOWS
   - 4.1. MINIMUM CEMENT CONTENT 250 kg/m³
   - 4.2. MAXIMUM 56 DAY SHRINKAGE STRAIN = AS NOMINATED ABOVE
   - 4.3. PRIOR TO COMMENCEMENT CONCRETE SUPPLIER TO PROVIDE DRYING SHRINKAGE TEST RESULTS FROM PRODUCTION ASSESSMENT AS EVIDENCE THAT SPECIFIED DRYING SHRINKAGE LIMITS CAN BE ACHIEVED USING NORMAL MIX DESIGN.

5. ALL REINFORCEMENT SHALL BE FIRMLY SUPPORTED ON MILD STEEL PLASTIC TIPPED CHAIRS. PLASTIC CHAIRS OR CONCRETE CHAIRS AT NOT GREATER THAN 1m CENTRES BOTH WAYS. BARS SHALL BE TIED AT ALTERNATE INTERSECTIONS.

6. CEMENT TYPE SHALL BE (ACSE SPECIFICATION) TYPE SL.

7. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379. TEST CYLINDERS ARE TO BE KEPT ON SITE.

8. ALL COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE CIVIL ENGINEER FOR REVIEW.

9. ALL CONCRETE IS TO BE CONTINUOUSLY CURED FOR A MINIMUM PERIOD OF 10 DAYS AFTER PLACING . CURING TO COMMENCE IMMEDIATELY AFTER FINISHING. SPRAY ON CURING COMPOUNDS TO COMPLY WITH AS3799.

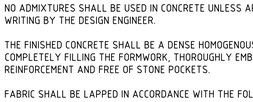
10. PLACE CONCRETE CONTINUOUSLY BETWEEN CONSTRUCTION JOINTS SHOWN ON PLAN. DO NOT BREAK OR INTERRUPT SUCCESSIVE POURS SUCH THAT COLD JOINTS OCCUR. ANY REVISIONS OR ADDITIONS TO CONSTRUCTION JOINTS SHOWN ON PLAN REQUIRE APPROVAL FROM THE CIVIL ENGINEER.

11. FALLS IN SLAB AS SHOWN ON PLAN MAINTAIN MINIMUM SLAB THICKNESS AS SHOWN.

12. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING BY THE DESIGN ENGINEER.

13. THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENOUS MASS, COMPLETELY FILLING THE FORMWORK, THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS.

14. FABRIC SHALL BE LAPPED IN ACCORDANCE WITH THE FOLLOWING DETAIL:



FOLLOWING THE FABRIC SYMBOL SL IS THE REFERENCE NUMBER FOR FABRIC TO AS1304.

15. ALL PENETRATIONS TO HAVE 2/N12 TRIMMER BARS TOP AND BOTTOM TO EACH FACE U.N.O. EXTEND TRIMMERS 700 BEYOND PENETRATION. MAINTAIN 40mm COVER TOP AND BOTTOM.

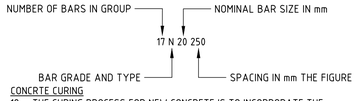
16. FORMWORK CLASS SHALL BE IN ACCORDANCE WITH AS3600.

17. SURFACE FINISHES:

ELEMENT	FORMWORK CLASS
STORMWATER PIT	OFF FORM
PAVEMENTS	MACHINE FLOAT OR BROOM FINISH
KERBS	STEEL FLOAT OR TROWEL

AUTHORITY SPECIFICATIONS TAKE PRECENDENCE

18. REINFORCEMENT SYMBOLS:
    - N DENOTES GRADE 450 N BARS TO AS1302 GRADE N
    - R DENOTES 230 R HOT ROLLED PLAIN BARS TO AS1302
    - SL DENOTES HARD-DRAWN WIRE REINFORCING FABRIC TO AS1304



CONCRTE CURING

19. THE CURING PROCESS FOR NEW CONCRETE IS TO INCORPORATE THE FOLLOWING ASPECTS, GENERALLY AS ORDERED;
    - 19.1. SPRAY CURING COMPOUND
    - 19.2. SAWCUT JOINTS AS LOCATED AND SPECIFIED AS SOON AS CURING PERMITS.

COVER NEW PAVING WITH HESSIAN AND BLACK PLASTIC SHEETS TAPED AT JOINTS ON COMPLETION OF SAWCUTTING. NOTE COVERING IS TO EXTENT MIN 5m BEYOND PAVEMENT BEING CURED. OVER ADJOINING (EXISTING) PAVEMENT AREAS, MAINTAIN CURING AS SPECIFIED.

PAVEMENTS

ALL PAVEMENT MATERIALS SHALL COMPLY WITH CURRENT RMS SPECIFICATIONS. PROVIDE MECHANICAL ANALYSIS FOR EACH BATCH OF PAVEMENT MATERIAL TO ENSURE CONFORMITY.

1. COMPACTION STANDARDS

BASE	98% MODIFIED MAXIMUM DRY DENSITY
SUBBASE	98% MODIFIED MAXIMUM DRY DENSITY
SUBGRADE	100% STANDARD MAXIMUM DRY DENSITY

2. THE CONTRACTOR SHALL CONFIRM THE DESIGN CBR WITH A MINIMUM OF 3 TESTS TAKEN AT SUBGRADE LEVEL. WHERE DISCREPANCY IS FOUND, CONTACT THE DESIGN ENGINEER.

3. ALLOW FOR COMPACTION TESTING BY A N.A.T.A. REGISTERED LABORATORY FOR BASE LAYER, SUBBASE LAYER AND SUBGRADE LAYER IN ACCORDANCE WITH THE LATEST VERSION OF AS3798 FOR PAVEMENTS (MINIMUM 2 TESTS PER LAYER). ALLOW FOR AT LEAST TWO SUCCESSFUL COMPACTION TESTS IN EACH LAYER.

4. MATCH NEW PAVEMENTS NEATLY AND FLUSH WITH EXISTING

5. AFTER BASE IS APPROVED, SWEEP CLEAN AND PRIME AT NOMINAL RATE OF 1.0L PER 1.0 sq.m.

6. PAVEMENT HOLD POINTS
   - 6.1. SUB-GRADE PROOF ROLL PRIOR TO SET-UP AND FORM FOR CONCRETE POUR.
   - 6.2. INSPECTION OF FORMWORK / STEEL PRIOR TO CONCRETE POUR.

PAVEMENT JOINTS

1. PROVIDE 10mm ABLEFLEX BETWEEN NEW CONCRETE WORKS AND EXISTING STRUCTURES.

2. LOCAL AUTHORITY REQUIREMENTS SHALL TAKE PRECEDENCE WITHIN THE PUBLIC ROAD RESERVE.

3. DOWELS TO BE PLACED ON PROPRIETARY CRADLES TO ENSURE CORRECT SPACING AND ALIGNMENT.

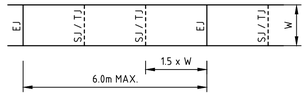
4. PEDESTRIAN PAVEMENTS
   ALL PEDESTRIAN PAVEMENTS ARE TO BE JOINTED AS FOLLOWS U.N.O. ON THE DESIGN DRAWINGS.

5. EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX. 6.0m CENTRES.

6. WEAKENED PLANE JOINTS (SAWN OR TOOL JOINTS) ARE TO BE LOCATED AT A MAX. SPACING OF 1.5m x WIDTH OF THE PAVEMENT.

7. WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.

8. TYPICAL PEDESTRIAN PAVEMENT JOINT DETAIL

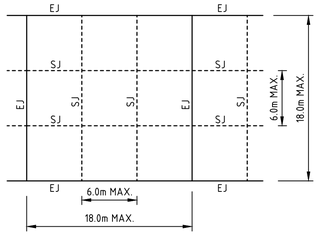


9. VEHICULAR PAVEMENTS
   ALL VEHICULAR PAVEMENTS TO BE JOINTED AS FOLLOWS U.N.O. ON THE DESIGN DRAWINGS.

10. TIED KEYED CONSTRUCTION JOINTS SHOULD GENERALLY BE LOCATED LONGITUDINALLY AT A MAX. OF 6.0m CENTRES.

11. SAWN JOINTS SHOULD GENERALLY BE LOCATED LATERALLY AT A MAX. OF 6.0m CENTRES WITH DOWELED EXPANSION JOINTS AT MAX. 18.0m CENTRES.

12. TYPICAL VEHICULAR PAVEMENT JOINT DETAIL.



13. KERB EXPANSION JOINTS SHALL BE FORMED FROM 10mm ABLEFLEX FOR FULL DEPTH OF SECTION.
14. KERB EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, TANGENT POINTS OF CURVES / CORNERS AND AT 12m MAX CENTRES.
15. KERB TOOLED JOINTS TO BE MIN 3mm WIDE AND LOCATED AT MAX 3m CENTRES.
16. INTEGRAL KERB JOINTS SHALL MATCH THE LOCATION OF PAVEMENT JOINTS.

3D INFORMATION DISCLAIMER

PLEASE BE ADVISED 12D DESIGN FILE, IF SUPPLIED, IS DEEMED TO BE AN ACCURATE REFLECTION OF NORTHROP'S DESIGN AT THE TIME OF FINAL DESIGN DEVELOPMENT AND MAY NOT FULLY REFLECT THE DESIGN SURFACE AS PRESENTED. HOWEVER THIS INFORMATION SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INCORPORATION IN THE CONSTRUCTION WORKS.

YOU ARE FURTHER ADVISED THAT ISSUED HARDCOPY/PDF PLANS AND DOCUMENTS TAKE PRECEDENCE OVER THE SUPPLIED ELECTRONIC INFORMATION AND ANY INCONSTANCIES SHOULD IMMEDIATELY BE REPORTED TO NORTHROP CONSULTING ENGINEERS FOR VERIFICATION PRIOR TO THEIR INCORPORATION IN THE WORKS.

NORTHROP CONSULTING ENGINEERS TAKES NO RESPONSIBILITY FOR USE OF NON-VERIFIED 3D DESIGN INFORMATION USED IN THE WORKS.

THE USE OF THE 3D MODEL INFORMATION SHALL CONSTITUTE ACKNOWLEDGMENT AND ACCEPTANCE OF THE ABOVE STATEMENTS BY THE RECIPIENT.

SAFETY IN DESIGN

THE FOLLOWING ITEMS HAVE BEEN IDENTIFIED AS SAFETY RISKS

- S01 INTERCEPTION OF EXISTING SERVICES
- S02 FALL DURING CONSTRUCTION
- S03 VEHICULAR TRAFFIC
- S04 DEEP TRENCHES

CONCEPT SOIL & WATER MANAGEMENT NOTES

1. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH RELEVANT ORDINANCES AND REGULATIONS; NOTE IN PARTICULAR THE REQUIREMENTS OF LANDCOMS MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION' (THE 'BLUE BOOK'). THIS SOIL AND WATER MANAGEMENT PLAN DETAILS THE ACTIONS TO BE TAKEN FOR THE MANAGEMENT AND DEWATERING OF STORMWATER DURING CONSTRUCTION OF THE PROPOSED BUILDING.
2. INSTALL SEDIMENT PROTECTION FILTERS ON ALL NEW AND EXISTING STORMWATER INLET PITS IN ACCORDANCE WITH EITHER THE MESH AND GRAVEL INLET FILTER DETAIL SD6-11 OR THE GEOTEXTILE INLET FILTER DETAIL SD6-12 OF THE 'BLUE BOOK'.
3. ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
4. INSTALL SEDIMENT FENCING AROUND INDIVIDUAL BUILDING ZONES/AREAS AS REQUIRED AND AS DIRECTED BY THE SUPERINTENDENT.
5. ALL TRENCHES INCLUDING ALL SERVICE TRENCHES AND SWALE EXCAVATION SHALL BE SIDE-CAST TO THE HIGH SIDE AND CLOSED AT THE END OF EACH DAYS WORK.
6. THE CONTRACTOR SHALL ENSURE THAT ALL VEGETATION (TREE, SHRUB & GROUND COVER) WHICH IS TO BE RETAINED SHALL BE PROTECTED DURING THE DURATION OF CONSTRUCTION. REFER ARCHITECTS PLANS FOR TREES TO BE KEPT.
7. ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ONSITE AND SPREAD/STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
8. STRIP TOPSOIL IN AREAS DESIGNATED FOR STRIPPING AND STOCKPILE FOR RE-USE AS REQUIRED. ANY SURPLUS MATERIAL SHALL BE REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA GUIDELINES.
9. CONSTRUCT AND MAINTAIN ALL MATERIAL STOCKPILES IN ACCORDANCE WITH DETAIL SD4-1 OF THE 'BLUE BOOK' (INCLUDING CUT-OFF SWALES TO THE HIGH SIDE AND SEDIMENT FENCES TO THE LOW SIDE).
10. ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE WITH THE 'BLUE BOOK'.
11. PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST.
12. ONCE CUT/FILL OPERATIONS HAVE BEEN FINALIZED ALL DISTURBED AREAS THAT ARE NOT BEING WORKED ON SHALL BE RE-VEGETATED AS SOON AS IS PRACTICAL.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING A DETAILED WRITTEN RECORD OF ALL EROSION & SEDIMENT CONTROLS ON-SITE DURING THE CONSTRUCTION PERIOD. THIS RECORD SHALL BE UPDATED ON A DAILY BASIS & SHALL CONTAIN DETAILS ON THE CONDITION OF CONTROLS AND ANY/ ALL MAINTENANCE, CLEANING & BREACHES. THIS RECORD SHALL BE KEPT ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE PRINCIPAL CERTIFYING AUTHORITY AND THE SUPERINTENDENT DURING NORMAL WORKING HOURS.
14. GROUNDWATER SEEPAGE RATES AND QUALITY TO BE MONITORED AND TREATED IF REQUIRED DURING CONSTRUCTION IN ACCORDANCE WITH REQUIREMENTS OF SUPERVISING GEOTECHNICAL ENGINEER.

BASIN MANAGEMENT NOTES

1. PRIOR TO ANY FORECAST WEATHER EVENT, LIKELY TO RESULT IN SEDIMENT LADEN RUNOFF ON THE SITE, ANY EXISTING DETENTION BASINS/TRAPS SHALL BE DEWATERED TO PROVIDE SUFFICIENT CAPACITY TO CAPTURE SEDIMENT LADEN WATER FROM THE SITE.
2. ANY SEDIMENT LADEN WATER CAPTURED ON-SITE MUST BE TREATED TO ENSURE IT WILL ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES PRIOR TO ITS RELEASE FROM SITE. A SAMPLE OF THE RELEASED TREATED WATER MUST BE KEPT ON-SITE IN A CLEAR CONTAINER WITH THE SAMPLE DATE RECORDED.
3. NO ALUMINIUM BASED PRODUCTS MAY BE USED TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) ON-SITE WITHOUT THE PRIOR WRITTEN PERMISSION FROM AN APPROPRIATE COUNCIL OFFICER. THE APPLICANT MUST HAVE DEMONSTRATED ABILITY TO USE SUCH PRODUCTS CORRECTLY AND WITHOUT ENVIRONMENTAL HARM PRIOR TO ANY APPROVAL.
4. THE CHEMICAL/AGENT (FLOCCULATING/COAGULANTS) USED IN TYPE D AND TYPE F BASINS TO TREAT TURBID WATER CAPTURED IN THE BASIN MUST BE APPLIED IN CONCENTRATIONS SUFFICIENT TO ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES (TSS < 50mg/L, TURBIDITY < 60 NTU, 6.5 < pH < 8.5) WITHIN THE 5-DAY RAINFALL DEPTH USED TO CALCULATE THE CAPACITY OF THE BASIN, AFTER A RAINFALL EVENT.
5. ALL MANUFACTURERS INSTRUCTIONS MUST BE FOLLOWED FOR THE USE OF ANY CHEMICALS/AGENTS USED ON-SITE, EXCEPT WHERE APPROVED BY THE RESPONSIBLE PERSON OR AN APPROPRIATE COUNCIL OFFICER.
6. SUFFICIENT QUANTITIES OF CHEMICALS/AGENTS TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) MUST BE PLACED SUCH THAT WATER ENTERING THE BASINS/SEDIMENT TRAP MIXES WITH THE CHEMICALS/AGENTS AND IS CARRIED INTO THE BASIN/TRAP.
7. ANY BASIN MUST BE DEWATERD AS SOON AS PRACTICAL, ONCE WATER CAPTURED IN THE BASIN ACHIEVES COUNCIL'S WATER QUALITY OBJECTIVES.
8. INSPECT THE SEDIMENT BASINS AFTER EACH RAINFALL EVENT AND/OR WEEKLY. ENSURE THAT ALL SEDIMENT IS REMOVED ONCE THE SEDIMENT STORAGE ZONE IS FULL. ENSURE THAT OUTLET AND EMERGENCY SPILLWAY WORKS ARE MAINTAINED IN A FULLY OPERATIONAL CONDITION AT ALL TIMES.

SEDIMENT BASIN SIZING CALCULATION

THE SITE IS LOCATED WITHIN THE GOROKAN SOIL LANDSCAPE AND PRIMARILY CONSISTS OF SANDS AND SANDY CLAYS (AS PER THE SITE SPECIFIC GEOTECHNICAL INVESTIGATION), WHICH HAS THE FOLLOWING PROPERTIES (IN ACCORDANCE WITH TABLE C17 OF THE "BLUE BOOK"):

FOR CONSTRUCTION

Found : C:_NE_jobs_home\NE_OneDrive\Northrop Consulting Engineers\SY Project Drive - 190518 - NHQC202-CFD-Drawings\3D-Northrop\C-CIVIL\3-CAD\2-CAD FILES\3-2DWH\QC2-CF-CV-S-DDC201.12.dwg
Plotted By : JO
Date : 18.06.2020 6:33 PM

DESIGNED: T. BUGAEV | JOB MANAGER: N. SUTHERLAND | VERIFIER: J. GILLIGAN
DRAWN: J. O

AMMENDMENTS

REV	BY	DATE	DESCRIPTION
A	JO	18.06.20	ISSUED FOR CONSTRUCTION

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.

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PERUMAL PEDAVOLI ARCHITECTS

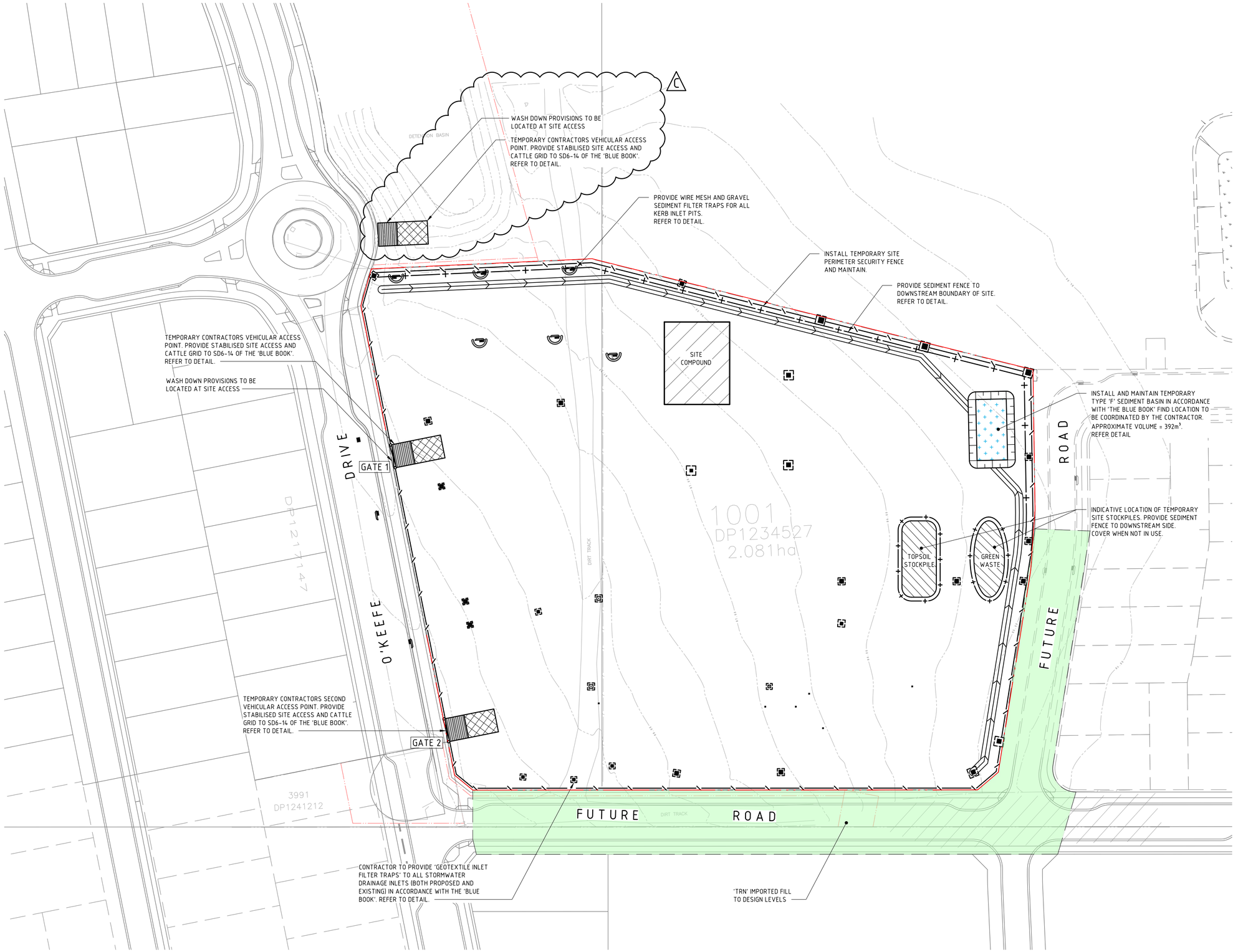
CATHERINE FIELD PRIMARY SCHOOL
NEW HIGH QUALITY CLASSROOMS

DRAWING NAME
SPECIFICATION NOTES - SHEET 02

PROJECT NORTH

DRAWN	CHECKED	VERIFIED	DATE
JO	JG	JG	16.06.20

DRAWING NUMBER
PROJECT CODE SCH.REF. DISC. TYPE SERIES# NHQC2-CF-CV-S-DDC201.12
REVISION A



LEGEND

- PROPOSED BOUNDARY LINE
- EXISTING BOUNDARY LINE
- EXISTING CONTOURS
- SEDIMENT FENCE
- SECURITY FENCE
- WIRE MESH AND GRAVEL INLET FILTER
- GEOTEXTILE INLET FILTER TRAPS
- DRAINAGE SWALE
- STABILISED SITE ACCESS WITH CATTLE GRIDS
- STOCKPILE
- SEDIMENT BASIN

SITE PARAMETERS

CONSTRAINT	VALUE
SEDIMENT TYPE	D
SOIL HYDROLOGY GROUP	C
K = SOIL ERODIBILITY (K-FACTOR)	0.050
R = RAINFALL EROSIVITY (R-FACTOR)	3157
S = 2 YEAR, 6 HOUR STORM INTENSITY	12.1 mm/hr (LAKE HAVEN)
LS = SLOPE LENGTH/GRADIENT	0.87 (150m SLOPE @ 3% GRADE)
P = EROSION CONTROL PRACTICE (P-FACTOR)	1.3 (TYPICAL)
C = GROUND COVER (C-FACTOR)	1.0 (TYPICAL FOR STRIPPED SITE)
SOIL LOSS (RUSLE METHOD) (tonnes/ha/yr)	179
EROSION HAZARD (TABLE 4.2 BLUE BOOK)	LOW BASIN/TANKS REQUIRED

SEDIMENT BASIN/TANKS SIZING

CONSTRAINT	VALUE	UNITS
CV = VOLUMETRIC RUNOFF COEFFICIENT	0.5	
R = 5 DAY, 75TH PERCENTILE RAINFALL	25.1	mm/hr
A = CATCHMENT AREA	2.08	ha
SETTLING ZONE VOLUME (10xCVxRxA)	261	m^3
SOIL LOSS (CALC ABOVE)	138	m^3/ha/yr
A2 = DISTURBED CATCHMENT AREA	2.08	ha
SEDIMENT STORAGE VOLUME (0.17xSOIL LOSSxA2)	131	m^3
TOTAL BASIN/TANKS VOLUME REQUIRED	392	m^3

DESIGNED: T. BUGAEV
DRAWN: J. O
JOB MANAGER: N. SUTHERLAND
VERIFIER: J GILLIGAN

FOR CONSTRUCTION

AMENDMENTS

REV	BY	DATE	DESCRIPTION
A	JO	18.06.20	ISSUED FOR CONSTRUCTION
B	JO	04.08.20	RE-ISSUED FOR CONSTRUCTION
C	CP	28.10.20	RE-ISSUED FOR CONSTRUCTION

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CATHERINE FIELD PRIMARY SCHOOL
NEW HIGH QUALITY CLASSROOMS

DRAWING NAME
SEDIMENT AND SOIL EROSION CONTROL PLAN

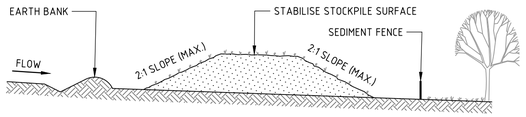
PROJECT NORTH

SCALE 1:500 @ A1 (0 5 10 15 20 25m)

DRAWN	CHECKED	VERIFIED	DATE
JO	JG	JG	28.10.20

DRAWING NUMBER
PROJECT CODE SCH.REF. DISC. TYPE SERIES#
NHQC2-CF-CV-S-DDC202.01

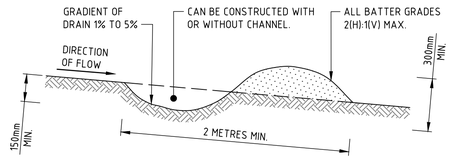
REVISION C



CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) 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 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

STOCKPILE

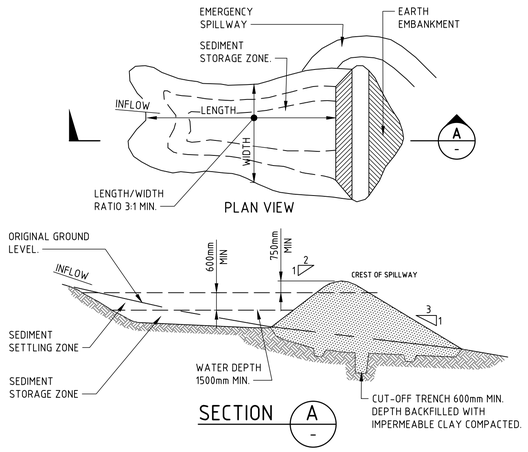


CONSTRUCTION NOTES

1. BUILD WITH GRADIENTS BETWEEN 1 AND 5 PERCENT.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

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

DRAINAGE SWALE

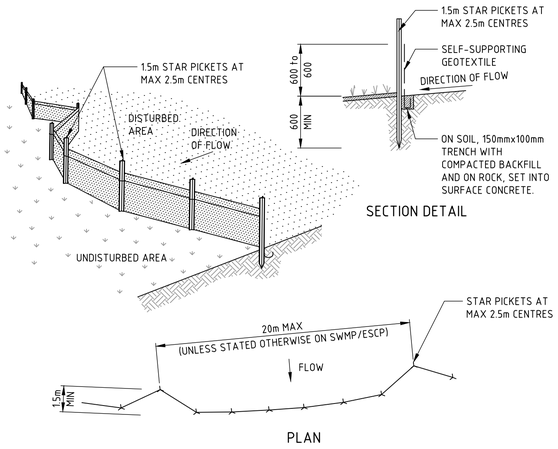


CONSTRUCTION NOTES

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AND 1200mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95 PER CENT STANDARD PROCTOR DENSITY.
4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.
7. CONSTRUCT THE EMERGENCY SPILLWAY.
8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP.

(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)

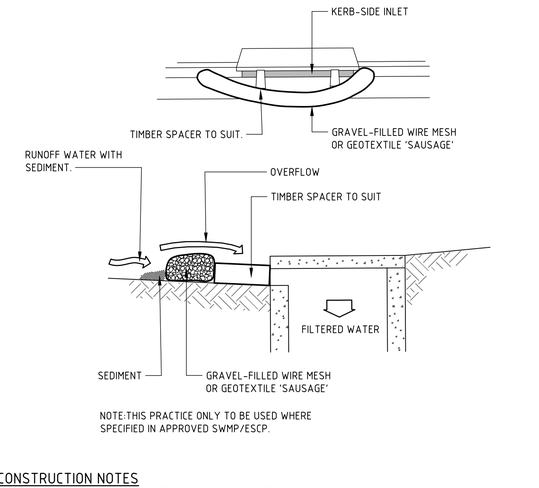
SEDIMENT BASIN - WET



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. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS 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. 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.

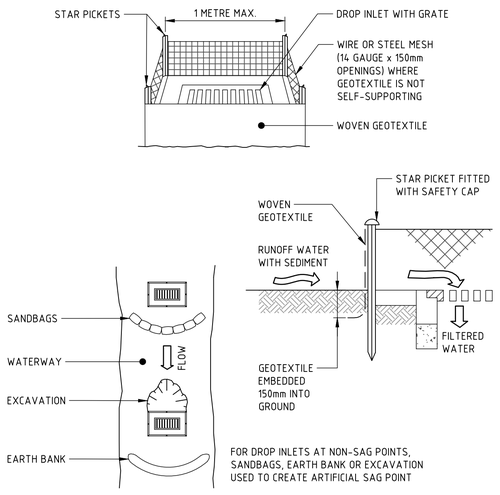
SEDIMENT FENCE



CONSTRUCTION NOTES

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

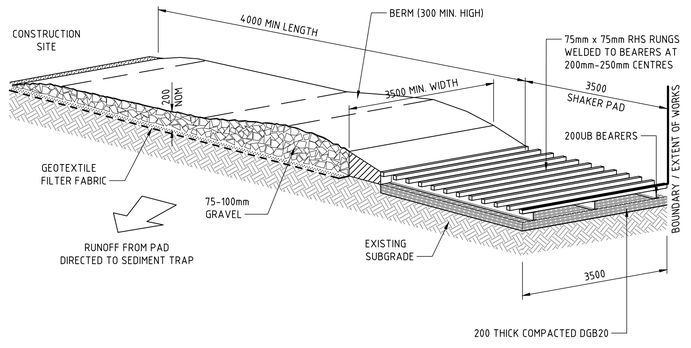
WIRE MESH AND GRAVEL SEDIMENT FILTER



CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
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 GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER TRAPS



MAINTENANCE

- THE TEMPORARY ACCESS SHALL BE MAINTAINED IN A CONDITION THAT PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY,
- THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT,
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.
- INSTALL BARRIER ON EITHER SIDE OF SHAKER PAD TO ENSURE VEHICLES ARE GUIDED ON TO THE PAD.
- INVERT OF SHAKER PAD TO BE DRAINED VIA AGRICULTURAL PIPE WRAPPED IN GEOTEXTILE FABRIC.

STABILISED SITE ACCESS

FOR CONSTRUCTION

DRAWN: J. O DESIGNED: T. BUGAEV JOB MANAGER: N. SUTHERLAND VERIFIER: J. GILLIGAN

AMMENDMENTS			
REV	BY	DATE	DESCRIPTION
A	JO	18.06.20	ISSUED FOR CONSTRUCTION

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Vince Pedavoli NSW reg No.5045

PERUMAL PEDAVOLI ARCHITECTS

CATHERINE FIELD PRIMARY SCHOOL
NEW HIGH QUALITY CLASSROOMS

DRAWING NAME
SEDIMENT AND SOIL EROSION CONTROL DETAILS

PROJECT NORTH

DRAWN	CHECKED	VERIFIED	DATE
JO	JG	JG	16.06.20

DRAWING NUMBER
PROJECT CODE SCH.REF. DISC. TYPE SERIES#
NHQC2-CF-CV-S-DDC202.11

REVISION A

LEGEND

- PROPOSED BOUNDARY LINE
- EXISTING BOUNDARY LINE
- EASEMENT LINE
- PROPOSED BUILDING FOOTPRINT
- BEXX.XX — BULK EARTHWORKS PAD LEVEL
- XX.XX — CONTOURS
- XX.XX — EXISTING CONTOURS

DEPTH OF CUT

- 3.00m TO - 2.00m	
- 2.00m TO - 1.50m	
- 1.50m TO - 1.25m	
- 1.25m TO - 1.00m	
- 1.00m TO - 0.75m	
- 0.75m TO - 0.50m	
- 0.50m TO - 0.25m	
- 0.25m TO - 0.00m	

DEPTH OF FILL

0.00m TO 0.25m	
0.25m TO 0.50m	
0.50m TO 0.75m	
0.75m TO 1.00m	
1.00m TO 1.25m	
1.25m TO 1.50m	
1.50m TO 2.00m	
2.00m TO 3.00m	

GENERAL NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
2. CAD FILES / DTM FILES TO BE SUPPLIED IN AUTOCAD FORMAT FOR SETOUT PURPOSES (UPON REQUEST).
3. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS. NOTE ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.
4. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EARTHWORKS; ie SERVICE TRENCHING, DETAILED EXCAVATION, FOOTINGS, RETAINING WALLS AND THE LIKE. CONTRACTOR IS TO ALLOW FOR REMOVAL OF ALL EXCESS MATERIAL GENERATED BY THE WORKS.
5. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.
6. BULK EARTHWORKS ARE BASED ON THE FOLLOWING DEPTHS FROM FINISHED SURFACE LEVELS;
   - 6.1. ASPHALT PAVEMENT (CARPARK) 500mm
   - 6.2. MODULAR BUILDINGS SLAB 450mm
   - 6.3. BLOCK B AMENITIES SLAB 200mm
   - 6.4. BLOCK C AMENITIES SLAB 800mm
   - 6.5. ADMINISTRATION AND HALL SLAB 200mm
   - 6.6. FOOTPATH PAVEMENT 150mm
   - 6.7. LANDSCAPE PLANTING AREA 300mm
   - 6.8. LANDSCAPE TURFED AREA 150mm
   - 6.9. GAMES COURT AREA 175mm
   - 6.10. SPORTS FIELD AREA 75mm
7. APPROXIMATE BULK EARTHWORK VALUES AS FOLLOWS;
   - 7.1. CUT 604 cu.m
   - 7.2. FILL 13,118 cu.m
   - 7.3. BALANCE 12,514 cu.m (IMPORT)
   - 7.4. NOTE: A 134mm SITE STRIP HAS BEEN ALLOWED FOR, EQUATING TO APPROX. 2,800 cu.m.
   - 7.5. PLANTING AREA TOPSOIL 553 cu.m.
   - 7.6. TURFED AREA TOPSOIL 818 cu.m.
   - 7.7. SPORTS FIELD TOPSOIL 226 cu.m.
   - 7.8. TEMPORARY BATTERS BEYOND SITE BOUNDARY HAS BEEN EXCLUDED FROM BULK EARTHWORK VALUES.

FOR CONSTRUCTION

DESIGNED: T. BUGAEV
DRAWN: J. O
JOB MANAGER: N. SUTHERLAND
VERIFIER: J. GILLIGAN
Plotted By: J-O
Date: 19.06.2020 10:18 AM
Found : t:\2019 jobs\190518 - nhqc2\02-CF\cf-drawings\d-northrop\C-CIVIL\2-CAD\2-CAD FILES\2-DDN\NHQC2-CF-CV-S-DDC203.01.dwg

AMMENDMENTS

REV	BY	DATE	DESCRIPTION
A	JO	18.06.20	ISSUED FOR CONSTRUCTION
B	JO	19.06.20	RE-ISSUED FOR CONSTRUCTION

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CATHERINE FIELD PRIMARY SCHOOL
NEW HIGH QUALITY CLASSROOMS

DRAWING NAME
BULK EARTHWORKS CUT AND FILL PLAN

PROJECT NORTH
NORTH

SCALE 1:500 @ A1 (0 5 10 15 20 25m)

DRAWN	CHECKED	VERIFIED	DATE
JO	JG	JG	16.06.20

DRAWING NUMBER: NHQC2-CF-CV-S-DDC203.01
REVISION: B
PROJECT CODE | SCH.REF. | DISC. TYPE | SERIES#

Appendix B – Sediment Basin Calculations

If type D and F

Parameter	Adopted value	
Total area (ha)	2.08	
Soil Texture Group	F	See 1) Soil Hydrological groups
Design rainfall depth (days)	5	See 2) Rainfall depth (days)
Design rainfall depth (percentille)	80	See 3) Rainfall depth (percentille)
x-day, y-percentile rainfall event	25.1	See Sheet x-day-y-p%
Cv	0.5	See 4) Cv
Settling zone volume (m³)	261.040	(calculated)
Sediment storage volume (m³)	130.520	(calculated)
Total basin volume (m³)	**391.560**	(calculated)

1) Soil Texture Group

Source: The Blue Book, Volume 1, 2004. Page 6-12.

Table 6.1 Summary of selected sediment basin types and design criteria

Soil Type	Soil characteristics	Treatment process	Basin design capacity	
			Settling zone	Sediment storage zone
Type D (dispersible)	10 percent or more of the soil materials are dispersible. Particle size is irrelevant	Aided flocculation in wet basins	Capacity to contain all runoff expected from the y percentile, x-day rainfall depth where, depending on the sensitivity of the receiving waters and/or the duration that the structure is in use: x is 2, 5, 10 or 20-days y is the 75th, 80th, 85th or 90th percentile	Normally taken as 50 percent of the capacity of the settling zone. However, it can be taken as two months soil loss as calculated by the RUSLE
Type C (coarse)	less than 33 percent finer than 0.02 mm and less than 10 percent of the soil materials are dispersible	Rapid settling in wet or dry basins	Surface area of 4.100 m²/m³/sec in the 3-month ARI flow, minimum depth of 0.6m, and length:width ratio of >3:1	Normally taken as 100 percent of the capacity of the settling zone. However, it can be taken as two months soil loss as calculated by the RUSLE
Type F (fine)	33 percent or more of the particles are finer than 0.02 mm and less than 10 percent of the soil materials are dispersible	Slow settling in wet basins	Capacity to contain all runoff expected from the y percentile, x-day rainfall depth where, depending on the sensitivity of the receiving waters and/or the duration that the structure is in use: x varies between 2 and 20 days y is the 75th, 80th, 85th or 90th percentile	Normally taken as 50 percent of the capacity of the settling zone. However, it can be taken as two months soil loss as calculated by the RUSLE

For type D and F

V = settling zone + sediment storage zone

Settling Zone Type D/F = 10 x Cv x A x R (y %ile, 5 day)

where:
- 10 is a unit conversion factor
- Cv is a volumetric runoff coefficient, defined as that propor: on of rainfall that runs off as stormwater[13]
- A is the catchment area of the basin (hectares)
- R(y %ile, 5 day) is the 5-day total rainfall depth (mm) that is not exceeded in y percent of rainfall events. This figure can be determined from Appendix L. Rainfall depths corresponding to management periods more and less than 5 days can be adopted, as site characteristics allow and as detailed previously

2) Rainfall depth (days)

Source: The Blue Book, Volume 1, 2004. Page 6-15.

A **5-day** rainfall depth can be adopted as standard in the design of the settling zone where the soils being disturbed are Type D or Type F. This assumes that five days or less are required following a rainfall event to achieve effective flocculation if necessary, settling and subsequent discharge of the supernatant stormwater (Appendix E and Section 6.3.3(d)).
In certain conditions, basins can be designed for rainfall depths and management periods of between 2 and 20 days, to accommodate a range of site constraints and opportunities that may be present :

(i) Where the site area is insufficient to allow building structures as required for the y-percentile 5-day criterion, a 2, 3 or 4-day rainfall depth can be adopted providing flocculation, settlement and discharge can be achieved in that time. However, this will usually require the use of a special range of flocculants and specialised techniques that will achieve sufficiently fast settling (Section E4.2). Many such flocculants can cause environmental harm if not managed properly and the plans for sediment control must also include a detailed plan of management of these.
(ii) Where site conditions permit the construction of extremely large structures, a 6 to 20-day rainfall depth can be adopted. These large structures allow longer periods for reuse (e.g. dust suppression) or flocculation, settling and discharge.

3) Design rainfall depth (percentille)

Source: The Blue Book, Volume 1, 2004. Page 6-21.

Unless Council's Stormwater Management Plan states differently:[11]
(i) on most sites the 75th percentile storm depth is recommended for use if the duration of disturbance is likely to be six months or less, while the 80th percentile storm depth is recommended if the duration of disturbance is likely to be more than six months;
(ii) where receiving waters are considered particularly sensitive, either by the development proponent/designer, local council or other consent authority, a higher level of protection can be provided, e.g.: the 80th percentile storm depth is recommended for use if the duration of disturbance is likely to be six months or less, while the 85th percentile storm depth is recommended if the duration of disturbance is likely to be more than six months.
Longer term land disturbances, such as waste depots, extractive sites and some road construction activities, warrant

4) Cv

Source: The Blue Book, Volume 1, 2004. Appendix F, Page F-4.

Table F2. Runoff coefficients (Cv) for volumetric data in disturbed catchments (adapted from USDA, 1996)

Soil Hydrologic Group	Design Rainfall depth (mm)							Runoff potential
	<20	21-25	26-30	31-40	41-50	51-60	61-80	
A	0.01	0.05	0.08	0.15	0.22	0.28	0.37	very low
B	0.10	0.19	0.25	0.34	0.42	0.48	0.57	low to moderate
C	0.25	0.35	0.42	0.51	0.58	0.63	0.70	moderate to high
D	0.39	0.50	0.56	0.64	0.69	0.74	0.79	high

Where the Soil Hydrologic Group is not known and/or cannot be found out without an additional soil survey (but see Appendix C), adopting a default volumetric runoff coefficient of 0.5 is reasonable. However, higher values should be considered for high-density development or other sites that can be subject to very high levels of surface sealing (e.g. wheel compaction). Alternatively, lower values can be adopted where a significant proportion of the site is to remain undisturbed (i.e. vegetated), if that value is properly justified. However, the correct Soil Hydrologic Group should be determined on all sites where design is to greater than the standard 85th percentile, x-day rainfall depth and/or where the receiving waters are deemed to be highly or extremely sensitive.

Soil hydrological group

A	Group A – very low runoff potential. Water moves into and through these soil materials relatively quickly, when thoroughly wetted. Usually, they consist of deep (>1.0 metres), well-drained sandy loams, sands or gravels. They shed runoff only in extreme storm events.
B	Group B – low to moderate runoff potential. Water moves into and through these soil materials at a moderate rate when thoroughly wetted. Usually, they consist of moderately deep (>0.5 metres), well-drained soils with medium, loamy textures or clay loams with moderate structure. They shed runoff only infrequently.
C	Group C – moderate to high runoff potential. Water moves into and through these soil materials at slow to moderate rates when thoroughly wetted. Usually, they consist of soils that have: - moderately fine (clay loam) to fine (clay) texture - weak to moderate structure and/or - a layer near the surface that impedes free downward movement of water. They regularly shed runoff from moderate rainfall events.
D	Group D – very high runoff potential. Water moves into and through these soils very slowly when thoroughly wetted. Usually, they consist of soils: that are fine-textured (clay), poorly structured, surface-sealed or have high shrink/swell properties, and/or with a permanent high watertable, and/or with a layer near the surface that is nearly impervious. They shed runoff from most rainfall events.

Appendix C – Correspondence

ENVIRONMENTAL CONSULTING SERVICES

11 May 2020

Mr Jake Fitch
Rainbow Group
5 Gatwood Close
Padstow NSW 2211

Dear Jake

Re: Salinity Testing
Shale Material

Attached are the results of salinity testing of the shale material supplied by Rainbow Group. The sample was submitted for analysis and tested for the following parameters:

- pH;
- Electrical Conductivity (EC)
- Sulphate (SO_4); and
- Chloride (Cl)

The results of this testing are summarised in Table 1 and the laboratory report is attached>

Table 1 – Summary of Results

Sample Number	pH (pH units)	EC (dS/m)	SO_4 (mg/kg)	Cl (mg/kg)
F1	6.0	0.330	110	320
Guideline		Saline at > 1.5[1]		

Notes: 1. Salinity Training Manual. (NSW Department of Primary Industries, June 2014)

The results of this sampling indicate that the shale material has a relatively low salinity.

Yours sincerely

Simon Caples

Environmental Consulting Services Grp
118A Australia Street
Camperdown
NSW 2050

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Simon Caples**

Report **717872-S**
Project name FILL
Received Date May 06, 2020

Client Sample ID			**F1**
Sample Matrix			**Soil**
Eurofins Sample No.			**S20-My08349**
Date Sampled			**May 06, 2020**
Test/Reference	LOR	Unit	
Chloride	10	mg/kg	320
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	330
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	6.0
Resistivity*	0.5	ohm.m	150
Sulphate (as SO4)	10	mg/kg	110
% Moisture	1	%	8.9

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Chloride	Sydney	May 07, 2020	28 Days
- Method: E045 /E047 Chloride			
Conductivity (1:5 aqueous extract at 25°C as rec.)	Sydney	May 07, 2020	7 Days
- Method: LTM-INO-4030 Conductivity			
pH (1:5 Aqueous extract at 25°C as rec.)	Sydney	May 07, 2020	7 Days
- Method: LTM-GEN-7090 pH in soil by ISE			
Sulphate (as SO4)	Sydney	May 07, 2020	28 Days
- Method: E045 Anions by Ion Chromatography			
% Moisture	Sydney	May 06, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			

eurofins | Environment Testing

ABN – 50 005 085 521 web : www.eurofins.com.au e.mail : EnviroSales@eurofins.com

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

New Zealand

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35 O'Rorke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: Diversified Grp P/L-T/a Enviro Consult Serv Grp
Address: 118A Australia Street
Camperdown
NSW 2050

Project Name: FILL

Order No.:
Report #: 717872
Phone: 1800 099 880
Fax:

Received: May 6, 2020 3:12 PM
Due: May 8, 2020
Priority: 2 Day
Contact Name: Simon Caples

Eurofins Analytical Services Manager : Alena Bounkeua

Sample Detail						Aggressivity Soil Set	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	F1	May 06, 2020		Soil	S20-My08349	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
Chloride			mg/kg	< 10			10	Pass	
Sulphate (as SO4)			mg/kg	< 10			10	Pass	
LCS - % Recovery									
Chloride			%	98			70-130	Pass	
Sulphate (as SO4)			%	100			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
				Result 1					
Chloride	S20-My08349	CP	%	113			70-130	Pass	
Sulphate (as SO4)	S20-My08349	CP	%	78			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Chloride	S20-My08349	CP	mg/kg	320	360	11	30%	Pass	
Sulphate (as SO4)	S20-My08349	CP	mg/kg	110	110	3.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	No
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised By

Alena Bounkeua	Analytical Services Manager
Gabriele Cordero	Senior Analyst-Inorganic (NSW)

Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

eurofins | Environment Testing

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ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Diversified Grp P/L-T/a Enviro Consult Serv Grp**
Contact name:	Simon Caples
Project name:	FILL
COC number:	Not provided
Turn around time:	2 Day
Date/Time received:	May 6, 2020 3:12 PM
Eurofins reference:	**717872**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☒ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Alena Bounkeua on Phone : or by e.mail: AlenaBounkeua@eurofins.com

Results will be delivered electronically via e.mail to Simon Caples - simon@ecsgroup.com.au.

Note: A copy of these results will also be delivered to the general Diversified Grp P/L-T/a Enviro Consult Serv Grp email address.

diversified
group pty ltd

Chain of Custody

Project: FILL																						
Diversified Group Pty Ltd						Manager: Simon Caples							Ph: 0415 225 474			Email: simon@ecsgroup.com.au						
Event Number:			Matrix			Analysis																
Lab Number	Sample Number	Sample Date	Soil	Water	Other	BTEX	TPH	PAH	Phenol	Ammonia	Cyanide	Metals	TCLP Metals	Asbestos	SUITE L2							
	F1	6/5	x												x							
Metals: As Cd Cr Cu Ni Pb Zn Hg						Comments: 2 DAY TAT																
Relinquished By: Simon		Signed:				Date: 6/5		Received By:				Signed:				Date: 6/5						

118A AUSTRALIA STREET, CAMPERDOWN NSW 2050 | P 1800 099 880 | ABN 45 165 948 372

717872

Appendix D – CV

James Gilligan

Associate | Senior Civil Engineer

BE (Civil) MIEAust CPEng NER

James is a Senior Civil Engineer with over twelve years' experience managing and delivering buildings and complex civil infrastructure projects requiring design from the concept phase through to construction and post construction stages.

James also has particular experience in project management and contract administration. James' technical background includes civil design of utilities, earthworks, stormwater and roads for subdivision and buildings projects across all types of development including Education, Residential, Commercial & Industrial.

Project Experience

Urban Redevelopment

- Frasers Central Park, Broadway
- Tailors Walk, Pemberton Street, Botany
- 150 Epping Road, Lane Cove
- Glebe Affordable Housing Project, Glebe
- Altrove Stage 7 & 9, Schofields
- Airds Subdivision Works, Airds
- Pemulwuy Southern Lands, Pemulwuy
- Stellar Apartments, Ryde
- 10 Hall Street, Bondi
- McEvoy Street, Waterloo

Public Domain and Open Spaces

- Endeavour Energy Southern Carpark, Huntingwood
- Windsor Station Bus Interchange, Windsor
- Waterfall Station Easy Access Upgrade
- New Acton South Carpark, Canberra
- Elara Neighbourhood Centre, Elara
- Hurstville Bus Interchange, Hurstville
- Twin Creeks Golf Club, Luddenham
- Croom Regional Sporting Complex, Croom

Infrastructure / Utilities Coordination

- Southern Sydney Freight Line
- North West Rail Link
- Sydney International Airport – Stage 2B

Aged Care & Retirement Living

- St Mary's Aged Care Facility, St Mary's
- The Abbey Aged Care Facility, Mittagong
- Anglican Retirement Village, Glenhaven
- Oran Park Aged Care Facility, Oran Park
- Zhiva Living, Dural

Commercial / Industrial

- Ingram Micro Warehouse
- Goodyear Warehouse
- 1-5 Interchange Drive, Eastern Creek
- 2-4 Interchange Drive Eastern Creek
- 9-11 Interchange Drive, Eastern Creek
- 17-19 Interchange Drive, Eastern Creek
- 21-23 Interchange Drive, Eastern Creek
- Bunnings Distribution Centre, Eastern Creek
- Basalt Road, Greystanes
- Blum Australia Warehouse, Hoxton Park
- Masters Home Improvement, Penrith
- Masters Home Improvement Wagga Wagga
- AMP Shopping Centre, Glenmore Park
- Kingsford Smith Distribution Centre, Mascot
- Danks Hardware Distribution Centre

Health

- Manly AYAH
- Westmead Hospital
- Cumberland Hospital
- Bungarribee House Relocation, Blacktown

Education

- Passfield Park School
- Jordon Spring Public School
- Alex Avenue Public School
- Western Sydney University, Westmead
- Barker College Junior School and Early Learning Centre
- Westmead Catholic College
- Catherine Field Public School
- Wagga Wagga Public School
- East Leppington Public School
- Meadowbank TaFE

A.8 Construction Waste Management Plan

HANSENYUNCKEN

Construction Waste Management Plan

Project: New High-Quality Classroom – New Catherine Field Primary School

Job No: SC126

Rev: D | June 2020

—

Contents

1 Document Information

1.1 Review & Approval

Review			
Position	**Name**	**Sign**	**Date**
Contracts Authorised Person	Kevin Gomez		
Snr Contracts Administrator	Ronaldo Bermudez		
Services Engineer	Nicholas Ko		
(CF) Project Manager	Paul Todhunter		
(CF) Contracts Administrator			
(CF) Site Manager	Andrew Baker		
(CF) Site Safety Officer	Andrew Wackwitz		
(CF) Project Engineer	Matthew McCrohan		
(CF) Site Engineer	Lee Moran		
(CF) Cadet			
(CF) Foreman	Troy Morgan		
(CF) Site Administration			

Approval			
Position	**Name**	**Sign**	**Date**
Operations Manager	John Wilson		
State HSE Manager	Peter Fay		
Construction Manager	Dean Marcon		
QA & Systems Manager	Patrick Carnuccio		

1.2 Change Information

Change Information			
Revision	**Description**	**Issued by**	**Issue date**
A	Issued for Draft SSDA submission	MOG	August 2019
B	Issued for ECI milestone CMP for approval 1	MOG	30/08/19
C	Issued for Construction	PT	March 2020
D	Issued for Construction (Updated for SSDA Post Compliance Docs)	MB	June 2020

2 Definitions

The following definitions and abbreviations have been used in this Environmental Management Plan. Further definitions and abbreviations are provided in referenced procedures and plans.

BIM360 Field	Cloud based QHSE field management software application designed specifically for the construction industry.
EMP	Environmental Management Plan (this document)
EPA	State Environment Protection Authority
ESD	Ecologically Sustainable Development
HSE	Health, Safety & Environment
HY	Hansen Yuncken Pty Ltd
HYWAY	An information management platform developed by HY utilising Microsoft SharePoint
NC	Non-Conformance
NGER	National Greenhouse and Energy Reporting
SC126	New High-Quality Classroom – New Catherine Field Primary School
NVMP	Noise and Vibration Management Plan
OEH	Office of Environment and Heritage
PLN	HY Plan
PMP	Project Management Plan
POEO	The Protection of the Environment Operations Act
PROJ	Project Management
REO	Regional Environmental Officer
RMS	Roads and Maritime Services
RTS	Roads and Traffic Authority
S/C	Subcontract(s) or Subcontractor(s) as the context requires
Site Safety Supervisor	Site Manager
SSC	Site Safety Coordinator
SSO	Site Safety Officer
SWMS	Safe Work Method Statement
TMP	Traffic Management Plan

3 Introduction

3.1 Purpose of the Waste Management Plan

The Construction Waste Management Plan (CWMP) has been developed to identify the expected waste streams for the proposed New Catherine Field Primary School, and to outline the strategy for reducing this waste. The plan addresses Condition B16 of SSD 9477 in accordance with the objectives of the plan listed below. The prime objective is to minimise the amount of materials transferred from this project to landfill.

The CWMP will;

- Detail the quantities of each waste type generated during construction and the proposed reuse, recycling and disposal locations; and
- Removal of hazardous materials, particularly the method of containment and control of emission of fibres to the air, and disposal at an approved waste disposal facility in accordance with the requirements of the relevant legislation, codes, standards and guidelines, prior to the commencement of construction.
- Identify, quantify and classify the likely waste streams that will be generated during the construction.
- Identify the measures to be implemented to manage, reuse, recycle and safely dispose of the waste.
- Identify appropriate servicing arrangements, including waste management and loading zones for the site.

3.2 Project and Site Description

The New High-Quality Classrooms Package 2 will involve the new construction of Catherine Field (CF), Public School. It involves the design and construction of the following through a combination of offsite and onsite construction techniques.

Teaching Spaces – Catherine Field - 44 new permanent teaching spaces for 1000 students in accordance with EFSG standards.

Core Facilities - Library, Administration, Canteen, staffing and pupil facilities to Core 35 Standards to and shared Community Hall & parking.

Site Configuration - Site must be configured to allow for teaching spaces, parking, sporting facilities, open space, infrastructure and area for future demountable.

The Catherine Field Public School site covers an area of approximately 2.0Ha, and is located within a growth precinct. The surrounding area includes newly constructed single dwellings to the west with undeveloped open space to the north, east and south.

A combination of offsite and onsite construction techniques will be used to deliver a high quality, future focused innovative, state of the art school. Meeting the current and future school and community needs whilst complying with the requirements as detailed in the Educational Facilities Standards and Guidelines (EFSG) and providing a high level of end user satisfaction.

4 Targets, Objectives & Legislation

4.1 Objectives

The project waste objectives include, complying will all environmental legislation (listed in section 4.3), minimising the amount of waste sent to landfill and maximising the amount of waste recycling.

4.2 Targets

- Disposal of no more than 20% of residual waste materials to a licensed landfill.
- The diversion from landfill of 80% of construction waste by weight.

4.3 Legislation

Relevant legislation and guidelines applicable to the project are listed below;

- Environmental Planning and Assessment Act 1979 No 203
- Environmental Planning and Assessment Regulation 2000
- Protection of the Environment Operations Act 1997 (NSW)
- Protection of the Environment Operations (General) Regulation 2009
- ISO 14001; 2015 Environmental management systems - Requirements with guidance for use
- NSW Government Environmental Management System Guidelines (edition 3 - August 2013)

5 Implementation

5.1 Waste Management

5.1.1 Waste Reduction

The main source of waste associated with the construction works would be demolished material (bricks, concrete, steel etc.) resulting from the demolition and refurbishment of existing buildings. It is likely that some excess building materials will be produced due to the construction work such as miscellaneous waste associated with packaging and transport of plant and equipment and various other manufactured items forming part of the augmentation works. Excavation for buildings, inground services and civil landscapes will create Virgin excavated natural material (VENM) which can create an amount of waste attributed to the project. Fortunately, this project does not contain any demolition which eliminates the main source of waste associated with construction. VENM will be utilised on site where possible for landscaping and to fill low building footprint areas. Waste generated as a result of construction will be minimised, recycled, reused or recovered, where practical.

HY has accepted the challenge to reduce waste on this construction project, particularly in materials transferred to landfill.

The strategy for reducing the waste on the project will be made up of three strategies as detailed below in order of priority. The prime objective is to keep the amount of materials transferred to landfill from this project to the minimum possible amount.

1. Reduce the amount of waste material produced on the project by ensuring that only enough materials required to perform the works are ordered.
2. Any excess materials from particular work areas are to be retained and incorporated into other work areas where practical.
3. Encourage “just in time” delivery of construction materials (minimum storage on site) to reduce the potential of loss / waste due to damage prior to usage.
4. Utilise VENM on site where possible.

5.1.2 Non-Recyclable Waste

Non-recyclable waste will be disposed of at an EPA approved landfill or transfer station.

5.1.3 Waste Collection & Disposal

Appropriate waste bins are to be provided by HY and made available to all S/C.

All S/C shall be directed to place waste in the bins provided. This shall be included in the Site Induction.

Waste collection points are nominated on the waste management loading zone (refer to Appendix 7.1).

5.1.4 Waste Reporting

Waste generation is monitored by HY on monthly basis to ensure that the company’s waste reduction objectives are achieved. Waste disposal quantities are monitored monthly by HY to ensure compliance.

The Project Administrator shall record waste disposal data on BIM360 Field using the waste record checklist.

Waste quantities from the PMR shall be entered into the State HSE Database for analysis and reporting against HY Waste reduction targets.

5.1.5 Concrete Waste & Washout

Concrete trucks and pumps shall be washed out at designated locations as shown on the site layout plan. Washout of concrete pumps and AGI's in other areas will not be permitted.

Washout shall be captured using membranes or other suitable means and allowed to set.

Waste shall be placed in bins for disposal with site waste.

Excess concrete shall be returned to the concrete plant for disposal or re-use.

5.1.6 Mitigation Strategies

- Accurate written records are to be kept such as:
  - Who transported the waste (company name, ABN, vehicle registration and driver details, date and time of transport, description of waste)
  - Copies of waste dockets/receipts for the waste facility (date and time of delivery, name and address of the facility, it's ABN, contact person).
- The construction contractor to ensure that waste generated by the works is transported to a place that can lawfully accept it as per Section 143 of the *Protection of the Environment Operations Act* 1997.
- The removal of any asbestos containing material if found is only to undertaken by an appropriately licenced contractor as per WorkCover NSW requirements and current guidelines.
- All waste, including excess spoil be recycled where practicable.
- Trucks transporting spoil off site to be covered.
- The EPA is to be notified immediately of any pollution incidents or harm to the environment (as defined under Part 5.7 of the POEO Act).

5.1.7 Soil Transfer

As the NHQC project involves the construction of multiple schools, a strategy to transfer soil between the sites will be in place to mitigate the amount of waste for the project. Soil from the East Leppington site will be transferred to the Catherine Fields site to create the required levels during the bulk earthwork stages. For cut and fill quantities refer to the civil consultant drawings.

5.1.8 Removal of Hazardous Material

In accordance with SSD 9477 Condition B17 (d), the removal of hazardous materials is addressed in this section of the Waste Management Plan. The initial contamination assessment completed by Environmental Investigative Services identified existing fill material as a potential source of contaminated/hazardous materials. Upon commencement of bulk earthworks, a Contaminated Soil Assessment was completed which confirmed that there was no hazardous materials present on site. Given the bulk earthworks are now complete and the material that has been imported as fill is VENM (Virgin Excavated Natural Material), the likelihood of encountering hazardous materials is extremely low. Despite this, the following unexpected finds protocol will be adopted in the event that a hazardous material is encountered on site.

5.1.9 Removal of Hazardous Material

Given the bulk earthworks are now complete and the material that has been imported as fill is VENM (Virgin Excavated Natural Material), the likelihood of encountering hazardous materials is extremely low. Despite this, the following unexpected finds protocol will be adopted in the event that a hazardous material is encountered on site. This is consistent with the unexpected finds protocol contained within Section 4.11.8 & Section 4.12 of the CEMP.

Unexpected Finds Protocol – Asbestos and contamination

If asbestos is detected in unexpected areas prior to, or during, site development works the following 'Unexpected Finds Protocol' will apply:

a. Upon discovery of suspected asbestos containing material, the site manager is to be notified and the affected area closed off by the use of barrier tape and warning signs. Warning signs shall be specific to Asbestos Hazards and shall comply with the AS1319-1994 – Safety Signs for the Occupational Environment.

b. An Occupational Hygienist is to be notified to inspect the area and confirm the presence of asbestos and to determine the extent of remediation works to be undertaken. A report detailing this information would be compiled by the Occupational Hygienist and provided to the Principal (or their representative) and the site manager.

c. The location of the identified asbestos material would be surveyed using sub-meter Differential Global Positioning System (DGPS).

d. If the impacted soil is to be disposed off site, it should be classified in accordance with the DECCW's Waste Classification Guidelines (2008) and disposed of, as a minimum, as asbestos contaminated waste to a suitably licensed landfill. In dry and windy conditions the stockpile would be lightly wetted and covered with plastic sheet whilst awaiting disposal.

e. All work associated with asbestos in soil would be undertaken by a contractor holding a class ASA Licence. WorkCover must be notified 7 days in advance of any asbestos works.

f. Monitoring for airborne asbestos fibres is to be carried out during the soil excavation in asbestos contaminated materials.

g. Documentary evidence (weighbridge dockets) of correct disposal is to be provided to the Principal (or their representative).

h. At the completion of the excavation, a clearance inspection is to be carried out and written certification is to be provided by an Occupational Hygienist that the area is safe to be accessed and worked. If required, the filling material remaining in the inspected area can be covered/sealed by an appropriate physical barrier layer of non-asbestos containing material prior to sign–off.

i. Validation samples would be collected from the remedial excavation to confirm the complete removal of the asbestos containing materials. If the asbestos pipes/conduits are uncovered, then sampling density would typically comprise one sample per 10-20 linear meter (depending on the length of the pipe). If asbestos debris are found, then the sampling density would typically comprise 1 sample per 5 metre x 5 metre grid.

j. The sampling locations should be surveyed using a sub-meter DGPS.

k. Details are to be recorded in the site record system.

l. Following clearance by an Occupational Hygienist, the area may be reopened for further excavation or construction work.

6 Waste Estimates and Treatment Methods

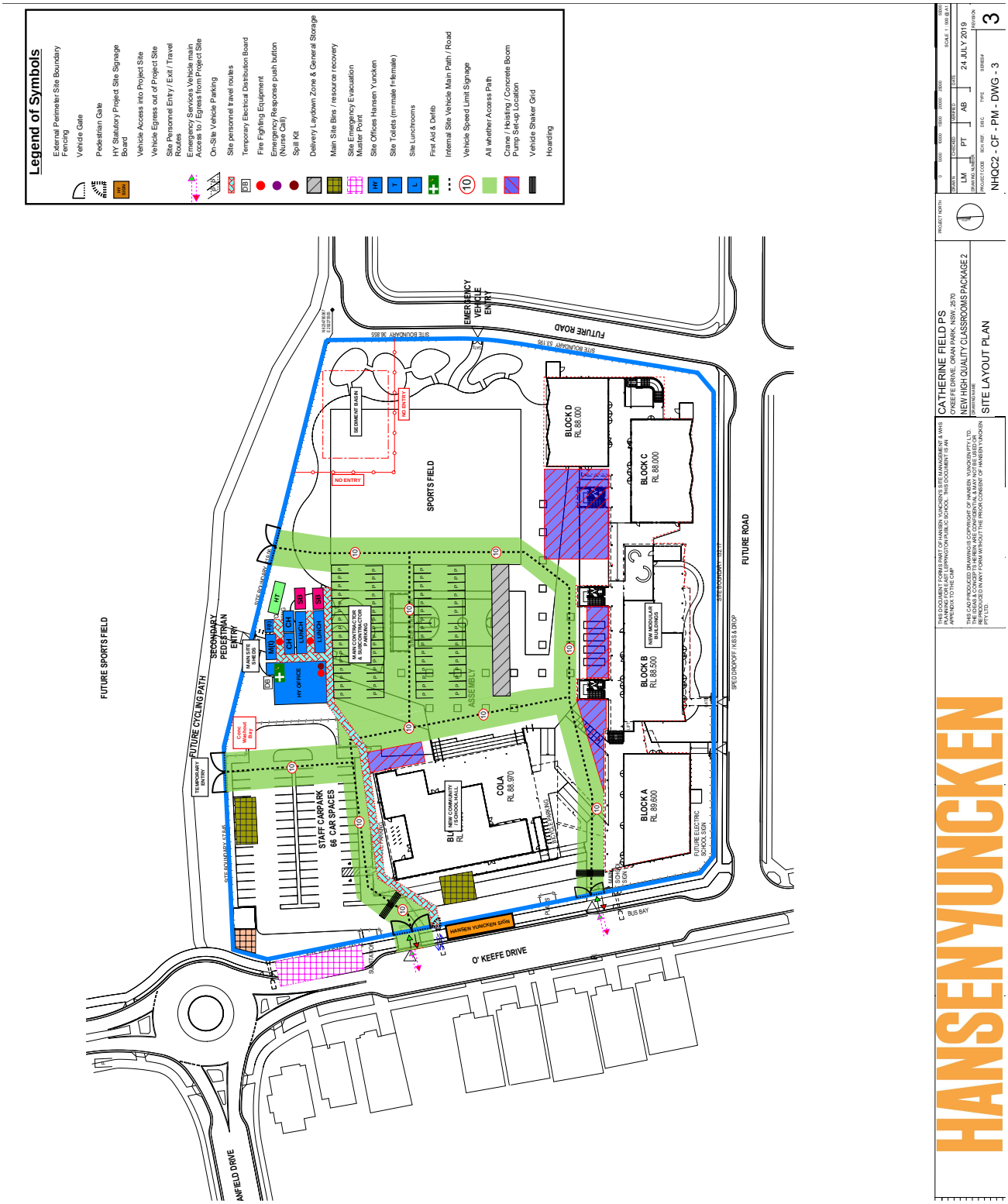
6.1 Excavation and Construction Waste Estimates

In accordance with SSD 9477 Condition B17a), the following table summarises each type of waste to be generated during construction along with the proposed reuse, recycling and disposal locations.

Material Type on Site	Estimated Volume (m^3) or Weight (t)			On-Site Treatment	Off-Site Treatment	
	Reuse	Recycle	Disposal	Proposed Reuse and / or Recycling Methods	Disposal / Transport Contractor	Waste Depot, Recycling Outlet or Landfill Site
Excavated material (VENM)	700m^3			Use to fill up low areas	TBA	TBA
Metals		100m^3		Site bins	TBA	TBA
Concrete Brick, Block & Tile		300m^3		Site bins	TBA	TBA
Timber		250 m^3		Site bins	TBA	TBA
Cardboard		150 m^3		Site bins	TBA	TBA
Plasterboard		250 m^3		Site bins	TBA	TBA
Plastics & packaging		150 m^3	30 m^3	Site bins	TBA	TBA
Pallets and Cable Drums	200			Separated and collected	TBA	TBA
Liquid Waste			30 m^3	Separated onsite	TBA	TBA
General Waste			300 m^3	Site bins	TBA	TBA
Sub Total	**700m^3**	**1200 m^3**	**360m^3**	Plus 200 units of pallet and drums that are returned to the suppliers for reuse.		
Total	**2260m3**			Plus 200 units of pallet and drums that are returned to the suppliers for reuse.		
Note: The disposal contractor and waste depot are yet to be determined as the contracts have not be let, as such they are listed as TBA.						

7 Appendices

7.1 Catherine Field Site Layout Plan



7.2 Construction Waste Management Advice

environmental management pty ltd

CATHERINE FIELDS PRIMARY SCHOOL CONSTRUCTION WASTE MANAGEMENT PLAN

SUBMITTED TO:

Fenn
Senior Project Manager, TSA
Level 15, 207 Kent Street | Sydney NSW 2000

PRESENTED BY:

JO DRUMMOND

ECCELL ENVIRONMENTAL MANAGEMENT PTYLTD
35 WAVERLY CRST, BONDI JUNCTION NSW 2022

TABLE OF CONTENTS

1. INTRODUCTION

This report has been prepared based on the requirements of the Secretary's Environmental Assessment Requirements Condition 20 Section 4.12 (8) of the Environmental Planning Assessment.

Section 2 Environmental Planning and Assessment Regulation 2000

Prepare a Construction Waste Management Plan

The Waste Management Plan will

a) Identify, quantity and classify waste streams to be generated during construction.

b) Describe measures to be implemented to manage, reuse, and recycle and safely dispose of the waste.

c) Identify servicing arrangements (including but not limited to waste management loading zones and Mechanical Plant for the site.

d) Prepare a site drawing for Construction Waste Management Loading Zones.

2. PROJECT PROFILE

The new Catherine Field primary school will be built in the Narellan primary school cluster of Catherine Field (Part), in the Sydney Metro South West district. The South West District is iden the Greater Sydney Commission's metropolitan plan "A Plan for Growing Sydney" as a sign ant focus for intensive growth and infrastructure in- vestment over next 20 years. The dra South West District Plan also applies to this area. The Cluster falls within the Camden Local Government Area (LPG) and includes 9 schools, which Catherine Field New Primary School is part o .

Catherine Field (Part) is in the South West Growth Centre, which is undergoing a sign ant development. The South West Growth Centre will have a sign ant number of dwellings and very high projected popula rowth. This is expected to generate increase in numbers of primary school age children, and demand for teaching space, and facil es to at least 2031.

3. PROJECT DESCRIPTION

The new primary school at Catherine Field (Part) will be located on a site within a Green eld Development that is expected to generate substan l popula school age popula owth. The site allocated for the school is approximately 2.0 Ha and has a direct conn on to a 5.0 Ha future Open Space to its Northern boundary, and full road access to the rest of the site's 3 boundaries.

The cons on will be delivered in a single stage as referenced CDR 17027 Catherine Field 181113

- Single stage cons on will include:
- 44 new teaching spaces to accommodate 1012 students.
- Core Facil es, Sta Facil es and Administra o Core 35 Standard
- Infrastructure and landscaping
- Parking facil es

4. OBJECTIVES & TARGETS

The project objec ves include:

- Me g all waste management standards while ensuring the health and safety of the workers on the project.
- Maximising the quan es of materials diverted from land ll by reusing, recycling and reprocessing o -site.
- Disposal of no more than 20% of residual waste materials to a licensed land ll in accordance with both regulatory and legal requirements.
- The diversion from land ll of 80% of cons on waste by weight, to meet the criteria of the NSW State Government's waste legisla waste policy se s and regulatory regime.

5. LEGISLATIVE REQUIREMENTS AND GUIDELINES

Relevant key legisla d guidelines applicable to the project include

- Prote n of the Environment Opera ons Act 1997
- Prote n of the Environment (General) Opera ct 1998
- Waste Avoidance and Resource Recovery Act 2001
- Prote n of the Environment Opera ons (Waste} Regula 014
- Secretary's Environmental Assessment Requirements

6. RISK MANAGEMENT

The current legisla on determines that the generator of waste is the owner of the waste un the waste crosses a weighbridge into a licensed facility. Waste contractors including cons on contractors are the primary transporters of waste o -site, accordingly contractors will be required to provide monthly reports on waste reused, reprocessed or recycled, thus diverted from land ll or waste sent to land ll. These reports have a direct bearing on the generator's regula .

The WMP will be implemented on site throughout excava cons on.

All entries in the Waste Data File must include:

- Time and Date of material removed
- Descrip size of waste
- Waste facility used
- Vehicle registra Waste Contractors Company name

The Waste Data File will be available for in on to any authorized officer at any e during site works. At the conclusion of site works, the designated person will retain all waste documenta n and make this valida g documenta vailable for inspe n.

7. WASTE MANAGEMENT STRATEGIES

The waste management strategy for the project will operate over the design, procurement, and cons on including t out of the project.

Management Strategies	Responsibili
Design:	
Use of modular components in design	Architect & Engineer
Use of prefabricated components in design	Architect, Builder, Subcontractors.
Design for materials to standard sizes	Architect, Subcontractors
Design for opera waste minimisa on	Architect & Builder
Procurement:	
Select recycled and reprocesses materials	Architect, Engineer, Builder & Sub Contractors
Components that can be reused a er decons on	Architect, Engineer & Builder
Pre-construc n	
Waste management plan to be reviewed & approved prior to construc	Builder
Construc n on-site:	
Use the avoid, reuse, reduce, recycle principles	Builder & Waste Contractor
Minimisa on of recurring packaging materials	Sub-contractors
Returning packaging to the supplier	Builder & Sub-contractor
Separa of recycling of materials o site	Waste Contractor
Audit & monitor the correct usage of bins	Builder & Waste Contractor
Audit and monitor the Waste Contractor	Builder

8. WASTE MANAGEMENT PLAN FOR DEVELOPMENT APPLICATION

Brief Outline of Proposal:

The cons on will be delivered in a single stage.

- Single stage cons on will include:
- 44 new teaching spaces to accommodate 1012 students.
- Core Facil es, Sta Facil es and Administra o Core 35 Standard
- Infrastructure
- Parking facil es

Project Site Address:

Barry O'Keefe Drive, Catherine Field (Part) Precinct, NSW 2567

Name

M n Fenn (TSA Management)
c/o Department of Educa W

Applicant's Address:

Level 15, 207 Kent Street | Sydney NSW 2000

Phone Number:

Exis g and other structures currently on site:

No exis g structures the site is a Green elds site

Signature of Applicant:

…… **Date:** / / 2018

PHASE 1: EXCAVATION

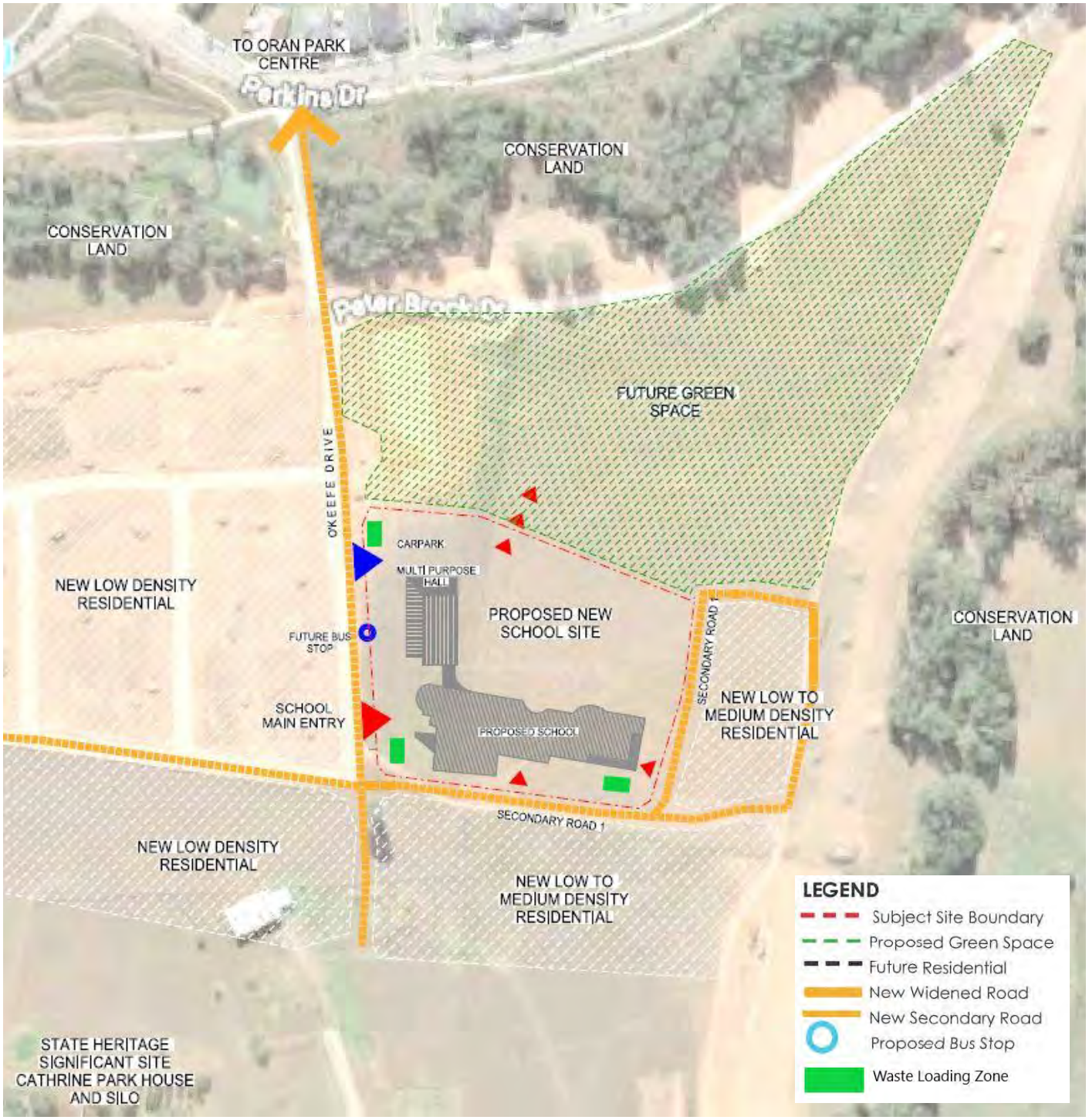
Material Type on Site	Es ted Volume (m^3) or Weight (t) (Most Favourable → Least)			ON-SITE TREATMENT	OFF-SITE TREATMENT	
	Reuse	Recycling	Disposal	Proposed reuse and/or recycling coll on methods	Disposal / Transport Contractor	Waste Depot, Recycling Outlet or Land ll site
Excavated materials	1,100					
Sub Total						
TOTAL	**1,100**					
Narra ve: Excavated material reused on site						

PHASE 2: CONSTRUCTION

Material Type on Site	Es ted Volume (m^3) or Weight (t) (Most Favourable → Least)			ON-SITE TREATMENT	OFF-SITE TREATMENT	
	Reuse	Recycling	Disposal	Proposed reuse and/or recycling coll on methods	Disposal / Transport Contractor	Waste Depot, Recycling Outlet or Land ll site
Concrete Brick Block-work & Tile		197m^3		Co-mingled Bins	TBA	Crushed for road base
Metals		114m^3		Co-mingled Bins	TBA	Scrap Metal Dealer for sme ng
Timber o -cuts		247m^3		Co-mingled Bins	TBA	Recycled for chips and mulch
Cardboard		169m^3		Co-mingled Bins	TBA	Recycled into cardboard
Plasterboard		184m^3		Co-mingled Bins	TBA	Recycled as soil cond oner
Plas plas packaging, paint drums, containers		142m^3	25 m^{3-}	Co-mingled Bins	TBA	- Styrene and plas o land ll * Paint drums nested and recycled
Pallets and Reels	130 units			Separated onsite	TBA	Returned to the supplier
Liquid Waste			17 m^3	Separated onsite	TBA	Transferred to licenced land ll
General Waste			170 m^3	Co-mingled Bins	TBA	Transferred to licenced land ll
Sub Total	**NB:130 units**	**1,053m^3**	**212 m^3**			
TOTAL	**1,265 m^3**			**NB: Plus, an addi nal 130 pallets (single units returned to suppliers for reuse)**		

Narra ve:
As the contracts for all contractors have not been let there are s l those including the waste contractor To Be advised (TBA**).**
All waste will be co-mingled and taken for o -site separa reuse or recycling except Pallets and Reels and liquid waste to be sent to land ll
for processing.

9. APPENDIX A – WASTE MANAGEMENT LOADING ZONE



A.10 SSDA Compliance Conditions

Refer over the page for a condition satisfaction table outlining where each of the conditions have been addressed throughout the CEMP.

NSW GOVERNMENT Education

New Catherine Field Primary School (SSD 9477): Submission of Construction Environmental Management Plan in accordance with Condition B13

Condition	Condition requirements	Document reference
B13	The CEMP must include, but not limited to, the following:	
	(a) Details of: (i) Hours of work:	Section 3.1.1, Hours of Work, p7
	(ii) 24-Hour contact details of site manager;	Section 3.1.2, 24 Hour Contact Details, p7
	(iii) management of dust and odour to protect the amenity of the neighborhood	Section 4.7, Air Quality & Dust Control, p16
	(iv) stormwater control and discharge	Section 4.8, Soil, Erosion & Water Quality, p17
	(v) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site;	Section 4.8.2, Soil, Erosion & Water Quality – Mitigation Strategies', p18
	(vi) groundwater management plan including measures to prevent groundwater contamination;	Section 4.11.1 & Section 4.11.4, Site Contamination & Release of Contaminants to Soil and Groundwater, p19-23
	(vii) external lighting in compliance with AS 4282-2019 Control of the Obtrusive effects of outdoor lighting	Section 4.17 & Appendix A.11, External Lighting & External Lighting Compliance, p28 & p177
	(viii) community consultation and complaints handling	Section 4.18, Community Consultation and Complaints Handling, p29
	(b) Construction Traffic and Pedestrian Management Sub-Plan (see condition B14)	Appendix A.5, Construction Traffic and Pedestrian Management Sub-Plan, p57
	(c) Construction Noise & Vibration Management Sub-Plan (see condition B15)	Appendix A.6, Construction Noise & Vibration Management Sub-Plan, p90
	(d) Construction Waste Management Sub-Plan (see condition B16)	Appendix A.8, Construction Waste Management Sub-Plan, p149

B13	(e) Construction Soil and Water Management Sub-Plan (see condition B17)	Appendix A.7, Construction Soil & Water Management Sub-Plan, p120
	(f) an unexpected finds protocol for contamination and associated communications procedure;	Section 4.11.7, Unexpected Finds, p22
	(g) an unexpected finds protocol for Aboriginal and non-Aboriginal heritage and associated communications procedure	Section 4.11.7, Unexpected Finds, p22
	(h) waste classification (for materials to be removed) and validation (for materials to remain) be undertaken to confirm the contamination status in these areas of the site	Section 4.12, Waste Management, p26 Appendix A.9, Waste Classification, p171
B12	(a) detailed baseline data;	Not applicable for this management plan
	(b) details of: (i) the relevant statutory requirements (including any relevant approval, license or lease conditions);	Section 3.6.3, Legal Compliance and Other Requirements, p11 Section 4.6.2, Traffic & Access Mitigation Strategies, p16 Section 4.8.2, Soil, Erosion & Water Quality Mitigation Strategies, p18 Section 4.11.7, Unexpected Finds, p22 Section 4.12.7, Waste Management Mitigation Strategies, p27 Section 4.17, External Lighting, p28 Section 5.3.3, NGER Reporting Process, p36
	(ii) any relevant limits or performance measures and criteria; and	Section 5.3.3, NGER Reporting Process, p36
	(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	Section 3.4, Targets, p10
	(c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 3.6.3, Legal Compliance and Other Requirements, p11 Section 4.6.2, Traffic & Access Mitigation Strategies, p16 Section 4.8.2, Soil, Erosion & Water Quality Mitigation Strategies, p18

		Section 4.11.7, Unexpected Finds, p22 Section 4.12.7, Waste Management Mitigation Strategies, p27 Section 4.17, External Lighting, p28 Section 5.3.3, NGER Reporting Process, p36
	(d) a program to monitor and report on the: (i) impacts and environmental performance of the development;	Section 5.3, National Greenhouse & Energy Reporting, p35
	(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	Section 3.6.3, Legal Compliance and Other Requirements, p11 Section 4.6.2, Traffic & Access Mitigation Strategies, p16 Section 4.8.2, Soil, Erosion & Water Quality Mitigation Strategies, p18 Section 4.11.7, Unexpected Finds, p22 Section 4.12.7, Waste Management Mitigation Strategies, p27 Section 4.17, External Lighting, p28 Section 5.3.3, NGER Reporting Process, p36
	(e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 4.11.7, Unexpected Finds, p22
	(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 5.3.3, NGER Reporting Process, p36
	(g) a protocol for managing and reporting any: (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);	Section 5.2.1, Non-Conformances, p34 Section 5.2.2, Reporting & Corrective Actions, p34
	(ii) complaint;	Section 4.18, Community Consultation & Complaints Handling, p29
	(iii) failure to comply with statutory requirements; and	Section 5.2.1, Non-Conformances, p34

	(h) a protocol for periodic review of the plan and any updates in response to incidents or matters of non-compliance	Section 5.2.2, Reporting & Corrective Actions, p34

A.11 External Lighting Compliance

Light is really the source of all being... all materials in nature are made of light which has been spent, and this crumpled mass called material casts a shadow, and the shadow belongs to light.
Louis Kahn

Mechanical Engineering
Lighting Design
Sustainable Design
Electrical Engineering

Copenhagen
London
Sydney
Canberra
Hong Kong
New York

Level 8, 9 Castlereagh Street
Sydney, NSW, 2000, Australia
ABN 50 001 189 037
t : +61 / 2 9967 2200
e : info@steensenvarming.com

STEENSEN VARMING

Hansen Yuncken
Sydney Corporate Park (SCP)
Building 1, Level 3
75-85 O'Riordan Street
Alexandria NSW 2015

Att. Marco Beretta

Sydney June 23rd, 2020

Dear Marco Beretta,

Building Services Design Statement for the external lighting design for Catherine Field Public School.

In my professional opinion the design of the lighting services for the above project is in general accordance with the Australian Standards current at the time of design, as referenced in SSD 9477 condition B10. In particular:

AS/NZS 4282.1: 2019	Control of the obtrusive effects of outdoor lighting -Refer to notes below
AS/NZS 1158: 2005	External Lighting -Pathways designed to category P3 -Entry points designed to category P2 -Carparks designed to category P11b and P12

The following documents formed the design documents for the building services systems:

Document Number	Rev.	Drawing Title	Date
NHQC2-CF-EL-S-EL_1010	G	Lighting Site Plan	29.05.2020

The exterior lighting has been designed in consideration of minimizing obtrusive light outside of the site boundaries and in consideration of public amenity. Refer to appendix A for the mitigation measures considered in the design to align with the intent of AS4282 Control of Obtrusive Effects of Outdoor Lighting.

Kind regards

Ivan Mira
Associate
BE Electrical, CPEng, NER

Level 8, 9 Castlereagh Street
Sydney, NSW, 2000, Australia
ABN 50 001 189 037
t : +61 / 2 9967 2200
e : info@steensenvarming.com

1.0 Appendix A

The exterior lighting focuses on functional illumination and consists of pole top and directional spotlight luminaires to provide lighting to the site carpark and key pathways, with light focused on the ground below.

- **Lighting controls -** EFSG guidelines recommend the control of external lighting be divided into two functions, thus limiting the operation of lighting during curfew hours, and ensuring operation is as per the schools needs. The following outline the functions:
  1. Predawn function: all external lighting on between 5:00am – 9:00am for the safe access of cleaners and staff
  2. Night function: only select lighting fixtures to operate as 'access' lighting from school closure – 5:00am

- **Minimise sky glow with downward directed lighting –** all external lighting for Catherine Field Primary schools utilises fixed downward directed pole top luminaires or directional spotlights for the purposes of pathway illumination, dedicated soley for the illumination of the ground surface. All pole top luminaires also have no upward lighting component.

- **Minimise horizontal spread light** – The external lighting design for Catherine Field Primary School utilises luminaires with optical control for the purposes of directing and controlling light throw. This also in turn addresses the use of assymetric light beams where possible.

- **Do not over light –** The external lighting design has been developed in line with the appropriate and applicable lighting levels as per AS1158.3.1 Pedestrian area (Category P) lighting. The calculations indicate that the relevant P categories are generally met and not excessively exceeded.

- **Minimise glare –** Potential glare sources have been minimised through the implementation of proper aiming, luminaire mounting heights, and optical control.

In general, the external lighting for Catherine Field Primary School is dedicated solely to functional lighting with no decorative or architectural lighting features. At current there is no uplighting, tree lighting, externally illuminated signage or surfaces, nor does Steensen Varming's lighting design specify internally illuminated signage.

Overall consideration has been given to the direction of luminaire aiming, height of luminaire mounting timing and duration of the exterior lighting in line with the intent to minimise obtrusive light.

A.12 Site Investigation Executive Summary (Groundwater Investigation)

The below is an extract from the Environmental Site Assessment for the Catherine Field Primary School that was conducted from Environmental Investigation Services (EIS) on 21 December 2018.

EXECUTIVE SUMMARY

This report presents the findings of a Stage 2 Environmental Site Assessment (ESA) for the proposed new school development at the corner of Barry O'Keefe Road and Banfield Drive, Catherine Field, NSW. The site location is shown on Figure 1 and the assessment was confined to the site boundaries as shown on Figure 2.

This report has been prepared to address Point 1 to 5 of Key Issue and Desired Performance Outcome 15, as specified in the Soils section of the NSW Department of Planning and Environment, Standard SEARs for Critical State Significant Infrastructure Projects, dated December 2015 provided by the client.

The aim of the assessment was to: identify potential contamination sources and contaminants of concern; assess the soil and groundwater contamination conditions; provide a preliminary waste classification for off-site disposal of in-situ soil; assess the potential for Acid Sulfate Soils (ASS); assess the potential for dryland salinity; and comment on site suitability for the proposed development.

The scope of works included: review of site information; site history information; detailed inspection of accessible areas of the site; preparation of a Conceptual Site Model (CSM); design and implementation of a Sampling Analysis Quality Plan (SAQP) including soil and groundwater sampling from selected locations (see Figure 2); interpretation of the analytical results against the Site Assessment Criteria (SAC); Data Quality Assessment; review of CSM and Tier 1 Risk Assessment; and preparation of this report summarising the results of the ESA.

The CSM identified potential sources of contamination/ Areas of Environmental Concern (AEC) at the site associated with: fill material; historical agricultural use; and dryland salinity. The ESA included the following works:

- Soil sampling from thirty-one (31) locations (boreholes/test pits);
- Groundwater sampling from three monitoring wells;
- Laboratory analysis of selected soil and groundwater samples for contaminants of potential concern (CoPC) identified in the CSM; and
- Interpretation and discussion of the results.

A CSM has been developed to address potential contaminant sources, transport mechanisms/ pathways and sensitive receptors. The CSM has identified potential on-site contamination sources and associated CoPC which have the potential to pose a risk to site receptors.

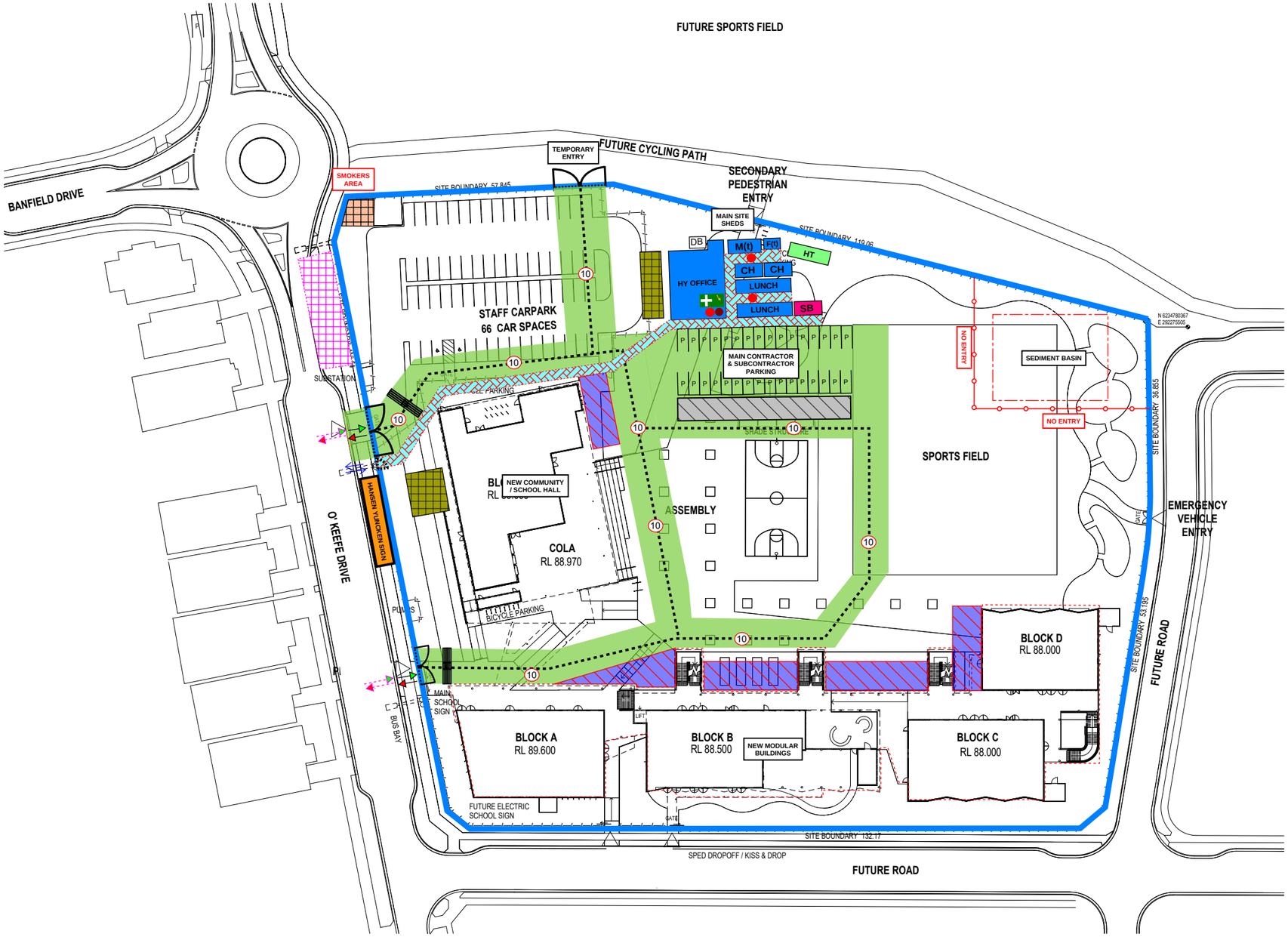
All of the soil results were below the SAC adopted for this ESA. The groundwater samples encountered marginally elevated concentrations of cadmium, copper, nickel and zinc above the SAC. The source of these elevated concentration is most likely regional and could be associated with leaking water infra structure, surface water run-off or significant earth works to the west. Based on these impacts the groundwater system is considered to be disturbed rather than pristine. EIS understand that groundwater will not be used as a resource at the site. Based on the results of the assessment, the AEC are not considered to pose a risk to site receptors.

The ESA identified saline conditions at the site which warrant management. Landscaped areas and built structures exposed to soil and groundwater should be designed to withstand the conditions described in the report.

Based on the findings of the assessment, EIS are of the opinion that the site is suitable for the proposed development. A salinity management plan should be prepared and implemented when development plans have been finalised.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of the report.

A.13 Site Layout Plan



Legend of Symbols

- External Perimeter Site Boundary Fencing
- Vehicle Gate
- Pedestrian Gate
- HY Statutory Project Site Signage Board
- Vehicle Access into Project Site
- Vehicle Egress out of Project Site
- Site Personnel Entry / Exit / Travel Routes
- Emergency Services Vehicle main Access to / Egress from Project Site
- On-Site Vehicle Parking
- Site personnel travel routes
- Temporary Electrical Distribution Board
- Fire Fighting Equipment
- Emergency Response push button (Nurse Call)
- Spill Kit
- Delivery Laydown Zone & General Storage
- Main Site Bins / resource recovery
- Site Emergency Evacuation Muster Point
- Site Offices Hansen Yuncken
- Site Toilets (m=male f=female)
- Site Lunchrooms
- First Aid & Defrib
- Internal Site Vehicle Main Path / Road
- Vehicle Speed Limit Signage
- All whether Access Path
- Crane / Hoisting / Concrete Boom Pump Set-up Location
- Vehicle Shaker Grid
- Hoarding

AMMENDMENTS

REV	BY	DATE	DESCRIPTION
A	LM	01.10.2019	
B	LM	21.05.2020	

HANSENYUNCKEN

CATHERINE FIELD PS

O'KEEFE DRIVE, ORAN PARK, NSW, 2570

NEW HIGH QUALITY CLASSROOMS PACKAGE 2

DRAWING NAME

SITE LAYOUT PLAN

PROJECT NORTH

0 5000 10000 15000 20000 25000 50000

SCALE 1 : 500 @ A1

DRAWN	CHECKED	VERIFIED	DATE
LM	PT	AB	21 MAY 2019

DRAWING NUMBER

PROJECT CODE SCH. REF. DISC. TYPE SERIES#

NHQC2 - CF - PM - DWG - A

REVISION A