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1 Document Information

1.1 Review & Approval

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<th>Position</th>
<th>Name</th>
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<tr>
<td>Contracts Authorised Person</td>
<td>Kevin Gomez</td>
<td></td>
<td></td>
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<tr>
<td>Snr Contracts Administrator</td>
<td>Ertac Turk</td>
<td></td>
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<tr>
<td>Services Engineer</td>
<td>Nicholas Ko</td>
<td></td>
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<tr>
<td>(CF) Project Manager</td>
<td>Paul Todhunter</td>
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<tr>
<td>(CF) Contracts Administrator</td>
<td>Mikky Baroni</td>
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<tr>
<td>(CF) Site Manager</td>
<td>Andrew Baker</td>
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<tr>
<td>(CF) Site Safety Officer</td>
<td>Andrew Wackwitz</td>
<td></td>
<td></td>
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<tr>
<td>(CF) Project Engineer</td>
<td>Basel Atatreh</td>
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<tr>
<td>(CF) Site Engineer</td>
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<tr>
<td>(CF) Cadet</td>
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<td></td>
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<tr>
<td>(CF) Foreman</td>
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<td>(CF) Site Administration</td>
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Approval

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<thead>
<tr>
<th>State HSE Manager</th>
<th>Peter Fay</th>
</tr>
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<tbody>
<tr>
<td>Construction Manager</td>
<td>Dean Marcon</td>
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1.2 Change Information

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<td>2</td>
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<td>09-04-2020</td>
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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:

- 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, its 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 its 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

<table>
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<tr>
<th>Environmental Risk Register Summary &amp; Responsibilities</th>
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<tbody>
<tr>
<td>Environmental Issue</td>
</tr>
<tr>
<td><strong>Location &amp; Land use</strong></td>
</tr>
<tr>
<td>Residential and other properties may be impacted with construction works due to construction noise and dust</td>
</tr>
<tr>
<td><strong>Noise &amp; Vibration</strong></td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td><strong>Traffic &amp; Access</strong></td>
</tr>
<tr>
<td>During construction there will be impacts to traffic on public roads surrounding the project from construction vehicles and deliveries for site.</td>
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</table>
### Environmental Risk Register Summary & Responsibilities

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<tr>
<th><strong>Air Quality</strong></th>
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<tbody>
<tr>
<td>During the earthworks stage of the project, there is a risk of poor air quality generated by the constructions works.</td>
<td>Low</td>
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<table>
<thead>
<tr>
<th><strong>Soils, Erosion, &amp; Water Quality</strong></th>
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<tbody>
<tr>
<td>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.</td>
<td>Low</td>
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<table>
<thead>
<tr>
<th><strong>Terrestrial Flora &amp; Fauna</strong></th>
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<tbody>
<tr>
<td>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.</td>
<td>Low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cultural Heritage</strong></th>
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<tbody>
<tr>
<td>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.</td>
<td>Low</td>
</tr>
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</table>

*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 20,810m² (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)
- 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 suppress 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 worksite 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 its 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

1. **Suspected ASBESTOS material**
   - Notify Hansen Yuncken Management
     - Isolate Work Area
     - Site Consultation
     - Hygenist is notified and requested to attend Site
     - Test sample of suspected hazardous

   - **YES**
     - Decontamination & Removal Contractor Engaged
       - Material removed from site and disposed in accordance with SafeWork NSW & EPA requirements
       - CLEARANCE Certificate Obtained
         - Site Personnel notified by Hansen Yuncken
         - RESUME work Activities
     - Obtain DISPOSAL Certificate to verify Hazardous material has been disposed at licensed facility – in accordance with EPA requirements

   - **NO**
     - Obtain Clearance Certificate to verify discovered material does not contain ASBESTOS
     - Site Personnel notified by Hansen Yuncken
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 a 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 m² (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 docketts 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 IDENTIFIED

Ascertained the location and type of fire

Bushfire, Fuel/Oil, Chemical, Electrical

Is there a Site Manager on site?

Notify Site Manager

-site manager/SSO

Organise Plant

Plant may be required to cut fire breaks or water carts used to extinguish flames

Does the site have a Fire Response Team?

Notify t

Contact Response Team

Response Team to fight fire

Is assistance required?

YES

Contact Fire Brigade

Fire Brigade to Control situation

MEDICAL EMERGENCY PROCEDURE

SITE EVACUATION PROCEDURE

Contact Residents or Owners and advise

ACCIDENT/INCIDENT REPORTING PROCEDURE

-YES or NO

Have people been injured in the fire?

YES

-YES

Is evacuation of the site, offices or workshop required?

YES

Are nearby residents, property or livestock in danger?

YES
Major Fuel Spill

1. Other Causes
2. Major Fuel Spill Notified
   - Ascertain the type of spill and fuel involved
   - Contact Site Manager and advise details
   - Site Manager to investigate the scene
   - Close valves or stop source of fuel if possible
   - Shut off all engines & eliminate sources of ignition
   - Supervisor to co-ordinate plant

   - Is there a danger of fuel draining into nearby creeks or watercourses?
     - Yes: Provide temporary bunding to contain the spill & prevent entry
     - No: Is temporary bunding be installed to prevent entry into the watercourse?
       - Yes: Temporary block/dam the watercourse to prevent flow downstream
       - No: Is there danger of a fire resulting from the fuel spill?
         - Yes: Fire Response Procedure
         - No: Is assistance required?
           - Yes: Contact Emergency Services
           - No: Have people been affected by fumes or contact with fuel?
             - Yes: Medical Emergency Procedure
             - No: Has ground become contaminated by fuel?
               - Yes: Obtain Client’s directions regarding rehabilitation requirements
               - No: Clean up contaminated ground as directed

3. Plant Collision Accident Procedure
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 products/ 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).
5.3.3 NGER Reporting process

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


7 Appendices

A.1 Hansen Yuncken Environmental Policy Statement

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 Salvesen
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.qcsce.com.au/certified-register, and www.jas-anz.org/our-directory/certified-organisations; it remains the property of
QCEC Pty Ltd and must be returned upon request.

Certificate Number: 160652022
Issue Date: 26 February 2019
Original Certification: 23 February 2010
Expiry Date: 22 February 2022

Cheryl Stone
Certification Manager

QMS/EMS Certified Company
Licence Number: G0160

www.jas-anz.org/register
A.3 Site Description and Location

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

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 be used as an aide 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 relating to works to be undertaken for the next month. Hazards with residual risk from the Design HSE Risk Assessment (if applicable) are to be also considered.

<table>
<thead>
<tr>
<th>RELEVANT PROCEDURE</th>
<th>Project HSE Risk Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOB NO</td>
<td>HY 128 (Catherine Field and East Leppington)</td>
</tr>
<tr>
<td>ASSESSED BY</td>
<td>Paul Todhunter</td>
</tr>
<tr>
<td>ASSESSMENT DATE</td>
<td>25 Mar 20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HAZARD (Include additional project specific hazards as required)</th>
<th>L</th>
<th>C</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access A 4 Medium Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
<td>4</td>
<td>Medium</td>
<td>Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
</tr>
<tr>
<td>Location and nature of workplace A 4 Medium Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
<td>4</td>
<td>Medium</td>
<td>Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
</tr>
<tr>
<td>Housekeeping A 4 Medium Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
<td>4</td>
<td>Medium</td>
<td>Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
</tr>
<tr>
<td>Seating A 4 Medium Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
<td>4</td>
<td>Medium</td>
<td>Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
</tr>
<tr>
<td>Lighting (Plan) A 4 Medium Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
<td>4</td>
<td>Medium</td>
<td>Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
</tr>
<tr>
<td>Air Quality A 4 Medium Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
<td>4</td>
<td>Medium</td>
<td>Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
</tr>
<tr>
<td>Hot and Cold Environment A 4 Medium Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
<td>4</td>
<td>Medium</td>
<td>Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
</tr>
<tr>
<td>Change Room A 4 Medium Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
<td>4</td>
<td>Medium</td>
<td>Satellite NSW Code Of Practice: Managing the work Environment and Facilities</td>
</tr>
</tbody>
</table>

### RISK ASSESSMENT TABLE

<table>
<thead>
<tr>
<th>Risk</th>
<th>Likelihood</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Very Likely</td>
<td>Major</td>
</tr>
<tr>
<td>B</td>
<td>Likely</td>
<td>Significant</td>
</tr>
<tr>
<td>C</td>
<td>Possible</td>
<td>Minor</td>
</tr>
<tr>
<td>D</td>
<td>Remotely Possible</td>
<td>Low</td>
</tr>
<tr>
<td>E</td>
<td>Very Likely</td>
<td>Medium</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk</th>
<th>Likelihood</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Very Likely</td>
<td>Major</td>
</tr>
<tr>
<td>B</td>
<td>Likely</td>
<td>Significant</td>
</tr>
<tr>
<td>C</td>
<td>Possible</td>
<td>Minor</td>
</tr>
<tr>
<td>D</td>
<td>Remotely Possible</td>
<td>Low</td>
</tr>
<tr>
<td>E</td>
<td>Very Likely</td>
<td>Medium</td>
</tr>
</tbody>
</table>

### PROJECT HSE RISK ASSESSMENT

<table>
<thead>
<tr>
<th>RISK ASSESSMENT CONTROLS (to be established in the following order of priority: 1=High Level Risks; 2=Medium Level Risks; 3=Low Level Risks)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### HSE Risk Assessment

5/06/2020

Page 1 of 15
## HAZARD

### HSE Risk Assessment 5/06/2020 Page 2 of 15

### PROJECT: New High Quality Schools

### JOB NO: SC 108 (Catherine Field and East Leppington)

### ASSESSOR: Paul Todhunter

### ASSESSMENT DATE: 20 May 20

## RISK ASSESSMENT TABLE

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Likelihood</th>
<th>Probability</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public being struck by trucks entering and exiting site</td>
<td>D 3 Medium</td>
<td>SafeWork NSW Code Of Practice: How to manage work health and safety risks</td>
<td></td>
</tr>
<tr>
<td>Subcontractors bringing vehicles onto site without Hansen Yuncken permission</td>
<td>B 4 Medium</td>
<td>Ford Civil Traffic Construction Traffic Management Plan</td>
<td></td>
</tr>
<tr>
<td>Workers slipping/ tripping over on muddy/ uneven ground</td>
<td>C 3 Medium</td>
<td>WHS Management Plan</td>
<td></td>
</tr>
<tr>
<td>Vehicles becoming bogged or losing traction whilst entering/ exiting and driving around site</td>
<td>E 4 Low</td>
<td>Vehicles to be driven on solid ground only. No vehicles will be allowed to drive on muddy terrain</td>
<td></td>
</tr>
<tr>
<td>Collisions between plant on site</td>
<td>E 3 Low</td>
<td>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</td>
<td></td>
</tr>
<tr>
<td>Too many vehicles parked on site creating restricted access around site</td>
<td>NA 4 NA</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

## CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)

- All subcontractors must seek approval from the Hansen Yuncken Site Manager prior to bringing vehicles/ trucks onto site.
- Pedestrian pathways have been constructed to minimise slip and trip hazards. Wheel rake, eroded ground, muddy haul roads and pathways are to be bladed back to solid ground as required. On site 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.
- A Parking area on site has been established. Vehicles are not permitted to park outside of the car park area.
- Gate keeper is in place managing vehicle and pedestrian movements at main entry to site.
- Vehicles to be driven on solid ground only. No vehicles will be allowed to drive on muddy terrain.
### HAZARD: (Include additional project specific hazards as required)

<table>
<thead>
<tr>
<th>L</th>
<th>C</th>
<th>Class</th>
<th>Legislation, Standards &amp; Codes of Practice</th>
<th>Enter Details of Specific Controls Required</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### RISK ASSESSMENT

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>Likelihood</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Workers being exposed to the asbestos contaminated soil (ACM) at various locations around site

<table>
<thead>
<tr>
<th>NA</th>
<th>NA</th>
<th>Working with asbestos guide 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A contamination report for the site has been produced and has not identified any ACM. An unexpected finds protocol is to be implemented.</td>
</tr>
</tbody>
</table>

### Unidentified finds of asbestos

<table>
<thead>
<tr>
<th>B</th>
<th>3</th>
<th>Medium</th>
<th>HSE Procedure: How to manage and control asbestos in the workplace</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

### Atmospheric - Contaminated/ Flammable

<table>
<thead>
<tr>
<th>A</th>
<th>4</th>
<th>Medium</th>
<th>SalWin/NSW Code Of Practice: Managing risks of hazardous chemicals in the workplace</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fuel must 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.</td>
</tr>
</tbody>
</table>

### Surface storage of fuel

<table>
<thead>
<tr>
<th>C</th>
<th>4</th>
<th>Medium</th>
<th>AS/NZS 2430: Classification of hazardous areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fuel must be stored in ventilated cages. No fuel to be stored in shipping containers.</td>
</tr>
</tbody>
</table>

### Fumes from spray sealer application to carpark slab

<table>
<thead>
<tr>
<th>D</th>
<th>4</th>
<th>Low</th>
<th>AS1318 Use of colour for the marking of physical hazards and the identification of certain equipment in industry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Applications 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.</td>
</tr>
</tbody>
</table>

### Biological Hazards

<table>
<thead>
<tr>
<th>E</th>
<th>4</th>
<th>Low</th>
<th>SalWin/NSW Code Of Practice: Control of work related exposure to Hepatitis B and HIV (blood borne) viruses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>HSE Plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Facilities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A cleaner has been engaged by Hansen Yuncken to clean amenities on a bi-weekly basis.</td>
</tr>
</tbody>
</table>

### Persons unaware of what to do in the event of an emergency

<table>
<thead>
<tr>
<th>E</th>
<th>5</th>
<th>Low</th>
<th>HSE Procedure: How to safely remove asbestos</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A cleaner has been engaged by Hansen Yuncken to clean amenities on a bi-weekly basis.</td>
</tr>
</tbody>
</table>

### Bank Threat

<table>
<thead>
<tr>
<th>E</th>
<th>5</th>
<th>Low</th>
<th>HSE Procedure: How to safely remove asbestos</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A cleaner has been engaged by Hansen Yuncken to clean amenities on a bi-weekly basis.</td>
</tr>
</tbody>
</table>

### Changes in design

<table>
<thead>
<tr>
<th>D</th>
<th>4</th>
<th>Low</th>
<th>HSE Management Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>All design changes must be risk assessed by HY and Consultants. Subcontractor SWMS will be reviewed by HY as required.</td>
</tr>
</tbody>
</table>

### Craning & Hoisting Operations

<table>
<thead>
<tr>
<th>A</th>
<th>1</th>
<th>High</th>
<th>AS 2550: Cranes, hoists &amp; winches - Safe Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>The work area around all cranes must be fully barricaded eg bunting and signage to keep other workers clear.</td>
</tr>
</tbody>
</table>

### Equipment failure

<table>
<thead>
<tr>
<th>A</th>
<th>1</th>
<th>High</th>
<th>AS 1418.1-3(KH): Cranes, hoists and winches - Elevating work platforms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

### Other trades on site walking into the crane slew area may be struck by crane or load

<table>
<thead>
<tr>
<th>B</th>
<th>1</th>
<th>High</th>
<th>AS 1418.1-3(KH): Cranes, hoists and winches - Elevating work platforms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A cleaner has been engaged by Hansen Yuncken to clean amenities on a bi-weekly basis.</td>
</tr>
</tbody>
</table>

### Keep clear of crane slew area

<table>
<thead>
<tr>
<th>D</th>
<th>4</th>
<th>Low</th>
<th>HSE Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>All subcontractors must keep an up to date register of all chains and slings. All equipment must be visually checked daily prior to use.</td>
</tr>
</tbody>
</table>

### NSW Code of Practice: How to manage and control asbestos in the workplace

<table>
<thead>
<tr>
<th>E</th>
<th>3</th>
<th>Medium</th>
<th>HSE Procedure: How to manage and control asbestos in the workplace</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A cleaner has been engaged by Hansen Yuncken to clean amenities on a bi-weekly basis.</td>
</tr>
</tbody>
</table>

### NSW Code of Practice: How to remove asbestos

<table>
<thead>
<tr>
<th>E</th>
<th>3</th>
<th>Medium</th>
<th>HSE Procedure: How to manage and control asbestos in the workplace</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A cleaner has been engaged by Hansen Yuncken to clean amenities on a bi-weekly basis.</td>
</tr>
</tbody>
</table>
## HSE Risk Assessment

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

### RELEVANT PROCEDURE:

**Project HSE Risk Assessment**

### RISK ASSESSMENT TABLE

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Significant</th>
<th>Major</th>
<th>Moderate</th>
<th>Minor</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Very Likely</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>B</td>
<td>Likely</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>C</td>
<td>Possible</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>D</td>
<td>Remote/ Possible</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>E</td>
<td>Very Unlikely</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

**CONSEQUENCE**

<table>
<thead>
<tr>
<th>L</th>
<th>C</th>
<th>Class</th>
<th>Legislation, Standards &amp; Codes of Practice</th>
<th>Enter Details of Specific Controls Required</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### JOB NO:

NC 138 (Catherine Field and East Leppington)

### ASSESSED BY:

Paul Todhunter

### ASSESSMENT DATE:

26-May-20

### RISK ASSESSMENT

<table>
<thead>
<tr>
<th>HAZARD (Include additional project specific hazards as required)</th>
<th>L</th>
<th>C</th>
<th>Class</th>
<th>Legislation, Standards &amp; Codes of Practice</th>
<th>Enter Details of Specific Controls Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Pumping - overalled formwork structure</td>
<td>A</td>
<td>2</td>
<td>High</td>
<td>WHS Plan</td>
<td>Spaller to be used when positioning boom over formwork</td>
</tr>
<tr>
<td>Trip hazard after excess concrete has cured</td>
<td>A</td>
<td>4</td>
<td>Medium</td>
<td>Environmental Protection Act 1994</td>
<td>Back to plant policy for large amounts of excess concrete</td>
</tr>
<tr>
<td>Slip hazard from excess water and slurry on the ground - concrete washout</td>
<td>A</td>
<td>4</td>
<td>Medium</td>
<td>WHS Plan</td>
<td>Concrete washout to be set up in area where water will not run over pedestrian pathways. Generally elastic is rolled cut on the ground. The hopper is washed out onto the plastic, the concrete surface then is placed in a skip for the following day</td>
</tr>
<tr>
<td>Slurry and wet concrete entering stormwater drains</td>
<td>B</td>
<td>5</td>
<td>Medium</td>
<td>WHS Plan</td>
<td>The concrete washout area will constantly move on site to suite site conditions. The in site supervisor will determine where the wash out area will be on the day of any concrete pour</td>
</tr>
<tr>
<td>No designated washout area could result in truck driven washing out whenever they please leaving the site messy and untidy</td>
<td>D</td>
<td>4</td>
<td>Low</td>
<td>WHS Plan</td>
<td>Excess concrete from washing out the pump is to be placed onto plastic, allowed to set then placed into the skip bin with a forklift</td>
</tr>
<tr>
<td>Concrete cutting / coring - dust</td>
<td>B</td>
<td>4</td>
<td>Medium</td>
<td>WHS Plan</td>
<td>Water must be used to minimise dust. Demolition saws take preference over dry cutting with a maryton blade on an angle grinder. Rubble to be cleaned up immediately. Slurry to be cleaned up immediately</td>
</tr>
<tr>
<td>Strike PT cables whilst cutting concrete</td>
<td>B</td>
<td>4</td>
<td>Medium</td>
<td>WHS Plan</td>
<td>Review A4 Construction drawings, consult Structural engineer and obtain permission to proceed. Exact cutting and Coring Permit prior to any works commencing</td>
</tr>
</tbody>
</table>

### Confined Space

<table>
<thead>
<tr>
<th>Hazard</th>
<th>L</th>
<th>C</th>
<th>Class</th>
<th>Legislation, Standards &amp; Codes of Practice</th>
<th>Enter Details of Specific Controls Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor ventilation inside in-ground pits</td>
<td>C</td>
<td>4</td>
<td>Medium</td>
<td>NSW/WCC 1006: Safe Working in a Confined Space</td>
<td>All chemical 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 of pop pits is to be conducted as pit rinses are installed to prevent the need for the pit altomethers</td>
</tr>
<tr>
<td>Workers unable to easily enter and exit trenches</td>
<td>D</td>
<td>3</td>
<td>Medium</td>
<td>WHS Plan</td>
<td>All trenches over 1.5m must be benched at 1:1 at a minimum of 1.5m or battered at 45 degrees. A ramp or steps must cut into the trench to easy pedestrian access.</td>
</tr>
<tr>
<td>Workers being overcomes by fumes building up in open trenches</td>
<td>D</td>
<td>3</td>
<td>Medium</td>
<td>NSW WHS Regulation 2017: Part 4.3 Confined spaces</td>
<td>All open trenching has good ventilation. Refuelling does not occur inside open trenches. Oxygen analyser equipment is kept clear of open trenching</td>
</tr>
</tbody>
</table>

### Contaminated Soil

<table>
<thead>
<tr>
<th>Hazard</th>
<th>L</th>
<th>C</th>
<th>Class</th>
<th>Legislation, Standards &amp; Codes of Practice</th>
<th>Enter Details of Specific Controls Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure to contaminated soil which has not been identified</td>
<td>C</td>
<td>3</td>
<td>Medium</td>
<td>AS 4462: Guide to the Investigation &amp; sampling of sites with potentially contaminated soil</td>
<td>NSW Environment Operations Act 1997</td>
</tr>
<tr>
<td>Exposure to contaminated soil which has not been identified</td>
<td>C</td>
<td>3</td>
<td>Medium</td>
<td>WHS Plan</td>
<td>Unspecified finds protocol</td>
</tr>
</tbody>
</table>

### Deliveries To Site

<table>
<thead>
<tr>
<th>Hazard</th>
<th>L</th>
<th>C</th>
<th>Class</th>
<th>Legislation, Standards &amp; Codes of Practice</th>
<th>Enter Details of Specific Controls Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery vehicle drivers unaware of site hazards</td>
<td>A</td>
<td>4</td>
<td>Medium</td>
<td>SafeWork NSW Code of Practice: Moving Plant On Construction Sites: 2008</td>
<td>All delivery drivers must complete a ‘delivery driver induction’ prior to entering site</td>
</tr>
<tr>
<td>Delivery vehicle unloading in an unsafe area e.g. in an area where there is mobile plant or pedestrians frequently moving past</td>
<td>C</td>
<td>2</td>
<td>Medium</td>
<td>WHS Plan</td>
<td>The driver must always have line of sight with the delivery driver and escort the driver to unload materials from the truck. Mobile plant must ensure they have enough space to unload load materials from trucks safely. If they have any problems they must not continue. Delivery driver will remain during loading/unloading activities. A driver safe zone sign will be attached to the barriers</td>
</tr>
<tr>
<td>Movements/other workers in the area being struck by materials as they are being unloaded from the truck</td>
<td>A</td>
<td>4</td>
<td>Medium</td>
<td>WHS Plan</td>
<td>All delivery drivers are told at the site induction to stop work immediately and notify Hansen Yuncken site staff whom will instruct at the site induction to stop work immediately and notify Hansen Yuncken site staff whom will investigate and take appropriate action as per their drug and alcohol policy.</td>
</tr>
<tr>
<td>Unauthorized delivery drivers using plant to unload goods</td>
<td>E</td>
<td>3</td>
<td>Low</td>
<td>WHS Plan</td>
<td>SWIMS must be in place for subcontractors using plant to unload their delivery</td>
</tr>
</tbody>
</table>

### Drugs & Alcohol

<table>
<thead>
<tr>
<th>Hazard</th>
<th>L</th>
<th>C</th>
<th>Class</th>
<th>Legislation, Standards &amp; Codes of Practice</th>
<th>Enter Details of Specific Controls Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons under the influence of drugs or alcohol are at high risk of injuring themselves or others</td>
<td>E</td>
<td>4</td>
<td>Low</td>
<td>Alcohol and other drugs in the workplace guide - 2006 Drug and Alcohol Management Plan</td>
<td>Persons assume 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.</td>
</tr>
</tbody>
</table>
**PROJECT HSE RISK ASSESSMENT**

This Project HSE Risk Assessment is to be used as guidance 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 outlining 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
- [ ] WHS Regulation 2017
- [ ] SafeWork NSW Code Of Practice: Managing Electrical Risks

**PROJECT:**
- New High Quality Schools

**JOB NO:**
- SC 106 (Catherine Field and East Leppington)

**ASSESSOR:**
- Paul Todhunter

**ASSESSMENT DATE:**
- 26 May 20

**PROJECT HSE RISK ASSESSMENT**

<table>
<thead>
<tr>
<th>HAZARD (Include additional project specific hazards as required)</th>
<th>L</th>
<th>C</th>
<th>Class</th>
<th>Legislation, Standards &amp; Codes of Practice</th>
<th>Enter Details of Specific Controls Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disruption/nuisance to neighbours and client</td>
<td>D</td>
<td>5</td>
<td>Low</td>
<td>AS/NZS 1386: Recommended practices for occupational eye protection</td>
<td>Shade cloth installation to site perimeter fence to contain all dust within the construction site.</td>
</tr>
<tr>
<td>Eye injuries and respiratory damage to workers</td>
<td>D</td>
<td>4</td>
<td>Low</td>
<td>AS/NZS 1115: Respiratory protection devices</td>
<td>Water must be used to minimise dust. Demolition saws take preference over dry cutting with a sawing blade on an angle grinder. Rubble to be cleaned up immediately. Shurry to be cleaned up immediately. HY Cutting/Coring permit in place.</td>
</tr>
<tr>
<td>Dust from wall chasing</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Concrete cutting/coring</td>
<td>E</td>
<td>4</td>
<td>Low</td>
<td>NSW Cutting &amp; Drilling Concrete &amp; Other Masonry Products 1996</td>
<td>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</td>
</tr>
</tbody>
</table>

**Electricity**

| Disconnection from faulty/damaged electrical equipment         | D | 1 | Medium | AS/NZS 2017: Electrical Installations - Testing & inspection guidelines | 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. Leads are to be elevated off the ground to minimise risk of electrical leads being damaged. |
| Disconnection from faulty/damaged Distribution boards          | NA| NA| NA    | NSW Plan | HY C/E Board checklist to be completed for all DB boards. All temporary distribution boards will be inspected, tested and tagged monthly. All RCDs to be tested and only reset by a qualified electrician. |
| Workers tripping on leads                                      | C | 4 | Medium | AS/NZS 3199: Approval & test specification for cord extension sets | 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. |
| Disconnection 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 | Medium | SafeWork | All substations conducting excavation works must obtain a ground work 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 | Portable generators must be used if electrical leads can reach from the DB board to the work area so a power source is close to the work area. |
|                         |                      |    |         | SafeWork NSW: Code Of Practice: Managing Electrical Risks | AS 3400: Approval & test specification - Residual current devices |
|                         |                      |    |         | SafeWork NSW: Code Of Practice: Managing Electrical Risks | All electrical installations - Substations premises and live site installations |
|                         |                      |    |         | SafeWork NSW: Code Of Practice: Managing Electrical Risks | AS2760: 2010 in-service inspection and testing of electrical equipment |
|                         |                      |    |         | SafeWork Code Of Practice: Electrical Practices for Construction Work 2007 | All subcontractors conducting excavation works must obtain a ground work permit from HY site staff. A plan with existing underground services must be attached to the permit to dig. |

**Emergency Services Unavailability**

| Injured person may not receive first aid treatment in a sufficient amount of time  | E | 3 | Low   | NSW Act 2011 | 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 set up 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. |

**Disposal/Loss of Topsoil**

| Sediment entering stormwater systems                           | E | 4 | Low   | Environmental Protection Act 1994 | All stormwater pits to be covered with sediment control fabric. Sediment barrier to be erected around the stormwater pit of the works to prevent entrainment of muddy water with the stormwater management plan. Sediment control to be inspected weekly and recorded on the site HSE inspection report. All de-watering of site must be conducted in accordance with the stormwater management plan. The water must be filtered, tested and approved by HY prior to being pumped into the existing stormwater system. |
| Division causing perimeter scaffolding to become unstable       | NA| NA| NA    | Environmental Management Plan | All perimeter scaffolding to be checked following significant rainfall and rectified by scaffolders as required. |
### RELEVANT PROCEDURE: Project HSE Risk Assessment

### PROJECT: New High Quality Schools

### JOB NO: SC 138 (Catherine Field and East Llanpog)

### ASSESSED BY: Paul Todhunter

### ASSESSMENT DATE: 25 May 2020

### RISK ASSESSMENT TABLE

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>Likelihood</th>
<th>Severity</th>
<th>Control</th>
<th>Cost</th>
<th>Advice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damage to existing services could cause major disruption to the site eg. fire water, security cables etc.</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
</tbody>
</table>

### PLANT OPERATORS STRIKING UNDERGROUND SERVICES WHILST UNDERTAKING TRENCHING/ EXCAVATION WORKS

A ground works permit system is in place on the site. All known existing services have been marked up on the site plans. Plant digging and hand digging must occur when working around existing services. Striking existing underground services has been listed as a hazard on all subcontract SWMS involving excavation works.

### Explosive Powered Tools

### Eye and hearing damage

### Explosions

### Hydrant lines throughout the site

### Excavators digging trenches accidentally striking recently installed and charged up power, security cables etc.

### Fall from heights

### Failure of fall arrest equipment

### Failure of fall arrest equipment

### Formwork collapse

### Formwork collapse

### Fall prevention/ arrest equipment

### Fall prevention/ arrest equipment

### HSE Risk Assessment 5/06/2020 Page 6 of 15

---

### Controls (to be established in the following order of priority: 1. High; 2. Medium; 3. Low)

### Plan has been issued to all subcontractors notifying them of existing services

### 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.

### Explosive Powered Tools

### Eye and hearing damage

### Explosions

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### Formwork collapse

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### HSE Risk Assessment 5/06/2020 Page 6 of 15

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### HSE Risk Assessment 5/06/2020 Page 6 of 15

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### HSE Risk Assessment 5/06/2020 Page 6 of 15

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### Explosive Powered Tools

### Eye and hearing damage

### Explosions

### Hydrant lines throughout the site

### Excavators digging trenches accidentally striking recently installed and charged up power, security cables etc.

### Fall from heights

### Failure of fall arrest equipment

### Failure of fall arrest equipment

### Formwork collapse

### Formwork collapse

### Fall prevention/ arrest equipment

### Fall prevention/ arrest equipment
PROJECT HSE RISK ASSESSMENT

This Project HSE Risk Assessment is to be updated as and when completing the monthly Project High Risk identification assessment on HY WLY Site Management Dashboard in accordance with the Project HSE Risk Assessment procedure and should be conducted at the time of Construction programme commencing to address 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

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>ASSESSMENT</th>
<th>RELEVANT PROCEDURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers falling into open trenches</td>
<td>C</td>
<td>AS 1418.1: Crows, hoists and winches – General Requirements</td>
</tr>
<tr>
<td>All open trenches must be bored off at least 1m from the edge of the trench. Where there are high movements of pedestrians as plant is a solid barrier such as a temporary mesh.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers falling open penetrations (eg in-ground pits)</td>
<td>C</td>
<td>NSW Regulation 2017 Part 4.4 Falls</td>
</tr>
<tr>
<td>All penetrations to be covered and secured and the wearing “spear” or “do not remove” spray painted onto the plywood/steel plates.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers falling from ladders</td>
<td>C</td>
<td>SafeWork NSW Code Of Practice: Managing the risk of falls at workplaces</td>
</tr>
<tr>
<td>Ladders are to be used in accordance with the HV 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 areas where a scissor lift will not fit. Ladders with 4 steps or less are not permitted on site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brickslayers falling from trellis scaffold</td>
<td>C</td>
<td>AS 4576: Guidelines for scaffolding</td>
</tr>
<tr>
<td>Brickslayers must install handrail to the scaffold and a ladder for safe access/egress. Trellis scaffold must be set up correctly so is solid ground</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full from scaffold</td>
<td>E</td>
<td>AS 1576: Scaffolding general requirements</td>
</tr>
<tr>
<td>Full from mobile scaffold</td>
<td>B</td>
<td>Scaffolding erection guide (comes with scaffold)</td>
</tr>
<tr>
<td>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 licensed scaffold professional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers falling from heights</td>
<td>C</td>
<td>AS 2444 Portable fire extinguishers and fire blankets – Selection and location</td>
</tr>
<tr>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Falls into bored piers</td>
<td>B</td>
<td>AS/NZS 1902 Portable Ladders</td>
</tr>
<tr>
<td>Stood piles must be fully covered with plywood or mesh to eliminate the risk of workers falling into the hole. Deep excavation signs are to be erected and the area fully bored off. Best practice is to 80 the hole with concrete as soon as possible</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Falling objects

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>ASSESSMENT</th>
<th>RELEVANT PROCEDURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers falling from scaffold</td>
<td>C</td>
<td>AS/NZS 2203:2010 Occupational protective footwear</td>
</tr>
<tr>
<td>No worker is to walk underneath an elevated EWP. All EWP operators must have a spotters or the area must be fully barricaded with anti-slip sheeting tape, bunting or flagging or signage is in place</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials left behind after works finish eg. loose bolts, off cuts etc</td>
<td>B</td>
<td>AS/NZS 1910:00 Occupational protective helmets</td>
</tr>
<tr>
<td>Work areas at heights must be checked daily and loose items brought down to ground level</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fires

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>ASSESSMENT</th>
<th>RELEVANT PROCEDURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical and fuel spills may cause a fire</td>
<td>E</td>
<td>AS 3749: Emergency control and organisation and procedures for buildings, structures and workplaces</td>
</tr>
<tr>
<td>All substances must obtain a hot works permit from HY staff. The permit will detail any controls required for undertaking the task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sparks from hot works eg welding, grinding may cause a fire</td>
<td>D</td>
<td>AS 2444 Portable fire extinguishers and fire blankets – Selection and location</td>
</tr>
<tr>
<td>ABE Powder type extinguishers are installed at several locations strategically placed around the site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flammable materials stored on-site may ignite from hot works in the area</td>
<td>D</td>
<td>SafeWork NSW Code Of Practice: Managing the risks of hazardous chemicals in the workplace</td>
</tr>
<tr>
<td>Hazardous materials must be stored in cool, dry areas away from ignition sources and flammable material signage installed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel drums could catch on fire from source of ignition</td>
<td>B</td>
<td>AS 2444 Emergency control and organisation and procedures for buildings, structures and workplaces</td>
</tr>
<tr>
<td>Fuel drums are to be put away when not in use in a storage cage in a well ventilated area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers could be seriously injured whilst attempting to extinguish fire</td>
<td>E</td>
<td>AS 2444 Portable fire extinguishers and fire blankets – Selection and location</td>
</tr>
<tr>
<td>All workers are told at induction not to place themselves at risk and not to try and fight the fire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time taken to obtain fire extinguisher in the event of an emergency</td>
<td>D</td>
<td>AS/NZS 1941 Portable fire extinguishers</td>
</tr>
<tr>
<td>Fire extinguishers are placed strategically around site for easy/fast access. Locations of fire extinguishers are on the site layout plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor maintenance of the extinguishers</td>
<td>E</td>
<td>AS 2379 Guide to the selection, care &amp; use of clothing for protection against heat &amp; fire</td>
</tr>
<tr>
<td>Fire extinguishers are to be labelled every 6 months by a competent person</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This Project HSE Risk Assessment is to be used as a guide when completing the monthly Project High Risk Identification assessment on HWY Site Management Dashboard in accordance with the Project HSE Risk Assessment procedure and should be conducted at the time of Construction programme status to assess hazards and risks for the 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:**
20 May 30

**RISK ASSESSMENT**

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>L</th>
<th>C</th>
<th>Class</th>
<th>Legislation, Standards &amp; Codes of Practice</th>
<th>Enter Details of Specific Controls Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidents not resulting in injury</td>
<td>E</td>
<td>4</td>
<td>Medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site hours</td>
<td>E</td>
<td>3</td>
<td>Medium</td>
<td>Emergency Response Plan</td>
<td>Access routes to be kept clear around site for emergency vehicles</td>
</tr>
<tr>
<td>Number of buildings</td>
<td>E</td>
<td>5</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>5 - all easily accessible for pedestrians or vehicles</td>
</tr>
<tr>
<td>Maximum number of levels on each building</td>
<td>E</td>
<td>6</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>4 - All have internal stair access</td>
</tr>
<tr>
<td>Time taken to walk to furthest point on site</td>
<td>D</td>
<td>4</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>5 minutes - from first aid room to furthest point on site</td>
</tr>
<tr>
<td>Nearest Hospital</td>
<td>D</td>
<td>4</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>Camden Hospital Sydney</td>
</tr>
<tr>
<td>Nearest Medical centre</td>
<td>D</td>
<td>4</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>Gregory Hills Medical centre</td>
</tr>
<tr>
<td>Maximum time to medical service</td>
<td>D</td>
<td>4</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>10 min</td>
</tr>
<tr>
<td>Maximum number of workers</td>
<td>D</td>
<td>4</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>≤100</td>
</tr>
<tr>
<td>Average hours worked by a worker</td>
<td>E</td>
<td>3</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>Workers generally work 8-9 hours per day</td>
</tr>
<tr>
<td>Type of injuries over the last 12 months</td>
<td>E</td>
<td>4</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>Majority of types of injuries include cuts and abrasions, minor eye injuries, mixed bites, sprains and strains, back injuries and dislocations</td>
</tr>
<tr>
<td>Incidents not resulting in injury</td>
<td>E</td>
<td>5</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>Incidents have occurred where excavator operators have struck existing live underground electrical cables - defibrillator will be required in the event persons are electrocuted</td>
</tr>
<tr>
<td>Cuts and abrasions</td>
<td>C</td>
<td>4</td>
<td>Medium</td>
<td>Emergency Response Plan</td>
<td>Type A first aid kit has contents for treating these types of injuries</td>
</tr>
<tr>
<td>Burns and scalds</td>
<td>D</td>
<td>4</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>Ice packs and instant cold packs to be available</td>
</tr>
<tr>
<td>Eye injuries</td>
<td>D</td>
<td>3</td>
<td>Medium</td>
<td>Emergency Response Plan</td>
<td>Eye wash facilities to be made available</td>
</tr>
<tr>
<td>Burns</td>
<td>E</td>
<td>3</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>Burn cream and non-adherent wound dressings</td>
</tr>
<tr>
<td>Fractures</td>
<td>D</td>
<td>4</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>Type A first aid kit and a stretcher for moving injured workers</td>
</tr>
<tr>
<td>Dislocations</td>
<td>D</td>
<td>4</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>Type A first aid kit has triangle slings</td>
</tr>
<tr>
<td>Poisoning and toxic effect of substances</td>
<td>E</td>
<td>5</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>Safety data sheets available for all substances used.</td>
</tr>
<tr>
<td>Heat stroke</td>
<td>D</td>
<td>4</td>
<td>Low</td>
<td>Emergency Response Plan</td>
<td>Ice packs and cold water on standby. Subcontractors have been addressed at site induction to take breaks, work in shade whenever possible, job rotation etc.</td>
</tr>
</tbody>
</table>
Hansenyuncken

PROJECT HSE RISK ASSESSMENT

This Project HSE Risk Assessment is to be updated as per 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 ceasing to assess hazards and risks for next month. Hazards with residual risk from the Design WHS Risk Assessment (if applicable) are to be considered.

RELEVANT PROCEDURE:
Project HSE Risk Assessment

PROJECT:
New High Quality Schools

JOB NO:
EC 128 (Catherine Field and East Lappington)

ASSESS BY:
Paul Todhunter

ASSESSMENT DATE:
26 May 2020

RISK ASSESSMENT

HAZARD

Likelihood
Consequence
Table

A Very Likely
High
High
High
Medium
Medium
Medium

B Likely
High
High
Medium
Medium
Low
Low

C Possible
High
Medium
Medium
Medium
Low
Low

D Remotely Possible
Medium
Medium
Medium
Low
Low
Low

E Very Unlikely
Medium
Medium
Low
Low
Low
Low

NA Not applicable
NA
NA
NA
NA
NA
NA

RISK ASSESSMENT

CONTROLS (to be established in the following order of priority: 1. High Level Risks; 2. Medium Level Risks; 3. Low Level Risks)

Hazardous Chemicals

Slippage of fuels and chemicals
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 area next to their site containers with signage erected ‘no smoking’, ‘Danger Fuel Storage area’ etc.

Unsafe storage of oxy acetylene equipment
Oxygen and acetylene bottles are to be stored in separate ventilated cages 3m apart at the end of each shift and appropriate warning signage erected.

Mix matched storage of hazardous substances could cause a chemical reaction
Only substances of the same class can be stored together as per the Safety Data sheet for the products

Plant roll over from sinking in unstable ground conditions
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 blasted back to solid ground prior to plant operating on it. All subcontractors must obtain a HY plant setup permit prior to operating plant with subcontractors. 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.

Plant could become bogged in soft muddy ground
Temporary roadways have been rolled and compacted to keep ground stable. No plant to work on unstable ground accessed in wet weather permit to be conducted after each inclement weather event

Pedestrian slip and trip hazards from muddy or uneven ground
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

Crushers and vehicles tracking mud and dirt onto road from muddy tyres
Shaker grid installed at site entrance. High pressure water blaster to be used to wash tyres if required

Pedestrian workers tripping over in deep wheel ruts left by plant movements
Wheel ruts are to be blasted levelled out to minimise trip hazards around site

Ground Collapse/poor ground

HSE Risk Assessment

5/06/2020
Page 9 of 15
### RELEVANT PROCEDURE:

**Significant Major Moderate Minor Insignificant**

- **A Very Likely**
  - High
  - High
  - Medium
  - Low

- **B Likely**
  - High
  - Medium
  - Low

- **C Possible**
  - High
  - Medium
  - Low

- **D Remotely Possible**
  - Medium
  - Low

- **E Very Unlikely**
  - Medium
  - Low

**NA Not applicable**

---

### HAZARD

#### L C Class Legislation, Standards & Codes of Practice Enter Details of Specific Controls Required

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Likelihood</th>
<th>Consequence</th>
<th>Control Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual handling injuries</td>
<td>E 4 Low</td>
<td>NHS Regulation 2017 Part 4.2 Hazardous Manual Tasks</td>
<td>Team lifts for heavy items. Mechanical lifts wherever possible</td>
</tr>
<tr>
<td>Back injuries</td>
<td>E 3 Low</td>
<td>NHS Plan</td>
<td>Bend knees, keep a straight back, don't twist</td>
</tr>
<tr>
<td>Black and tackle use</td>
<td>NA 4 NA</td>
<td>NCOP for Manual Tasks 2007, National Standard for Manual Tasks - 2007, NSW Manual Handling Resource 2004</td>
<td>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</td>
</tr>
<tr>
<td>Hot Works</td>
<td>C 4 Medium</td>
<td>AS 1674: Safety in welding and allied processes</td>
<td>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</td>
</tr>
<tr>
<td>Fire and injury to others from persons using angle grinders</td>
<td>A 4 Medium</td>
<td>Hot works permit</td>
<td>Conduct all grinding away from flammable materials and other workers in the area. Be aware of direction of flying sparks</td>
</tr>
<tr>
<td>Milders flash to other trades</td>
<td>B 4 Medium</td>
<td>NHS Plan</td>
<td>Welding screens and warning signage must be erected to protect other trades from welders flash if others are within a 3m radius of the work area</td>
</tr>
<tr>
<td>Hygiene (poor)</td>
<td>D 4 Low</td>
<td>SafeWork NSW Code Of Practice: Managing the work environment and facilities</td>
<td>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</td>
</tr>
<tr>
<td>Trades not putting rubbish and off cuts in bins provided creating trip hazards</td>
<td>D 4 Low</td>
<td>SafeWork NSW Code Of Practice: Managing the work environment and facilities</td>
<td>Improvement notices to be issued to subcontractors who do not keep the site neat and tidy</td>
</tr>
<tr>
<td>Inadequate facilities for general site rubbish</td>
<td>D 4 Low</td>
<td>SafeWork NSW Code Of Practice: Managing the work environment and facilities</td>
<td>Skip bins to be placed on site at various locations and changed over regularly</td>
</tr>
<tr>
<td>Lifting Over Public / outside site</td>
<td>NA 4 NA</td>
<td>AS 1742.3-2009: Manual of uniform traffic control devices - Traffic control for works on roads, NHS Plan Traffic Management Plan, Road Management Act 2004</td>
<td>No lifting of building materials outside of the construction fence unless traffic control and diversions are in place and the subcontractor has sought approval from the HY Site Manager</td>
</tr>
<tr>
<td>Injury to pedestrian / public</td>
<td>NA 4 NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual Handling</td>
<td>C 3 Medium</td>
<td>NHS Glove and clip policy</td>
<td>Team lifts for heavy items. Mechanical sides eg. Telehandler to be used whenever possible. Building material to be dropped off as close to the work area as possible to minimise carrying distance</td>
</tr>
<tr>
<td>Cut to hands</td>
<td>C 4 Medium</td>
<td>Gloves to be worn for manual handling tasks as per Hansen Yuncken glove &amp; clip policy</td>
<td></td>
</tr>
</tbody>
</table>

---

### JOB NO:

SC 126 (Catherine Field and East Lappington)

### ASSESSMENT DATE:

30-May-20
### PROJECT HSE RISK ASSESSMENT

This Project HSE Risk Assessment is to be used as guidance when completing the monthly Project High Risk Identification assessment on HWY/W site Management Dashboard in accordance with the Project HSE Risk Assessment procedure and should be conducted at the time of Construction programme relating to assess hazards and risks for next month. Hazards with residual risk from the Design HSR Risk Assessment (if applicable) are to be also considered.

#### RELEVANT PROCEDURE:
- HSE Risk Assessment

### RISK ASSESSMENT TABLE

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>Likelihood</th>
<th>Severe</th>
<th>Medium</th>
<th>Minor</th>
<th>Improbable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Plant</td>
<td>A</td>
<td>Very Likely</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Likely</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Possible</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>Remote / Possible</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>Very Unlikely</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
</tr>
</tbody>
</table>

### CONSEQUENCES

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Plant</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Plant roll over on unstable ground</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Possibility of scissor lift being driven off edge of concrete slab resulting in incesor lift tipping over</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Crushing injury from scissor or boom lift</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Needle stick injury</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

### CONTROLS (to be established in the following order of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)

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<tr>
<th>HAZARD</th>
<th>RELEVANT PROCEDURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Plant</td>
<td>SafeWork NSW Code Of Practice - Managing the Risks of Plant in the Workplace</td>
</tr>
<tr>
<td>Plant roll over on unstable ground</td>
<td>SafeWork NSW Code of Practice - Managing the Risks of Plant in the Workplace</td>
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<tr>
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<tr>
<td>Crushing injury from scissor or boom lift</td>
<td>SafeWork NSW Code of Practice - Managing the Risks of Plant in the Workplace</td>
</tr>
<tr>
<td>Needle stick injury</td>
<td>SafeWork NSW Code Of Practice: Control of work related exposure to Hepatitis B and HIV (blood borne) viruses</td>
</tr>
</tbody>
</table>

### ASSESSMENT DATE:
- 26 May 20

### RISK ASSESSMENT

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>RISK ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile Plant</td>
<td>C 1 High</td>
</tr>
<tr>
<td>Plant roll over on unstable ground</td>
<td>C 3 Low</td>
</tr>
<tr>
<td>Possibility of scissor lift being driven off edge of concrete slab resulting in incesor lift tipping over</td>
<td>C 1 High</td>
</tr>
<tr>
<td>Crushing injury from scissor or boom lift</td>
<td>NA 1 High</td>
</tr>
<tr>
<td>Needle stick injury</td>
<td>E 2 Medium</td>
</tr>
<tr>
<td>Workers unaware of what to do if a needle is found</td>
<td>E 4 Low</td>
</tr>
<tr>
<td>Adequate disposal facilities for needles found on site</td>
<td>E 4 Low</td>
</tr>
<tr>
<td>Noise</td>
<td>B 3 Medium</td>
</tr>
<tr>
<td>Disruption to client and neighbours</td>
<td>D 3 Low</td>
</tr>
<tr>
<td>Overhead Power lines</td>
<td>A 1 High</td>
</tr>
</tbody>
</table>

### ASSESSED BY:
- Paul Trohunter

### ASSESSMENT DATE:
- 26 May 30

### RISK ASSESSMENT

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<tr>
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<tr>
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<tr>
<td>Possibility of scissor lift being driven off edge of concrete slab resulting in incesor lift tipping over</td>
<td>NA 2 NA</td>
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<td>Crushing injury from scissor or boom lift</td>
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### PROJECT HSE RISK ASSESSMENT

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<tr>
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<tbody>
<tr>
<td>Mobile Plant</td>
<td>1</td>
<td>Sharps clean up kit to be kept in site office at all times</td>
</tr>
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<td>Plant roll over on unstable ground</td>
<td>3</td>
<td>Provide safe training, instruction and supervision</td>
</tr>
<tr>
<td>Possibility of scissor lift being driven off edge of concrete slab resulting in incesor lift tipping over</td>
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<td>Provide safe training, instruction and supervision</td>
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PROJECT HSE RISK ASSESSMENT
This Project HSE Risk Assessment is to be reviewed quarterly 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 commencing to assess hazards and risks for next month 1. 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 Toddhunter

ASSESSMENT DATE: 26 May 20

ASSESSMENT

HAZARD

CONSEQUENCE

RISK ASSESSMENT TABLE

Likelihood Values:

A Very Likely
B Likely
C Possible
D Remotely Possible

E Very Unlikely
Likelihood

Significant

Major

Moderate

Minor

Insignificant

1

2

3

4

5

0

Risk Assessment procedure and should be conducted at the time of Construction programme commencing to assess hazards and risks for next month 1. Hazards with residual risk from the Design WHS Risk Assessment (if applicable) are also to be considered.

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

Enter Details of Specific Controls Required

PLANT & EQUIPMENT

Plant failure may cause serious injury to workers

D 3 Medium

WHS Reg 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 and daily report faults to their supervisors.

Poorly maintained ladders and scaffolding falling/ collapsing

D 3 Medium

AS/NZS 1890: Portable Ladders

No ladder to be more than 4m high. Ladders must be in good condition. Electricians must use fibre-glass ladders. All workers are aware of the 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 conditions.

Lack of damaged ladders

D 3 Medium

AS 4076: Guidelines for scaffolding

Ladders to be checked for damage weekly on the site safety walk.

Lifting gear failure

D 1 Medium

AS/NZS 4864: Temporary edge protection

All lifting gear: soft slings, lifting chains must be visually checked daily prior to use for damage. Damaged lifting gear to be withdrawn from service. Lifting gear register to be supplied to Hansen Yuncken. Hansen Yuncken lifting verification certificate to be completed for soft slings if not captured on lifting register.

Scaffold collapse/fall from scaffold

NA 1 NA

AS/NZS 1951-1 2007 Industrial fall arrest systems - harnesses and ancillary equipment

Scalddoh handover certificate to be issued by 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 manufacturer’s instructions. Scaffold where a person can fall more than 2m must be erected by a licensed scaffold. No person to enter the scaffold What so ever. Any issues with scaffold is to be reported to the Site Manager immediately.

Multiple mobile plant interactions/ contact

D 1 Medium

WHS Plan

Plant operators must communicate by way of 2 way radio, eye contact and systems.

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 footpaths.

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 MANS

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. Hot holding must occur when working around existing services. Only toothless buckets are to be used when digging in the vicinity of gas lines. Existing/ existing underground services have been listed as a hazard on all subcontractor SWMS involving excavation works.

Scaffold

Fall from heights over 2m

C 2 Medium

WHS Regulation 2017: Part 1.1 Managing risks to health and safety

Fall from heights whilst forming up and pouring concrete

C 2 Medium

AS4375: Guidelines for scaffolding

Insufficient access from building in the event of an emergency

B 5 Medium

WHS Plan

Inadequate development of scaffold plan

D 5 Low

Possible scaffold overloads 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

Silt barriers to be installed around low areas of site to catch all rain fall. All stormwater pits to be covered with silt control. All vehicle 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.

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 with silt control. All vehicle 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.

Plant & Equipment: 발생할 가능성이 큰 사고

기계 및 장비 결함

D 3 Medium

WHS Reg 1010: National Standard for Plant

HY 기계 및 장비 확인 보고서를 작성하고 모든 기계를 검사해야 합니다. 유지 관리 기록을 HY에 전달하여 기계가 안전한 것으로 보인다. 장비 운영자가 장비를 사용하기 전에 출고 차량을 설치해야 합니다. 안전 경고를 설치할 수 있습니다. 장비의 손상은 즉시 보고해야 합니다. 신고 사항을 Site Manager에게 신고해야 합니다.

교각 바닥이 떨어져서 기계가 무너질 수 있는 경우

D 3 Medium

AS 4076: Guidelines for scaffolding

교각 바닥을 확인해야 합니다. 교각 바닥을 혼란으로 돌려 놓고 재사용해야 합니다. 교각 바닥 검사 기록을 HY에 사용하여 소프트 슬링의 경우 그 기록에서 사용하기 전에 확인해야 합니다.

교각 붕괴/교각 바닥에서 떨어지는 경우

NA 1 NA

AS/NZS 1951-1 2007 Industrial fall arrest systems - harnesses and ancillary equipment

교각 헤더 수동 등록서는 HY에 의해 모든 사용자에게 제공되어야 합니다. 교각의 사용은 매월 또는 사고 직후에 확인되어야 합니다. 교각의 사용은 바닥의 사용이 불가능해야 합니다. 이 기관은 Site Manager에게 신고해야 합니다.

중복되는 모바일 기계의 교차 사용

D 1 Medium

WHS Plan

기계 운영자는 쌍방향 라디오, 시야와 시스템을 통해 커뮤니케이션을 해야 합니다.

차량 및 장비 연소 가스

D 4 Low

HY 엽대 정책

전동 스크류 리프트는 건물 내에서만 사용해야 합니다. 다른 커뮤터 기계는 개방된 웨를 사용해야 합니다.

포스트 테이션

무도 토이 디르링 또는 PT 케이블 자르기

D 2 Medium

모든 공급업체가 첨단 피해 구역을 자르는 허가를 받아야 합니다. 이 허가는 구역의 PT 케이블의 위치를 나타내야 합니다.

장비 및 장비 충돌

D 4 Low

현수막 보호

부드럽고 오염된 물이 환경 보호 법률 1994년을 통해 홍수구 동부에 들어갑니다.

마운드 및 투과

D 4 Low

현수막 관리 계획

토양으로부터의 침tam을 방지하기 위해 산개 분석을 수행해야 합니다.

압력 배관

채수구를 탐지하는 UNDERGROUND GAS LINES

E 1 Medium

안전 Work NSW Code Of Practice: Excavation Work

허가를 부여하여 시장을 위한 시스템이 설치되어 있습니다. 해당 서비스는 표시되지 않았습니다. 상업 서비스는 각기 다른 서비스를 사용하여 설치해야 합니다. 각기 다른 서비스는 육상에서 사용할 수 있는 트러스를 사용하여 설치해야 합니다.

교각

2m 이상의 높이에서 평가

C 2 Medium

WHS 규정 2017: Part 1.1 위험 관리 - 건강 및 안전

채수구를 형성하고 콘크리트를 부수는 경우

C 2 Medium

AS4375: 규정 이건 교각

건물로부터 충분한 접근이 없는 경우

B 5 Medium

WHS Plan

교각 계획 개발이 부족할 수 있습니다.

볼을 체중으로 사용하는 교각 붕괴 - 재료 및 작업자

C 4 Medium

교각 붕괴로 인한 구조적 안전

D 3 Medium

토양 및 흙 허سكر

D 4 Medium

환경 보호 법률 1994년

토양 및 흙의 교역을 방지하기 위해 토성 분석을 수행해야 합니다.

토양 및 흙의 교역을 방지하기 위해 토성 분석을 수행해야 합니다.
PROJECT HSE RISK ASSESSMENT

This Project HSE Risk Assessment is to be used as a guide 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 obtaining 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:
20 May 20

Risk Assessment Table

<table>
<thead>
<tr>
<th>HAZARD</th>
<th>Likelihood</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun glare restricting plant operators visibility</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Sunburn</td>
<td>C</td>
<td>Medium</td>
</tr>
<tr>
<td>Site Lighting</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Workers slipping or tripping on rough/uneven/muddy/slippery ground</td>
<td>C</td>
<td>Medium</td>
</tr>
<tr>
<td>Structural Support</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Synthetic fibres</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Temperature Extremes</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Tie-up or Precast Concrete Work</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

Site Lighting

- Sun glare restricting plant operators visibility
- Sunburn
- Ensure that task areas have adequate natural light and if natural light is not adequate provide artificial lighting

Workers slipping or tripping on rough/uneven/muddy/slippery ground

- Pedestrian pathways to be kept clear of rubbish and material. Safe access around site to be maintained at all times. Grower/courts due to be placed on slippery/muddy surfaces. Stabilising of risks and muddy ground conditions to be conducted as required. Buried 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
- Precast concrete panel collapse if structural steel is inadequately braced
- Structural steel collapse
- Masonry walls must be adequately braced with timbers every 2m until core filled
- Structural steel must be signed off by engineer prior to pouring of any concrete
- 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

- Insulate handling of roof insulation
- Install roof insulation as per Safety Data Sheet and SWMS

Temperature Extremes

- Sunburn
- Sun glare restricting plant operators visibility
- 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.

Tie-up or Precast Concrete Work

- Structural steel support collapse
- Precast panel installation checklist must be completed and all relevant documentation submitted, reviewed and approved by HY prior to installation of precast panels
- 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

- All maintenance records and plant safety verification reports must maintained and kept up to date

Failure of lifting points on precast panels

- HY precast panel installation checklist must be completed and all relevant documentation submitted

Concrete may not have cured to specified strength

- HY precast panel installation checklist must be completed and all relevant documentation submitted

Crane roll over on unstable ground

- Plant setup permit must be obtained by subcontractor prior to standing crane

Regular SWL of crane

- Riggers must inspect all lifting gear prior to use. Damaged lifting equipment must not be used. Lifting gear registers and certificates must be liaised to HY prior to use

Poor communication between crane operator and dogmen

- Crane operators to take directions from dogmen only

HSE Risk Assessment

5/06/2020

Page 13 of 15
**PROJECT HSE RISK ASSESSMENT**

This Project HSE Risk Assessment is to be used as a guide 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 commencement of the project, or whenever there are material changes to the works or any project specific hazards are identified.

### RELEVANT PROCEDURE:
- Project HSE Risk Assessment

### RISK ASSESSMENT TABLE

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Likelihood (if applicable)</th>
<th>consequence 1</th>
<th>consequence 2</th>
<th>consequence 3</th>
<th>consequence 4</th>
<th>consequence 5</th>
<th>consequence 6</th>
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<tbody>
<tr>
<td>A Very Likely</td>
<td>High</td>
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<td>High</td>
<td>Medium</td>
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<td>Low</td>
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<td>B Likely</td>
<td>High</td>
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<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
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<td>Low</td>
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<tr>
<td>C Possible</td>
<td>Medium</td>
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<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
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<tr>
<td>D Remotely Possible</td>
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<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>E Very Unlikely</td>
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<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
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<tr>
<td>NA Not applicable</td>
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<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

### HAZARD (include additional project specific hazards as required)

<table>
<thead>
<tr>
<th>L</th>
<th>C</th>
<th>Class</th>
<th>Legislation, Standards &amp; Codes of Practice</th>
<th>Enter Details of Specific Controls Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

### Traffic Management

- **Vehicle & truck speeding on site**
  - **Likelihood:** B 3 Medium
  - **Enter Details of Specific Controls Required:**
    - B 3 Medium
    - **Additional Controls:**
      - AS/NZS 4994 Temporary edge protection
      - AS/NZS 1891 Industrial fall arrest systems & devices
      - AS/NZS 4488 Industrial rope access systems - Selection, use & maintenance
      - AS/NZS 1715 Selection, use and maintenance of respiratory protective devices
      - NSW Code of practice; Managing the risk of falls in the workplace
      - Violence in the workplace guide 2002

### Site Management

#### Tree lopping

- **Likelihood:** A 3 Medium
  - **Enter Details of Specific Controls Required:**
    - A 3 Medium

#### Vehicle & plant exhaust fumes

- **Likelihood:** E 3 Low
  - **Enter Details of Specific Controls Required:**
    - E 3 Low

#### Vehicle parking and blocking access roads

- **Likelihood:** B 4 Medium
  - **Enter Details of Specific Controls Required:**
    - B 4 Medium

#### Blind spots creating collisions between vehicles

- **Likelihood:** E 3 Low
  - **Enter Details of Specific Controls Required:**
    - E 3 Low

#### Pedestrians entering site being struck by trucks and vehicles

- **Likelihood:** A 2 High
  - **Enter Details of Specific Controls Required:**
    - A 2 High

#### Workers entering/exiting site via scaffolding

- **Likelihood:** E 1 Medium
  - **Enter Details of Specific Controls Required:**
    - E 1 Medium

#### Workers entering/exiting site using chemicals

- **Likelihood:** E 1 Medium
  - **Enter Details of Specific Controls Required:**
    - E 1 Medium

#### Water Contaminants

- **Likelihood:** C 2 Medium
  - **Enter Details of Specific Controls Required:**
    - C 2 Medium

#### Falls

- **Likelihood:** B 1 High
  - **Enter Details of Specific Controls Required:**
    - B 1 High

- **Likelihood:** E 3 Medium
  - **Enter Details of Specific Controls Required:**
    - E 3 Medium

#### Mobile scaffold collapse

- **Likelihood:** B 1 High
  - **Enter Details of Specific Controls Required:**
    - B 1 High

#### Workers falling from roof

- **Likelihood:** A 1 High
  - **Enter Details of Specific Controls Required:**
    - A 1 High

#### Mobile scaffold collapse

- **Likelihood:** B 1 High
  - **Enter Details of Specific Controls Required:**
    - B 1 High

#### Fall from ladder

- **Likelihood:** C 3 Medium
  - **Enter Details of Specific Controls Required:**
    - C 3 Medium

#### Fall from scaffold lift

- **Likelihood:** B 1 High
  - **Enter Details of Specific Controls Required:**
    - B 1 High

#### Inadequately installed roof perimeter handrail

- **Likelihood:** B 1 High
  - **Enter Details of Specific Controls Required:**
    - B 1 High

### AS/NZS Standards

- AS/NZS 4994 Temporary edge protection
- AS/NZS 1891 Industrial fall arrest systems & devices
- AS/NZS 4488 Industrial rope access systems - Selection, use & maintenance
- AS/NZS 1715 Selection, use and maintenance of respiratory protective devices
- NSW Code of practice; Managing the risk of falls in the workplace
- Violence in the workplace guide 2002

### Controls (to be established in the following order of priority: 1st = High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)

- **Hazard:** Vehicles parking and blocking access roads
  - **Likelihood:** B 4 Medium
  - **Enter Details of Specific Controls Required:**
    - B 4 Medium
    - **Additional Controls:**
      - AS/NZS 4994 Temporary edge protection
      - AS/NZS 1891 Industrial fall arrest systems & devices
      - AS/NZS 4488 Industrial rope access systems - Selection, use & maintenance
      - AS/NZS 1715 Selection, use and maintenance of respiratory protective devices
      - NSW Code of practice; Managing the risk of falls in the workplace
      - Violence in the workplace guide 2002

### Risk Management

- **Likelihood:** A 3 Medium
  - **Enter Details of Specific Controls Required:**
    - A 3 Medium

### AS/NZS Standards

- AS/NZS 4994 Temporary edge protection
- AS/NZS 1891 Industrial fall arrest systems & devices
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- Violence in the workplace guide 2002

### Controls (to be established in the following order of priority: 1st = High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)

- **Hazard:** Workers entering/exiting site using chemicals
  - **Likelihood:** E 1 Medium
  - **Enter Details of Specific Controls Required:**
    - E 1 Medium

- **Hazard:** Fall from scaffold lift
  - **Likelihood:** B 1 High
  - **Enter Details of Specific Controls Required:**
    - B 1 High

- **Hazard:** Fall from ladder
  - **Likelihood:** C 3 Medium
  - **Enter Details of Specific Controls Required:**
    - C 3 Medium
PROJECT HSE RISK ASSESSMENT

This Project HSE Risk Assessment is to be used as an aid to 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 to be considered.

RELEVANT PROCEDURE:
Project HSE Risk Assessment

<table>
<thead>
<tr>
<th>PROJECT:</th>
<th>New High Quality Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOB NO:</td>
<td>SC 126 (Catherine Field and East Leppington)</td>
</tr>
<tr>
<td>ASSESSED BY:</td>
<td>Paul Todhunter</td>
</tr>
<tr>
<td>ASSESSMENT DATE:</td>
<td>03 May 20</td>
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</table>

<table>
<thead>
<tr>
<th>RISK ASSESSMENT TABLE</th>
<th>Likelihood</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Significantly</td>
<td>Major</td>
</tr>
<tr>
<td></td>
<td>Likely</td>
<td>Medium</td>
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<td>Possible</td>
<td>Medium</td>
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<tr>
<td></td>
<td>Remotely Possible</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Very Unlikely</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
<td>NA</td>
</tr>
</tbody>
</table>

HAZARD (Include additional project specific hazards as required)

<table>
<thead>
<tr>
<th>L</th>
<th>C</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Legislation, Standards &amp; Codes of Practice</td>
</tr>
</tbody>
</table>

Enter Details of Specific Controls Required

<table>
<thead>
<tr>
<th>Potential Emergencies</th>
<th>Preparation for and response to potential emergency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>events assessed high or medium risk to be defined in the Emergency Response Plan</td>
</tr>
</tbody>
</table>

Arrested fall in a harness B 2 High HY Procedure for Emergency Response

Bomb threat C 5 Low HY Procedure for Emergency Response

Confined Space Rescue E 3 Low HY Procedure for Emergency Response

Cyclone D 5 NA HY Procedure for Emergency Response

Drowning D 4 Low HY Procedure for Emergency Response

Electric shock D 3 Medium HY Procedure for Defibrillators

Emergency services unavailability N/A HY Procedure for Emergency Response

Fire N/A Fire procedure detailed in the HY emergency response plan

First Aid (inadequate resources) E 2 Low HY Procedure for Emergency Response

Gas line contact or damage D 2 Medium HY Procedure for Emergency Response

Major rock fall/strike D 2 Low Jemena contact details are part of the HY Emergency response plan

Major Oil/Chemical Spill E 2 Low HY Procedure for Emergency Response

Medical Emergency D 2 Medium HY Procedure for Emergency Response

Overhead power line contact or arcing B 2 Medium HY Procedure for Emergency Response

Precast Panel Collapse D 1 Medium HY Procedure for Emergency Response

Structural Collapse D 1 Medium HY Procedure for Emergency Response

Trench collapse D 1 Medium HY Procedure for Emergency Response

 Arrested fall in a harness

Procedure for bomb threats is part of the HY Emergency Response Plan

Procedure for confined space rescue is part of the HY Emergency Response Plan

Electric shock procedure detailed in the HY Emergency response plan

Fire procedure detailed in the HY emergency response 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 Code of Practice: First Aid . (Refer to first aid assessment )

Jemena contact details are part of the HY Emergency response plan

Rockfall procedure detailed in the HY Emergency response plan

Fuel Chemical spill is part of the HY emergency response plan

Medical emergency is part of the HY emergency response plan

Contract with overhead power line is part of the HY emergency response plan

Precast panel collapse is part of the HY emergency response plan

Structural collapse is part of the HY emergency response plan

Trench collapse is part of the HY emergency response plan

As mentioned, this document is an excerpt from a project's HSE Risk Assessment, which includes a detailed table for risk assessment, specific controls required for various potential emergencies, and references to relevant standards and codes of practice. The assessment is to be conducted at the time of Construction programme statusing to assess hazards and risks for next month. The assessment process involves identifying hazards with residual risk from the Design WHS Risk Assessment (if applicable) and considering them in the project's risk assessment.
A.5 Construction Traffic and Pedestrian Management Sub-plan
Construction Traffic and Pedestrian Management Sub-Plan

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

Ref: P1047r05
4/06/2020
Document Control

Project No: P1047

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

Client: Hansen Yuncken

File Reference: P1047r05 CTPMSP New Catherine Field Primary School, Oran Park.docx

Revision History

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<td>03/06/2020</td>
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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 CTPMSp has been updated to incorporate the requirements of the conditions identified.
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<td>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:</td>
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<td>a) be prepared by a suitably qualified and experienced person(s);</td>
<td>Section 1.1 Appendix B</td>
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<td>b) be prepared in consultation with Council;</td>
<td>Section 1.3</td>
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<td>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</td>
<td>Section 3</td>
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<td>d) detail heavy vehicle routes, access and parking arrangements</td>
<td>Section 2.4, 3.3</td>
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<td>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:</td>
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<td>a) all vehicles must enter and leave the Site in a forward direction;</td>
<td>Section 2.4 Appendix C</td>
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<td>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</td>
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<td>c) the safety of vehicles and pedestrians accessing adjoining properties, where shared vehicle and pedestrian access occurs, has been addressed.</td>
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<td>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:</td>
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<td>a) a minimum of 68 on-site car parking spaces for use during operation of the development and designed in accordance with the latest versions of AS 2890.1 and AS 2890.6; and</td>
<td>Section 3.3 Appendix C</td>
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<td>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.</td>
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<td>h) a protocol for periodic review of the plan and any updates in response to incidents or matters of non-compliance</td>
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1.3 Consultation

In addition to correspondence by phone and email, Council and TfNSW have been consulted at various stages in the development of this CTPMSP, including meetings, workshops and site inspections.

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, Roads and Maritime Services (RMS) and Transport for NSW (TfNSW) at several meetings, workshops and site inspections. Ason Group acknowledges the insights in regard to existing and future local traffic and transport conditions provided by these officers.
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.
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 be in the approximate location of the future connection to O’Keefe 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.
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 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 3.4 and 3.5.

3.4 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.

3.5 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
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 specified routes

Code of Conduct

All vehicle operators accessing the site must:

▪ Take reasonable care for his or her own personal health and safety.
▪ Not adversely, by way of actions or otherwise, impact on the health and safety of other persons.
▪ Notify their employer if they are not fit for duty prior to commencing their shift.
▪ Obey all applicable road rules and laws at all times.
▪ In the event an emergency vehicle behind your vehicle, pull over and allow the emergency vehicle to pass immediately.
▪ Obey the applicable driving hours in accordance with legislation and take all reasonable steps to manage their fatigue and not drive with high levels of drowsiness.
▪ Obey all on-site signposted speed limits and comply with directions of traffic control supervisors in relation to movements in and around temporary or fixed work areas.
▪ Ensure all loads are safely restrained, as necessary.
▪ Drive over cattle grids – located at the Site’s access – to vibrate off any loose material attached to construction vehicles.
▪ Operate their vehicles in a safe and professional manner, with consideration for all other road users.
▪ Hold a current Australian State or Territory issued driver’s licence.
- Notify their employer or operator immediately should the status or conditions of their driver’s license change in any way.

- Comply with other applicable workplace policies, including a zero tolerance of driving while under the influence of alcohol and/or illicit drugs.

- Not use mobile phones when driving a vehicle or operating equipment. If the use of a mobile device is required, the driver shall pull over in a safe and legal location prior to the use of any mobile device.

- Advise management of any situations in which you know, or think may, present a threat to workplace health and safety.

- Drive according to prevailing conditions (such as during inclement weather) and reduce speed, if necessary.

- Have necessary identification documentation at hand and ready to present to security staff on entry and departure from the site, as necessary, to avoid unnecessary delays to other vehicles.

Crash or Incident Procedure

- Stop your vehicle as close to it as possible to the scene, making sure you are not hindering traffic. Ensure your own safety first, 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.
  - If you damage property other than your own.

- As soon as reasonably practical, report all details gathered to your manager.
Appendix B

Traffic Control Plans
Site Entry & Exit - No TC

Future Catherine Field Public School

Legend
- Access Route
- Egress Route
- truck

Local Traffic Services
Plan Drawn By: Danny Betts
0402 746 408
9603 8886

Client: HANSEN/YUNCKEN
Date: 29/04/20
Plan No: 3061

UBD REF: O'Keefe Dr
Location Of Work: ORAN PARK
On Site Contact: Andrew Baker
0401 141 509

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*Local Traffic Services (LTS) accepts no liability for the implementation or execution of this TCP unless undertaken by Authorised (LTS) personnel.* All Traffic Control plans are copyright. Property of (LTS) & are not transferable unless Authorised by (LTS).

* This plan remains the property of (LTS). * This TCP is not to scale. * This TCP Complies with Australian Standards 1744:3 and the RTA Traffic Control at Work Sites Manual.

Doc 027

www.invarion.com
Future Catherine Field Public School

Legend

- Access Route
- Egress Route
- Traffic Controller
- truck

Local Traffic Services

Plan Drawn By: Danny Betts
0402 746 408 9603 8886

Client: HANSENYUNKEN

Location Of Work: O'Keefe Dr ORAN PARK

On Site Contact: Andrew Baker 0401 141 509

Plan No: 3061-1

Date: 29/04/20

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<tr>
<td>105</td>
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</table>

*Local Traffic Services (LTS), accepts no liability for the implementation or execution of this TCP unless undertaken by Authorised (LTS) personnel*. *All Traffic Control plans are copyright / Property of (LTS) & are not transferable unless Authorised by (LTS)*. *This plan remains the property of (LTS)*. *This TCP is not to scale*. *This TCP Complies with Australian Standards 1743-3 and the RTA Traffic Control at Work Sites Manual*.
Appendix C
Swept Path Analysis
This drawing is provided for information purposes only and should not be used for construction.

Document Info:
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 21

Client: Hansen Yucken

File name: 1047d03v1 Truck & Dog Access.dwg

info@asongroup.com.au
Appendix D

Curriculum Vitae
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

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 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)
- 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 has been working in the traffic engineering and transport planning industry for over 13 years. 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.

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 40,000m² 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 processes through the Planning and Assessment Commission.
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 120,000m² 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 also 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
## Construction Noise Management Plan

### Revision Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Issue</th>
<th>Prepared By</th>
<th>Approved By</th>
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<td>A</td>
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<td>I. Adlington</td>
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<tr>
<td>18.06.2020</td>
<td>B</td>
<td>Updated for Review</td>
<td>I. Adlington</td>
<td>J. Ameli</td>
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<td>I. Adlington</td>
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<td>D</td>
<td>Final issue</td>
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<td>J. Ameli</td>
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---

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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
- *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 receivers 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 “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: IGCC noise criteria at residences, using quantitative assessment, \( L_{Aeq} \)

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>Management Level – ( L_{Aeq} ) (15min)</th>
<th>How to apply</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommended Standard Hours:</strong></td>
<td><strong>Noise affected</strong></td>
<td>The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured ( L_{Aeq} ) (15min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to 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.</td>
</tr>
<tr>
<td>Monday to Friday 7am to 6pm</td>
<td>RBL + 10 dB</td>
<td></td>
</tr>
<tr>
<td>Saturday 8am to 1pm</td>
<td><strong>Highly noise affected</strong> 75 dB(A)</td>
<td>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.</td>
</tr>
<tr>
<td>No work on Sundays or public holidays</td>
<td><strong>Noise affected</strong></td>
<td>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)</td>
</tr>
<tr>
<td>Outside recommended standard hours</td>
<td>RBL + 5 dB</td>
<td></td>
</tr>
<tr>
<td>Active Play Areas (Childcare Centres)</td>
<td>65 dB(A)</td>
<td>When in use</td>
</tr>
</tbody>
</table>

#### 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 Continuous, 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>
<thead>
<tr>
<th>Location</th>
<th>Assessment period</th>
<th>Preferred values</th>
<th>Maximum values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>z axis</td>
<td>x &amp; y axis</td>
</tr>
<tr>
<td>Continuous vibration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residences</td>
<td>Daytime (7am-10pm)</td>
<td>0.010</td>
<td>0.0071</td>
</tr>
<tr>
<td>Impulsive vibration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residences</td>
<td>Daytime (7am-10pm)</td>
<td>0.30</td>
<td>0.21</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Location</th>
<th>Daytime (7am-10pm)</th>
<th>Night-time (10pm-7am)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Preferred values</td>
<td>Maximum values</td>
</tr>
<tr>
<td>Residences</td>
<td>0.20</td>
<td>0.40</td>
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</table>

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**

<table>
<thead>
<tr>
<th>Location</th>
<th>Period</th>
<th>Rating Background Noise Level (RBL) – L_{Aeq,15min}, dB(A)</th>
<th>Construction Noise Criteria (RBL + 10) – L_{Aeq,15min}, dB(A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>Day</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>L2</td>
<td>Day</td>
<td>47</td>
<td>57</td>
</tr>
</tbody>
</table>

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, $L_{Aeq,15\text{minute}}$ – dB(A)

<table>
<thead>
<tr>
<th>Plant</th>
<th>Octave band centre frequency</th>
<th>dB(A)</th>
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<tr>
<td></td>
<td>63Hz</td>
<td>125Hz</td>
</tr>
<tr>
<td>1. Site establishment and excavation works</td>
<td></td>
<td></td>
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<tr>
<td>Excavator, 5t</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>Screw piler</td>
<td>114</td>
<td>110</td>
</tr>
<tr>
<td>Truck delivery/spoil</td>
<td>104</td>
<td>101</td>
</tr>
<tr>
<td>Hammer</td>
<td>94</td>
<td>94</td>
</tr>
<tr>
<td>Angle grinder</td>
<td>85</td>
<td>79</td>
</tr>
<tr>
<td>2. Structural works</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavator</td>
<td>99</td>
<td>99</td>
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<tr>
<td>Truck delivery</td>
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<td>101</td>
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<td>Concrete pump, 25kW</td>
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<td>99</td>
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<td>Concrete saws, 3kW</td>
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<td>110</td>
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<td>Mobile crane</td>
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<td>101</td>
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<td>Angle grinder</td>
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<td>79</td>
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<tr>
<td>Hammer</td>
<td>94</td>
<td>94</td>
</tr>
<tr>
<td>3. Fit out works</td>
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<td></td>
</tr>
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<td>Angle grinder</td>
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<td>79</td>
</tr>
<tr>
<td>Hammer</td>
<td>94</td>
<td>94</td>
</tr>
<tr>
<td>Truck delivery</td>
<td>104</td>
<td>101</td>
</tr>
</tbody>
</table>
Table 6: Predicted construction noise levels, $L_{Aeq,15\text{minute}}$ dB(A) during standard hours

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

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**

<table>
<thead>
<tr>
<th>Noise mitigation measure</th>
<th>Typical noise reduction, $L_p$ – dB(A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance attenuation</td>
<td>6 dB per doubling of distance</td>
</tr>
<tr>
<td>Screening and barriers</td>
<td>Typically, 5 to 10 dB(A) maximum 15 dB(A)</td>
</tr>
<tr>
<td>Enclosure</td>
<td>Typically, 15 to 25 dB(A) maximum 50 dB(A)</td>
</tr>
<tr>
<td>Silencing</td>
<td>Typically, 5 to 10 dB(A) maximum 20 dB(A)</td>
</tr>
</tbody>
</table>

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.

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Typical ground vibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulldozers/ Excavators</td>
<td>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.</td>
</tr>
<tr>
<td>Jack Hammers</td>
<td>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.</td>
</tr>
<tr>
<td>Truck traffic</td>
<td>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.</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Plant Item</th>
<th>Recommended Minimum Buffer Distance (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFA (Continuous Flight Auger) Piling rig</td>
<td>10</td>
</tr>
<tr>
<td>Excavators</td>
<td>10</td>
</tr>
<tr>
<td>Jack hammers</td>
<td>5</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Monitoring condition</th>
<th>Frequency</th>
<th>Monitoring Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>During high noise construction activities</td>
<td>Monthly</td>
<td>Nearest affected receiver</td>
</tr>
<tr>
<td>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</td>
<td>As required</td>
<td>At address of complainant</td>
</tr>
<tr>
<td>Vibration monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration generating works undertaken at distances less than the buffer distances presented in Table 9</td>
<td>As required</td>
<td>At address of complainant</td>
</tr>
<tr>
<td>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</td>
<td>As required</td>
<td>At address of complainant</td>
</tr>
</tbody>
</table>
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
NSW Department of Education – School Infrastructure

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

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Consent condition and proposed activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td>Proposed actions</td>
</tr>
<tr>
<td></td>
<td>- 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.</td>
</tr>
<tr>
<td></td>
<td>- We will provide advance notice of work to the local community, particularly when we anticipate high noise generating works.</td>
</tr>
<tr>
<td></td>
<td>- Trucks will be well maintained and only use approved truck routes to and from the site.</td>
</tr>
<tr>
<td></td>
<td>- 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.</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>Consent condition: procedures for achieving the noise management levels in EPA’s <em>Interim Construction Noise Guideline</em> (DECC, 2009).</td>
</tr>
<tr>
<td></td>
<td>Consent condition: noise reducing work practices to be implemented.</td>
</tr>
<tr>
<td></td>
<td>Proposed actions:</td>
</tr>
<tr>
<td></td>
<td>- Noise levels for general activities will only occur within approved standard work hours:</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- An acoustic fence will be installed on O’Keefe Drive to mitigate noise impacts.</td>
</tr>
<tr>
<td></td>
<td>- Work will occur within approved standard work hours.</td>
</tr>
<tr>
<td></td>
<td>- Workers and contractors are regularly trained to use equipment in ways to minimise noise.</td>
</tr>
<tr>
<td></td>
<td>- Avoid the use of radios or stereos outdoors where neighbours can be affected.</td>
</tr>
<tr>
<td></td>
<td>- Avoid the overuse of public address systems.</td>
</tr>
<tr>
<td></td>
<td>- Avoid shouting and minimise talking loudly or slamming vehicle doors.</td>
</tr>
<tr>
<td></td>
<td>- Develop a one-page summary of the consent conditions for the site noticeboard for workers to quickly reference this information.</td>
</tr>
</tbody>
</table>
## Activity Consent condition and proposed activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Consent condition: measures to be implemented to manage high noise generating works such as piling, in close proximity to the closest homes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td><strong>Proposed actions:</strong></td>
</tr>
<tr>
<td></td>
<td>- If high noise generating works are planned, neighbours should be notified of this before work starts.</td>
</tr>
<tr>
<td></td>
<td>- 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:</td>
</tr>
<tr>
<td></td>
<td>- 9:00am to 12:00pm, Monday to Friday</td>
</tr>
<tr>
<td></td>
<td>- 2:00pm to 5:00pm, Monday to Friday</td>
</tr>
<tr>
<td></td>
<td>- 9:00am to 12:00pm, Saturday.</td>
</tr>
<tr>
<td></td>
<td>- 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.</td>
</tr>
</tbody>
</table>
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
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

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Issue</th>
<th>Prepared By</th>
<th>Approved By</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.06.20</td>
<td>1</td>
<td>Draft</td>
<td>J. Gilligan</td>
<td>J. Gilligan</td>
</tr>
<tr>
<td>19.06.20</td>
<td>2</td>
<td>Final</td>
<td>J. Gilligan</td>
<td>J. Gilligan</td>
</tr>
</tbody>
</table>
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   1.2 Related Reports and Documents ........................................................................................................ 3
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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
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 measures 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 B – Sediment Basin Calculations
A delay rainfall depth can be adopted in the design of the settling zone where the site characteristics do not lend themselves to the use of standard rainfall depths in y percent of rainfall events. This figure can be determined from rainfall depth percentiles, or, if y = 20, by adopting a default volumetric runoff coefficient of 0.5 is reasonable. However, higher values should be considered for long term land disturbances, such as waste depots, extractive sites and some road construction activities, where much more severe disturbance is likely to be experienced in the future.

Where the site area is sufficient to allow building structures as required for the y %ile to be constructed and the plans for sediment control must also include a detailed plan of gravel areas the 85th percentile storm depth is recommended for use if the duration of disturbance is likely to be more than six months.

(i) Where the site area is insufficient to allow building structures as required for the y %ile to be constructed and the plans for sediment control must also include a detailed plan of gravel areas the 85th percentile storm depth is recommended for use if the duration of disturbance is likely to be more than six months.

(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 filtration, settling and discharge.
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 (SO₄); and
- Chloride (Cl)

The results of this testing are summarised in Table 1 and the laboratory report is attached>

Table 1 – Summary of Results

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>pH (pH units)</th>
<th>EC (dS/m)</th>
<th>SO₄ (mg/kg)</th>
<th>Cl (mg/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>6.0</td>
<td>0.330</td>
<td>110</td>
<td>320</td>
</tr>
</tbody>
</table>

Guideline: Saline at > 1.5

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
# Certificate of Analysis

**Environmental Consulting Services Grp**  
118A Australia Street  
Camperdown  
NSW 2050

Attention: Simon Caples

Report 717872-S

<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>F1 Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Matrix</td>
<td></td>
</tr>
<tr>
<td>Eurofins Sample No.</td>
<td>S20-My08349</td>
</tr>
<tr>
<td>Date Sampled</td>
<td>May 06, 2020</td>
</tr>
<tr>
<td>Test/Reference</td>
<td>LOR</td>
</tr>
<tr>
<td>Unit</td>
<td>Unit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>10</td>
<td>mg/kg</td>
<td>320</td>
</tr>
<tr>
<td>Conductivity (1:5 aqueous extract at 25°C as rec.)</td>
<td>10</td>
<td>uS/cm</td>
<td>330</td>
</tr>
<tr>
<td>pH (1:5 Aqueous extract at 25°C as rec.)</td>
<td>0.1</td>
<td>pH Units</td>
<td>6.0</td>
</tr>
<tr>
<td>Resistivity*</td>
<td>0.5</td>
<td>ohm.m</td>
<td>150</td>
</tr>
<tr>
<td>Sulphate (as SO4)</td>
<td>10</td>
<td>mg/kg</td>
<td>110</td>
</tr>
<tr>
<td>% Moisture</td>
<td>1</td>
<td>%</td>
<td>8.9</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Description</th>
<th>Testing Site</th>
<th>Extracted</th>
<th>Holding Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride</td>
<td>Sydney</td>
<td>May 07, 2020</td>
<td>28 Days</td>
</tr>
<tr>
<td>Conductivity (1:5 aqueous extract at 25°C as rec.)</td>
<td>Sydney</td>
<td>May 07, 2020</td>
<td>7 Days</td>
</tr>
<tr>
<td>pH (1:5 Aqueous extract at 25°C as rec.)</td>
<td>Sydney</td>
<td>May 07, 2020</td>
<td>7 Days</td>
</tr>
<tr>
<td>Sulphate (as SO4)</td>
<td>Sydney</td>
<td>May 07, 2020</td>
<td>28 Days</td>
</tr>
<tr>
<td>% Moisture</td>
<td>Sydney</td>
<td>May 06, 2020</td>
<td>14 Days</td>
</tr>
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<td>- Method: E045 /E047 Chloride</td>
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<tr>
<td>- Method: LTM-INO-4030 Conductivity</td>
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<tr>
<td>- Method: LTM-GEN-7090 pH in soil by ISE</td>
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<td></td>
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<tr>
<td>- Method: E045 Anions by Ion Chromatography</td>
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<tr>
<td>- Method: LTM-GEN-7080 Moisture</td>
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</table>
## Sample Detail

<table>
<thead>
<tr>
<th>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</th>
<th>Sydney Laboratory - NATA Site # 18217</th>
<th>Brisbane Laboratory - NATA Site # 20794</th>
<th>Perth Laboratory - NATA Site # 23736</th>
<th>External Laboratory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sydney Laboratory - NATA Site # 18217</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brisbane Laboratory - NATA Site # 20794</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perth Laboratory - NATA Site # 23736</td>
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<td></td>
<td></td>
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</table>

### Test Counts

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<tr>
<th>No</th>
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<th>Sample Date</th>
<th>Sampling Time</th>
<th>Matrix</th>
<th>LAB ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F1</td>
<td>May 06, 2020</td>
<td>Soil</td>
<td>S20-My08349</td>
<td>X</td>
</tr>
</tbody>
</table>
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
%

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
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. Duplicates 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 & Chloriane 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

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<td>Some samples have been subcontracted</td>
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Authorised By

Alena Bourkeua  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 shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and without any indication of source indicated otherwise, the tests were performed on the samples as received.

Date Reported: May 08, 2020
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.
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<tr>
<td>Project: Diverse Group Pty Ltd</td>
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<tr>
<td>Manager: Simon Capples</td>
</tr>
<tr>
<td>Ph: 0415 225 474</td>
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Chain of Custody
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
Construction Waste Management Plan

Project: New High-Quality Classroom – New Catherine Field Primary School
Job No: SC126

Rev: D | June 2020

Uncontrolled Document in Hard Copy
Copies shall not be made without the written permission of Hansen Yuncken Project Manager
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1 Document Information

1.1 Review & Approval

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<td>Ertac Turk</td>
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<tr>
<td>Services Engineer</td>
<td>Nicholas Ko</td>
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<tr>
<td>(CF) Project Manager</td>
<td>Paul Todhunter</td>
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<td>(CF) Contracts Administrator</td>
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<td>(CF) Site Safety Officer</td>
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<td>(CF) Project Engineer</td>
<td>Basel Atatreh</td>
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<td>(CF) Cadet</td>
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<td>State HSE Manager</td>
<td>Peter Fay</td>
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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.

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<td>BIM360 Field</td>
<td>Cloud based QHSE field management software application designed specifically for the construction industry.</td>
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<td>EMP</td>
<td>Environmental Management Plan (this document)</td>
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<td>EPA</td>
<td>State Environment Protection Authority</td>
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<td>ESD</td>
<td>Ecologically Sustainable Development</td>
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<td>HSE</td>
<td>Health, Safety &amp; Environment</td>
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<td>HY</td>
<td>Hansen Yuncken Pty Ltd</td>
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<td>HYWAY</td>
<td>An information management platform developed by HY utilising Microsoft SharePoint</td>
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<td>Non-Conformance</td>
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<td>NGER</td>
<td>National Greenhouse and Energy Reporting</td>
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<td>SC126</td>
<td>New High-Quality Classroom – New Catherine Field Primary School</td>
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<td>Noise and Vibration Management Plan</td>
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<td>Office of Environment and Heritage</td>
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<td>Project Management Plan</td>
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<td>The Protection of the Environment Operations Act</td>
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<td>Roads and Traffic Authority</td>
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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 B17 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:

- 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
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 docket/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.

<table>
<thead>
<tr>
<th>Material Type on Site</th>
<th>Estimated Volume (m$^3$) or Weight (t)</th>
<th>On-Site Treatment</th>
<th>Off-Site Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reuse</td>
<td>Recycle</td>
<td>Disposal</td>
</tr>
<tr>
<td>Excavated material (VENM)</td>
<td>700m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metals</td>
<td>100m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete Brick, Block &amp; Tile</td>
<td>300m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timber</td>
<td>250 m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardboard</td>
<td>150 m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plasterboard</td>
<td>250 m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastics &amp; packaging</td>
<td>150 m$^3$ 30 m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pallets and Cable Drums</td>
<td>200</td>
<td>Separated and collected</td>
<td></td>
</tr>
<tr>
<td>Liquid Waste</td>
<td>30 m$^3$</td>
<td>Separated onsite</td>
<td></td>
</tr>
<tr>
<td>General Waste</td>
<td>300 m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td>700m$^3$ 1200 m$^3$ 360m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2260m$^3$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Refer to waste and bin zones
7.2 Construction Waste Management Advice
CATHERINE FIELDS PRIMARY SCHOOL
CONSTRUCTION
WASTE MANAGEMENT PLAN

SUBMITTED TO:
Martin Fenn
Senior Project Manager, TSA
Level 15, 207 Kent Street | Sydney NSW 2000

PRESENTED BY:
JO DRUMMOND
ECCELL ENVIRONMENTAL MANAGEMENT PTY LTD
35 WAVERLY CRST, BONDI JUNCTION NSW 2022
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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 identified in the Greater Sydney Commission’s metropolitan plan “A Plan for Growing Sydney” as a significant focus for intensive growth and infrastructure investment over next 20 years. The draft South West District Plan also applies to this area. The Cluster falls within the Camden Local Government Area (LGA) and includes 9 schools, which Catherine Field New Primary School is part of.

Catherine Field (Part) is in the South West Growth Centre, which is undergoing a significant development. The South West Growth Centre will have a significant number of dwellings and very high projected population growth. This is expected to generate increase in numbers of primary school age children, and demand for teaching space, and facilities to at least 2031.

3. PROJECT DESCRIPTION
The new primary school at Catherine Field (Part) will be located on a site within a Greenfield Development that is expected to generate substantial population and school age population growth. The site allocated for the school is approximately 2.0 Ha and has a direct connection 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 construction will be delivered in a single stage as referenced CDR 17027 Catherine Field 181113

• Single stage construction will include:
• 44 new teaching spaces to accommodate 1012 students.
• Core Facilities, Staff Facilities and Administration to Core 35 Standard
• Infrastructure and landscaping
• Parking facilities
4. OBJECTIVES & TARGETS

The project objectives include:

- Meeting all waste management standards while ensuring the health and safety of the workers on the project.
- Maximising the quantities of materials diverted from landfill by reusing, recycling and reprocessing off-site.
- Disposal of no more than 20% of residual waste materials to a licensed landfill in accordance with both regulatory and legal requirements.
- The diversion from landfill of 80% of construction waste by weight, to meet the criteria of the NSW State Government’s waste legislation, waste policy settings and regulatory regime.

5. LEGISLATIVE REQUIREMENTS AND GUIDELINES

Relevant key legislation and guidelines applicable to the project include:

- Protection of the Environment Operations Act 1997
- Protection of the Environment (General) Operations Act 1998
- Protection of the Environment Operations (Waste) Regulation 2014
- Secretary’s Environmental Assessment Requirements

6. RISK MANAGEMENT

The current legislation determines that the generator of waste is the owner of the waste until the waste crosses a weighbridge into a licensed facility. Waste contractors including construction contractors are the primary transporters of waste off-site, accordingly contractors will be required to provide monthly reports on waste reused, reprocessed or recycled, thus diverted from landfill or waste sent to landfill. These reports have a direct bearing on the generator’s regulations.

The WMP will be implemented on site throughout excavation and construction.

All entries in the Waste Data File must include:

- Time and Date of material removed
- Description and size of waste
- Waste facility used
- Vehicle registration and Waste Contractors Company name

The Waste Data File will be available for inspection to any authorized officer at any time during site works. At the conclusion of site works, the designated person will retain all waste documentation and make this validating documentation available for inspection.
7. WASTE MANAGEMENT STRATEGIES

The waste management strategy for the project will operate over the design, procurement, and construction including fit out of the project.

<table>
<thead>
<tr>
<th>Management Strategies</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design:</strong></td>
<td></td>
</tr>
<tr>
<td>Use of modular components in design</td>
<td>Architect &amp; Engineer</td>
</tr>
<tr>
<td>Use of prefabricated components in design</td>
<td>Architect, Builder, Subcontractors.</td>
</tr>
<tr>
<td>Design for materials to standard sizes</td>
<td>Architect, Subcontractors</td>
</tr>
<tr>
<td>Design for operational waste minimisation</td>
<td>Architect &amp; Builder</td>
</tr>
<tr>
<td><strong>Procurement:</strong></td>
<td></td>
</tr>
<tr>
<td>Select recycled and reprocesses materials</td>
<td>Architect, Engineer, Builder &amp; Sub Contractors</td>
</tr>
<tr>
<td>Components that can be reused after deconstruction</td>
<td>Architect, Engineer &amp; Builder</td>
</tr>
<tr>
<td><strong>Pre-construction</strong></td>
<td></td>
</tr>
<tr>
<td>Waste management plan to be reviewed &amp; approved prior to construction</td>
<td>Builder</td>
</tr>
<tr>
<td><strong>Construction on-site:</strong></td>
<td></td>
</tr>
<tr>
<td>Use the avoid, reuse, reduce, recycle principles</td>
<td>Builder &amp; Waste Contractor</td>
</tr>
<tr>
<td>Minimisation of recurring packaging materials</td>
<td>Sub-contractors</td>
</tr>
<tr>
<td>Returning packaging to the supplier</td>
<td>Builder &amp; Sub-contractor</td>
</tr>
<tr>
<td>Separation of recycling of materials off site</td>
<td>Waste Contractor</td>
</tr>
<tr>
<td>Audit &amp; monitor the correct usage of bins</td>
<td>Builder &amp; Waste Contractor</td>
</tr>
<tr>
<td>Audit and monitor the Waste Contractor</td>
<td>Builder</td>
</tr>
</tbody>
</table>
8. WASTE MANAGEMENT PLAN FOR DEVELOPMENT APPLICATION

Brief Outline of Proposal:
The construction will be delivered in a single stage.

- Single stage construction will include:
- 44 new teaching spaces to accommodate 1012 students.
- Core Facilities, Staff Facilities and Administration to Core 35 Standard
- Infrastructure
- Parking facilities

Project Site Address:
Barry O’Keefe Drive, Catherine Field (Part) Precinct, NSW 2567

Name
Martin Fenn (TSA Management)
c/o Department of Education NSW

Applicant’s Address:
Level 15, 207 Kent Street | Sydney NSW 2000

Phone Number:

Existing and other structures currently on site:
No existing structures the site is a Greenfields site

Signature of Applicant:

......................................................... Date: / / 2018
# PHASE 1: EXCAVATION

<table>
<thead>
<tr>
<th>Material Type on Site</th>
<th>Estimated Volume (m³) or Weight (t) (Most Favourable → Least)</th>
<th>ON-SITE TREATMENT</th>
<th>OFF-SITE TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reuse</td>
<td>Recycling</td>
<td>Disposal</td>
</tr>
<tr>
<td>Excavated materials</td>
<td>1,100</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,100</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Narrative:** Excavated material reused on site
# PHASE 2: CONSTRUCTION

<table>
<thead>
<tr>
<th>Material Type on Site</th>
<th>Estimated Volume (m³) or Weight (t) (Most Favourable → Least)</th>
<th>Reuse</th>
<th>Recycling</th>
<th>Disposal</th>
<th>Proposed reuse and/or recycling collection methods</th>
<th>Disposal / Transport Contractor</th>
<th>Waste Depot, Recycling Outlet or Landfill site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete Brick Block-work &amp; Tile</td>
<td>197m³</td>
<td></td>
<td></td>
<td></td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>Crushed for road base</td>
</tr>
<tr>
<td>Metals</td>
<td>114m³</td>
<td></td>
<td></td>
<td></td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>Scrap Metal Dealer for smelting</td>
</tr>
<tr>
<td>Timber off-cuts</td>
<td>247m³</td>
<td></td>
<td></td>
<td></td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>Recycled for chips and mulch</td>
</tr>
<tr>
<td>Cardboard</td>
<td>169m³</td>
<td></td>
<td></td>
<td></td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>Recycled into cardboard</td>
</tr>
<tr>
<td>Plasterboard</td>
<td>184m³</td>
<td></td>
<td></td>
<td></td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>Recycled as soil conditioner</td>
</tr>
<tr>
<td>Plastics, plastic packaging, paint drums, containers</td>
<td>142m³</td>
<td>25 m³³</td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>- Styrene and plastic to landfill * Paint drums nested and recycled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pallets and Reels</td>
<td>130 units</td>
<td></td>
<td></td>
<td></td>
<td>Separated onsite</td>
<td>TBA</td>
<td>Returned to the supplier</td>
</tr>
<tr>
<td>Liquid Waste</td>
<td>17 m³</td>
<td></td>
<td></td>
<td></td>
<td>Separated onsite</td>
<td>TBA</td>
<td>Transferred to licenced landfill</td>
</tr>
<tr>
<td>General Waste</td>
<td>170 m³</td>
<td></td>
<td></td>
<td></td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>Transferred to licenced landfill</td>
</tr>
<tr>
<td>Sub Total</td>
<td><strong>NB:130 units</strong></td>
<td><strong>1,053m³</strong></td>
<td><strong>212 m³</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td><strong>1,265 m³</strong></td>
<td><strong>NB:</strong></td>
<td>Plus, an additional 130 pallets (single units returned to suppliers for reuse)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Narrative:**

As the contracts for all contractors have not been let there are still those including the waste contractor To Be advised (TBA). All waste will be co-mingled and taken for off-site separation and reuse or recycling except Pallets and Reels and liquid waste to be sent to landfill for processing.
9. APPENDIX A – WASTE MANAGEMENT LOADING ZONE
## A.9 Waste classification

<table>
<thead>
<tr>
<th>Material Type on Site</th>
<th>Estimated Volume (m³) or Weight (t) (Most Favourable → Least)</th>
<th>ON-SITE TREATMENT</th>
<th>OFF-SITE TREATMENT</th>
<th>Waste Depot, Recycling Outlet or Landfill site</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reuse, Recycling, Disposal</td>
<td>Proposed reuse and/or recycling collection methods</td>
<td>Disposal / Transport Contractor</td>
<td></td>
</tr>
<tr>
<td>Concrete Brick Block-work &amp; Tile</td>
<td>197 m³</td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>Crushed for road base</td>
</tr>
<tr>
<td>Metals</td>
<td>114 m³</td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>Scrap Metal Dealer for smelting</td>
</tr>
<tr>
<td>Timber off-cuts</td>
<td>247 m³</td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>Recycled for chips and mulch</td>
</tr>
<tr>
<td>Cardboard</td>
<td>169 m³</td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>Recycled into cardboard</td>
</tr>
<tr>
<td>Plasterboard</td>
<td>184 m³</td>
<td>Co-mingled Bins</td>
<td>TBA</td>
<td>Recycled as soil conditioner</td>
</tr>
</tbody>
</table>
| Plastics, plastic packaging, paint drums, containers | 342 m³, 25 m³ | Co-mingled Bins | TBA | - Styrene and plastic to landfill
* Paint drums nested and recycled |
| Pallets and Reels | 130 units | Separated onsite | TBA | Returned to the supplier |
| Liquid Waste | 17 m³ | Separated onsite | TBA | Transferred to licenced landfill |
| General Waste | 170 m³ | Co-mingled Bins | TBA | Transferred to licenced landfill |
| Sub Total | NB: 130 units | 1,053 m³, 212 m³ |                         |                                     |
| TOTAL | 1,265 m³ | NB: Plus, an additional 130 pallets (single units returned to suppliers for reuse) |                         |                                     |

**Narrative:**
As the contracts for all contractors have not been let there are still those including the waste contractor To Be advised (TBA).
All waste will be co-mingled and taken for off-site separation and reuse or recycling except Pallets and Reels and liquid waste to be sent to landfill for processing.
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.
New Catherine Field Primary School (SSD 9477): Submission of Construction Environmental Management Plan in accordance with Condition B13

<table>
<thead>
<tr>
<th>Condition</th>
<th>Condition requirements</th>
<th>Document reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>B13</td>
<td>The CEMP must include, but not limited to, the following:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Details of:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(i) Hours of work:</td>
<td>Section 3.1.1, Hours of Work, p7</td>
</tr>
<tr>
<td></td>
<td>(ii) 24-Hour contact details of site manager;</td>
<td>Section 3.1.2, 24 Hour Contact Details, p7</td>
</tr>
<tr>
<td></td>
<td>(iii) management of dust and odour to protect the amenity of the neighborhood</td>
<td>Section 4.7, Air Quality &amp; Dust Control, p16</td>
</tr>
<tr>
<td></td>
<td>(iv) stormwater control and discharge</td>
<td>Section 4.8, Soil, Erosion &amp; Water Quality, p17</td>
</tr>
<tr>
<td></td>
<td>(v) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site;</td>
<td>Section 4.8.2, Soil, Erosion &amp; Water Quality – Mitigation Strategies’, p18</td>
</tr>
<tr>
<td></td>
<td>(vi) groundwater management plan including measures to prevent groundwater contamination;</td>
<td>Section 4.11.1 &amp; Section 4.11.4, Site Contamination &amp; Release of Contaminants to Soil and Groundwater, p19-23</td>
</tr>
<tr>
<td></td>
<td>(vii) external lighting in compliance with AS 4282-2019 Control of the Obtrusive effects of outdoor lighting</td>
<td>Section 4.17 &amp; Appendix A.11, External Lighting &amp; External Lighting Compliance, p28 &amp; p177</td>
</tr>
<tr>
<td></td>
<td>(viii) community consultation and complaints handling</td>
<td>Section 4.18, Community Consultation and Complaints Handling, p29</td>
</tr>
<tr>
<td></td>
<td>(b) Construction Traffic and Pedestrian Management Sub-Plan (see condition B14)</td>
<td>Appendix A.5, Construction Traffic and Pedestrian Management Sub-Plan, p57</td>
</tr>
<tr>
<td></td>
<td>(c) Construction Noise &amp; Vibration Management Sub-Plan (see condition B15)</td>
<td>Appendix A.6, Construction Noise &amp; Vibration Management Sub-Plan, p90</td>
</tr>
<tr>
<td></td>
<td>(d) Construction Waste Management Sub-Plan (see condition B16)</td>
<td>Appendix A.8, Construction Waste Management Sub-Plan, p149</td>
</tr>
<tr>
<td></td>
<td>B13</td>
<td>B12</td>
</tr>
<tr>
<td>---</td>
<td>----------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>(e)</td>
<td>Construction Soil and Water Management Sub-Plan (see condition B17)</td>
<td>(a) detailed baseline data;</td>
</tr>
<tr>
<td>(f)</td>
<td>an unexpected finds protocol for contamination and associated</td>
<td>(b) details of:</td>
</tr>
<tr>
<td></td>
<td>communications procedure;</td>
<td>(i) the relevant statutory requirements (including any relevant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>approval, license or lease conditions);</td>
</tr>
<tr>
<td>(g)</td>
<td>an unexpected finds protocol for Aboriginal and non-</td>
<td>(ii) any relevant limits or performance measures and criteria;</td>
</tr>
<tr>
<td></td>
<td>Aboriginal heritage and associated communications procedure</td>
<td>and</td>
</tr>
<tr>
<td>(h)</td>
<td>waste classification (for materials to be removed) and validation</td>
<td>(iii) the specific performance indicators that are proposed to be</td>
</tr>
<tr>
<td></td>
<td>(for materials to remain) be undertaken to confirm the</td>
<td>used to judge the performance of, or guide the implementation of,</td>
</tr>
<tr>
<td></td>
<td>contamination status in these areas of the site</td>
<td>the development or any management measures;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c) a description of the measures to be implemented to comply</td>
</tr>
<tr>
<td></td>
<td></td>
<td>with the relevant statutory requirements, limits, or performance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>measures and criteria;</td>
</tr>
</tbody>
</table>

Appendix A.7, Construction Soil & Water Management Sub-Plan, p120

Section 4.11.7, Unexpected Finds, p22

Section 4.11.7, Unexpected Finds, p22

Section 4.12, Waste Management, p26

Appendix A.9, Waste Classification, p171

Not applicable for this management plan

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

Section 3.4, Targets, p10

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
<table>
<thead>
<tr>
<th></th>
<th>(d) a program to monitor and report on the:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(i) impacts and environmental performance of the development;</td>
</tr>
<tr>
<td></td>
<td>(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;</td>
</tr>
<tr>
<td></td>
<td>(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;</td>
</tr>
<tr>
<td></td>
<td>(f) a program to investigate and implement ways to improve the environmental performance of the development over time;</td>
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<td>(g) a protocol for managing and reporting any:</td>
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<td>(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);</td>
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<td>(ii) complaint;</td>
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<td>(iii) failure to comply with statutory requirements; and</td>
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<table>
<thead>
<tr>
<th>Section References</th>
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<tbody>
<tr>
<td>Section 4.11.7, Unexpected Finds, p22</td>
<td>(d) a program to monitor and report on the:</td>
</tr>
<tr>
<td>Section 4.12.7, Waste Management Mitigation Strategies, p27</td>
<td>(i) impacts and environmental performance of the development;</td>
</tr>
<tr>
<td>Section 4.17, External Lighting, p28</td>
<td>(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;</td>
</tr>
<tr>
<td>Section 5.3.3, NGER Reporting Process, p36</td>
<td>(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;</td>
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<td>Section 5.3, National Greenhouse &amp; Energy Reporting, p35</td>
<td>(f) a program to investigate and implement ways to improve the environmental performance of the development over time;</td>
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<td>Section 5.2.1, Non-Conformances, p34</td>
<td>(g) a protocol for managing and reporting any:</td>
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<td>Section 5.2.2, Reporting &amp; Corrective Actions, p34</td>
<td>(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);</td>
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<td>Section 4.18, Community Consultation &amp; Complaints Handling, p29</td>
<td>(ii) complaint;</td>
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<td>Section 5.2.1, Non-Conformances, p34</td>
<td>(iii) failure to comply with statutory requirements; and</td>
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<td>(h) a protocol for periodic review of the plan and any updates in response to incidents or matters of non-compliance</td>
<td>Section 5.2.2, Reporting &amp; Corrective Actions, p34</td>
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</tbody>
</table>
A.11 External Lighting Compliance
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 4282:2019**  
  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:

<table>
<thead>
<tr>
<th>Document Number</th>
<th>Rev.</th>
<th>Drawing Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHQC2-CF-EL-S-EL_1010</td>
<td>G</td>
<td>Lighting Site Plan</td>
<td>29.05.2020</td>
</tr>
</tbody>
</table>

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
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 school’s 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 solely 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 Fields 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 infrastructure, 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