Construction Environmental Management Plan (CEMP)

Project: New Wagga Wagga Public School Job No: SC126

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1 Document Information

1.1 Review & Approval

Review			
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(WW)			
(WW)			
Approval			
State HSE Manager	Peter Fay		
Construction Manager	Dean Marcon		

1.2 Change Information

Change Information							
Revision	Description	Issued by	Issue date				
1	Preliminary		22-10-2019				
2	Draft		12-03-2020				
3	Update: Issued for EWDA		25-03-2020				
4	For Review by WW Council		01-04-2020				
5	Incorporating Council Comments		09-04-2020				
6	Final – Issue for SSDA Main Works		29-06-2020				
7	Reviewed for B12 SSDA condition		22-10-2020				

2 Definitions

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

BIM360 Field	Cloud based QHSE field management software application designed specifically for the construction industry.
EMP	Environmental Management Plan (this document)
EPA	State Environment Protection Authority
ESD	Ecologically Sustainable Development
HSE	Health, Safety & Environment
HY	Hansen Yuncken Pty Ltd
HYWAY	An information management platform developed by HY utilising Microsoft SharePoint
NC	Non-Conformance
NGER	National Greenhouse and Energy Reporting
WW	New Wagga Wagga 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 21 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 9494.

3.1.2 24 Hour Contact Details

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

Brock Hooper

M: 0439 470 538

BHooper@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 New Wagga Wagga 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.



Project Management Plan

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 New Wagga Wagga Public School Environmental impact assessment document (Environmental Impact Statement SSD 9494 by Ethos Urban – Appendix A.3)
- Encourage best practice environmental management through planning, commitment and continuous improvement;
- Prevent and minimize adverse impacts on the environment;
- Identify the potential for, and respond to, environmental incidents and emergency situations and take corrective actions;
- Identify and control possible environmental hazards with the works and HY activities;
- Identify and protect any special environmental characteristics of the site including cultural heritage significance;
- Define roles and responsibilities and allocate the necessary resources
- Ensure environmental training and awareness programmes are provided to employees and subcontractors;
- Establish mechanisms to monitor, evaluate and report progress.

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

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

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

3.4 Targets

3.4.1 Objective: Comply with all environmental legislation

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

Target: Nil for duration of project.

Responsibility: HY & Subcontractors

3.4.2 Objective: Minimise impacts on the environment

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

Target: Nil for duration of project.

Responsibility: HY & Subcontractors

3.4.3 Objective: Conduct environmental site inspections to validate environmental conformance

KPI: Schedule and undertake regular site inspections

Target: > 90% of scheduled HSE inspections

Responsibility: HY Site Manager

3.4.4 Objective: Minimise and manage environmental complaints

KPI: Consult with impacted neighbours and promptly address all complaints

Target: ≤ 1 complaint per significant construction milestone

Responsibility: TSA

3.5 ESD Vision & Principles

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

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

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



3.6 Environmental Planning

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

3.6.1 Environmental Aspects & Impact

All activities related to the New Wagga Wagga Public School, which are enacted by or on behalf of Hansen Yuncken, are identified in the "Project HSE Risk Assessment" (refer Appendix A.5). 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 New Wagga Wagga 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 New Wagga Wagga Public School and to ensure the accessibility of the information. The procedure shall be referenced and is applicable to those activities and functions that have the potential to interact with the environment.

Furthermore (URL) links are supplied on HYWAY to regulatory body websites and relevant NSW legislation relevant to environmental Aspects and management of the same.



3.7 Roles and Responsibilities

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



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

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

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

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

4 Implementation

4.1 Environmental Awareness

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

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

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

4.2 Environmental Impacts of Subcontractor Activities

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

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

4.3 Environmental Risk Register

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

New Wagga Wagga Public School

Environmental Risk Register Summary & Responsibilities								
<u>Air Quality</u> During the earthworks stage of the project, there is a risk of poor air quality generated by the constructions works.	Low	SM						
Soils, Erosion, & Water Quality There is a risk of soil leaving the site and potentially contaminating the stormwater system in the short-term during the earthworks stage of the project.	Low	SM						
Terrestrial Flora & Fauna The removal of trees during construction works poses minimal risk to landscaped species throughout the area. Particular trees have been flagged for removal. These shall be marked and checked prior to any removal by a qualified Arborist. Tree protection zones (TPZ's) will be in place for trees deemed to be retained for the duration of the construction works. Please refer Appendix A.8 for the Biodiversity Report.	Low	PM / SM						
<u>Cultural Heritage</u> It is unlikely that construction works will impact any undisturbed aboriginal artefacts given that an Aboriginal Cultural Heritage Assessment Report has been completed by Biosis and the area has been assessed as having low archaeological potential.	Low	PM / SM						

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

4.4 Location and Land Use

4.4.1 Site Location

The site is contained by Estella Road on the south, Peter Hastie Oval to the East and Darnell Smith Drive to the North. The site is 4km north of the Wagga Wagga CBD and has an area of approx. 3ha (refer to Appendix A.4 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.7 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. The core recommendations taken from this report have also been listed below.
- 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 9494.
 - 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 required and where reasonably practicable



For more detailed mitigation strategies related to specific work phases and the relevant mitigation strategies to be adopted, refer to the CNVMP (Appendix A.7).

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 Estella Road. The management of construction traffic developed as a result of these works in summarised in the Construction Traffic Management Plan (refer Appendix A.6).

In accordance with SSD 9494 Condition B29, on-site parking facilities will be provided in line with the site layout plan contained within Appendix A.13.

4.6.2 Mitigation Strategies

Follow the Construction Traffic Management Plan (TMP) based on the detailed construction methodology and use of specific heavy vehicles and construction plant. The Traffic Management Plan is to include measures to minimise traffic impacts ensure public safety and is to be prepared in accordance with:

- Traffic Control at Work Sites Manual (RTA, 2010)
- Australian Standard 1742.3 2002 Traffic Control Devices for Works on Roads.
- The TMP has been developed in consultation with Wagga Wagga 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 has been carried out 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 9494.

 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 B12a (iii) of SSD 9494, repeated in part as follows; the Construction Environmental Management Plan (CEMP) which must include, but is not limited to, the following; (iii) management of dust and odour to protect the amenity of the neighbourhood. This section of the CEMP addresses this condition, outlining the likely impacts of air quality and dust control for the various aspect of the construction works, along with the mitigation strategies that will be implemented to minimise these impacts on the neighbourhood.

4.7.1 Likely Impacts

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

4.7.2 Mitigation Strategies

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

4.8 Soil, Erosion & Water Quality

In accordance with condition B12a (iv) & (v) of SSD 9494, 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) measures 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.

4.8.1 Likely Impacts

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

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

- Excavation for foundations and site levelling;
- Stockpiling and transportation of excess spoil; and
- General construction waste entering drainage lines

4.8.2 Mitigation Strategies

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

4.9 Terrestrial Flora and Fauna

4.9.1 Likely Impacts

Tree protection zones (TPZ's) are to remain in place for the duration of these works, the land clearing exercises were previously undertaken under a DA with the local government authority. Tree Protection



Zones during construction will be approved by Council's supervisor of Tree Planning and Management (for further details refer to Appendix 8 for the Biodiversity Management Plan).

4.9.2 Mitigation Strategies

- Exclusion zones to be established around trees that are to be retained.
- 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.

For more information regarding mitigation of terrestrial Flora and Fauna, please refer to Appendix 8.

4.10 Archaeology & Cultural Heritage

4.10.1 Likely Impacts

An Aboriginal Cultural Heritage Assessment Report has been completed and the area has been assessed as having low archaeological potential. Consultation has been conducted in line with condition B21 of SSD 9494 with the Registered Aboriginal Parties to determine the specific requirements and management measures to be used on site during construction. The outcome of this consultation is that 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 Envirowest Consulting which concluded that no areas of contamination were identified on the site. The only recommendation from this report was the implementation of an unexpected finds protocol in the event that unexpected finds are encountered, which is contained within Section 4.11.7 of this management plan. A summary of the findings of this investigation is contained within Appendix A.9. A risk assessment of contaminated soil shall be constructed at the start of the project in accordance with the following procedure for Contaminated Soil Assessment. As soon as possible after possession of the site by HY, an assessment of actual or potential soil contamination and it's impacts shall be undertaken using the Soil Contamination Assessment on BIM360 Field. The purpose of this assessment is 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.

In accordance with SSD 9494 condition B12 a) vi) groundwater management plan, Envirowest Consulting has conducted initial investigations at the site which have concluded that there is no groundwater present at the time that the investigation was completed (refer Appendix A.12 for the letter confirming these findings). While the likelihood of encountering groundwater on site is extremely low, Section 4.11.4 of this CEMP addresses the potential risk of soil and groundwater contamination along with the mitigation strategies that will be adopted to prevent groundwater contamination in the event that it is encountered on site.

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 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. This will be achieved by implementing the various measures outlined in the Sediment and soil erosion plan, and including but not limited to sediment control fences to assist in soil filtration from stockpiles potentially contaminating 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.

4.11.5 Heavy Metal Contamination

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

4.11.6 Mitigation Strategies

h. 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.



4.11.7 Unexpected Finds

In accordance with Condition B12d and B12e of SSD 9494, 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.
- I. Following clearance by an Occupational Hygienist, the area may be reopened for further excavation or construction work.





Unexpected Finds Protocol - ASBESTOS



Unexpected Finds Protocol - Buried Structures

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

- a. Upon discovery of structure, the site foreman is to be notified and the area barricaded;
- b. Visual identification of the tank and associated pipe-work;
- Remove and dispose of the structure and associated pipe-work by a qualified contractor. In the case of an UST, the tank must be removed in accordance with Australian Institute of Petroleum (AIP) Code of Practice and Australian standards;
- d. Excavate and stockpile impacted materials (based on field observations) for classification;
- e. Validation of the remedial pit by a qualified environmental consultant for the contaminants of concern at the following sampling density:
 - i) Base of tank pit excavation 1 sample per 25 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 dockets and, in the case of USTs, tank and pipe work destruction certificates) in the validation report.

4.12 Waste Management

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.

- New Wagga Wagga Public School
- 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 <u>HSE Incident Procedure</u>. 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 & B12a (vii) of SSD 9494, the external lighting to the proposed Wagga Wagga 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 B12a (viii) of SSD 9494, 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 Estella, Wagga Wagga.

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:

- Phone: 1300 482 651
- Email: <u>schoolinfrastructure@det.nsw.edu.au</u>

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 <u>HSE Incident Procedure</u> 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 <u>Emergency Response Plan</u>. 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)

Construction Environmental Management Plan

(CEMP)

New Wagga Wagga Public School







Major Fuel Spill





5.2 Environmental Inspections & Audits

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

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



5.2.1 Non-Conformances

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

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

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

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

5.2.2 Reporting & Corrective Actions

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

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

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

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

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



5.3 National Greenhouse & Energy Reporting (NGER)

5.3.1 National Reporting Guidelines

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

5.3.2 Reporting Thresholds

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


New Wagga Wagga Public School

5.3.3 NGER Reporting process



5.3.4 NGER Data Collection

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

6 References

Environmental Planning and Assessment Act 1979 No 203

Environmental Planning and Assessment Regulation 2000

Protection of the Environment Operations Act 1997 (NSW)

Protection of the Environment Operations (General) Regulation 2009

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

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

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

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



7 Appendices

A.1 Hansen Yuncken Environmental Policy Statement

MANSEN YUI	GKEN
ENVIRONMENT PO	DLICY
Hansen Yuncken Pty Ltd is o construction industry, which m Employees and Community Gro	committed to providing a high quality environment in the building and eets the requirements and expectations of Clients, Statutory Authorities, sups.
Hansen Yuncken recognises the relate not only to the process of constructed. Hansen Yuncken all facets of the building and con the impact on, and pollution of,	nat impacts on the environment in the building and construction industry of construction but also to the design and subsequent use of the buildings affirms its commitment to applying sustainable development principles to istruction process and to continually improve our performance in minimising the environment during the construction process.
In achieving this Hansen Yunck Management System meeting 14001.	en is committed to the implementation, maintenance and improvement of a the requirements of Australian and International Standard AS/NZS ISO
The National Executive Commit year. State Managers, through t and subcontractors achieve the	tee shall review Environmental objectives and set performance targets each heir line management structure, are accountable for ensuring all employees se objectives and targets.
The Company's Environmental and the results reported to the i	performance shall be monitored against established performance targets Board of Directors on the regular basis.
Hansen Yuncken affirm that the standards and codes of practic acknowledge the views of Envir	y have a legal obligation to comply with relevant Environmental legislation, se as the minimum level of performance and a professional obligation to commental and Community Groups.
Hansen Yuncken acknowledge: clear unequivocal direction of a of pride in our environmental act by concerned groups in obtainir	s that environmental excellence can only be achieved and maintained by a Il levels of management, stimulating a participative atmosphere and sense nievements by all employees and trade contractors, and through recognition ng this.
	4/10-6-
	Peter Salveson Chief Executive Officer May 2018



A.2 Environmental Management Accreditation - ISO14001

CERTIFICATE OF REGISTRATION

Hansen Yuncken Pty Ltd

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

ABN 38 063 384 056

complies with the requirements of

ISO 9001:2015

Quality Management Systems - Requirements

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

Certificate Number: 160052022 Issue Date: 26 February 2019

CASTONO







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



QMS/EMS Certified Company Licence Number: Q0160



www.jas-anz.org/register

A.3 Site Description and Location

(extracted from RPS Environmental Impact Statement SSD 9494 - Wagga Wagga School)

New Public School in Wagga Wagga | Environmental Impact Statement | 27 October 2019

2.0 Site Analysis

2.1 Site Location and Context

The site is located within the City of Wagga Wagga Local Government Area. The City of Wagga Wagga is situated in the Riverina region of south-western New South Wales. The site is approximately 4km north of the Wagga Wagga town centre and approximately 20kms from the Hume Highway, the main highway that connects Wagga Wagga to Sydney and Melbourne.

The site is located within the grounds of CSU, on the northern edge of Estella. Estella is a northern suburb of Wagga Wagga.

The site's locational context is shown at Figure 8.



Figure 8 Locational context Source: Googlemap and Ethos Urban

2.2 Site Description

The site is a vacant piece of land, located to the west of Peter Hastie Oval within the CSU campus. The site comprises a single lot, legally described as Lot 1 in DP 1253855. The site is regularly shaped and is approximately 3ha in area. The land is owned by the Department of Education.

It is noted that the Lot has recently changed as a result of a minor change to the lot boundary (to reduce the width). The former Lot was Part Lot 4 in DP 1253855 (see Section 1.3).

A Survey Plan is located at Appendix V. An aerial photo of the site is shown at Figure 9.

Ethos Urban | 218064



A.4 HSE Project Risk Assessment



A.5 Construction Traffic and Pedestrian Management Sub-plan



A.6 Construction Noise and Vibration Management Sub-plan



A.7 Biodiversity Management Plan



A.8 Waste classification

Summary report

Address:Proposed public school, Lot 1 DP1253855, Estella Road, Estella NSWDate of works20 July 2018

Main areas of concern

The current land-use of the investigation area is vacant with historical agricultural use of cropping and grazing. No buildings are known to have been located on the site. No fill material is known to have been applied to the site. The current and historic agricultural land-use may have resulted in application of pesticides.

Nature of works carried out

A preliminary soil investigation including desktop study, visual inspection and soil sampling was undertaken of the site.

Nature and extent of residual contamination Nil

Risk factors

No health or ecological receptors are exposed to the identified or potential contamination.

Waste removed

No soil was removed as part of the preliminary contamination investigation.

Recommendations

Nil

Statement of suitability

The investigation area is suitable for the proposed change in land-use.

This is an accurate summary of the report titled: Preliminary contamination investigation – Proposed public school on Lot 1 DP1253855, Estella Road, Estella NSW (Report number R9930c)

Produced by: Envirowest Consulting Pty Ltd Dated: 6/8/2018

Name: Gregory Madafiglio CEnvP



A.9 SSDA Compliance Conditions

Refer over the page for a copy of the condition satisfaction table outlining the sections of this plan that address the relevant SSD condition.



A.10 External Lighting Compliance



A.11 Envirowest Groundwater Confirmation



A.12 Site Layout Plan

PROJECT HSE RISK ASSESSMENT

RELEVANT PROCEDURE:	Project	t HSE F	Risk Assess	ment	R	RISK ASSESSMENT			Conseque	nce					
PROJECT:	New H	igh Qu	ality School	S		TABLE	1	2	3	4	5				
		<u> </u>	·			Likelihood	Significant	Major	Moderate	Minor	Insignificant				
JOB NO:	SC 12	6 (Este	lla Primary	School)	A B	Very Likely Likely	High High	High High	High Medium	Medium Medium	Medium Medium				
ASSESSED BY:	James	Fuller			C D	Possible Remotely Possible	High Medium	Medium Medium	Medium Medium	Medium Low	Low				
ASSESSMENT DATE:	7-May	-20			E NA	Very Unlikely Not applicable	Medium NA	Medium NA	Low NA	Low NA	Low				
	RISH		SSMENT	CONTROLS (to be established in the following order of	of priority 1st=High Level Risks; 2nd = Medium Level Risks; 3rd = Low Level Risks)										
HAZARD (Include additional project specific hazards as required)	L	с	Class	Legislation, Standards & Codes of Practice	-		Enter Details	of Specific C	ontrols Requi	red					
Amenities	_														
Access	А	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Grave The c	el, all weather footpaths h compound area is fenced	nave been inst off to protect	talled for safe a workers from n	access to all ar noving plant, tr	menities in the rucks and vehic	compound area. des				
Location and nature of workplace	А	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	All an in em	nenities are set up in a co nergency situations	ompound area	at the main en	itry to site mak	ting it easy for a	access and egree				
Housekeeping	А	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	A full	time cleaner is engaged	to manage an	d maintain all a	amenities.						
Seating	А	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Suffic distar	sient seating is in place fo ncing requirements	or all workers t	o rest, take bre	aks and eat lu	nch and remai	n within social				
Lighting (Poor)	А	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Lighti	ing is setup in all amentiti	ies for safe ac	cess							
Air Quality	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Winde	ows and airconditioning a	are installed to	all site sheds							
Hot and Cold Environment	А	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Air co	onditioning installed to all	lunch sheds								
Drinking water	А	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Bubbl	ler set up at lunch sheds	and varoius lo	ocations throug	hout site						
Dining Facilities	A	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Clean under	n and tidy tables are avail r cover and have lunch	lable in all lund	ch sheds. There	e is sufficient s	space for all wo	rkers to site dow				
Hand washing	А	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Warm	n water, soap and hand d	lryers are ava	ilable in the toil	ets						
Shower Facilities	А	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Show	vers are provided on site									
Change Room	А	4	Medium	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Chan	ge rooms with benching	and coat hook	s are proivded	on site for wo	rkers to change	clothes				
Air Quality															
Dust from plant & truck movements	С	4	Medium	WHS Plan	Wate where aroun	er cart to conduct regular e there is high plant and t nd site.	laps of the site truck moveme	e spraying wate nts. Temporary	er on the grour / water has be	nd to keep dust en installed at :	settled particular several locations				
Refuelling of plant and equipment	В	4	Medium	AS/NZS 1715 Selection, use and maintenance of respiratory protective devices AS/NZS 1716 Respiratory protection devices	All ref works	fuelling is to be conducte s on site such as grinding	d in well venti g, welding etc	lated areas only	y. Refuelling to	be conducted	clear of any hot				
Concrete cutting / coring	Е	5	Low	NSW Cutting & Drilling Concrete & Other Masonry Products 1996	Wate blade	er must be used to minimi e on an angle grinder. Rul	ise dust. Demo bble to cleane	olition saws tak d up immediate	e preference o ely. Slurry to b	over dry cutting e cleaned up in	with a masonry nmediately				
Access/ Egress and movements around site					•										
Workers entering site without Hansen Yuncken permission would be unaware of any specific site hazards eg, asbestos, gas lines, high risk construction work etc	A	2	High	SafeWork NSW Code Of Practice: WHS Consultation, coordination and cooperation	All wo conta suffici photo Induc	orkers must be site induc ict details sign at the maii ient notice prior to worker ID at all times and sign i ted.	ted by Hanser n entry to site. rs attending si into the site at	n Yuncken prior Subcontractor te to be site inc tendance regis	r to entering si s must give H ducted. All wor ter on a Daily	te. This is clear ansen Yuncker kers on site to Basis after they	ly marked on the ı site staff display a HY / have been				
Unauthorised access to Site	в	3	Medium	SafeWork NSW Code Of Practice: WHS Consultation, coordination and cooperation HY procedure - Site Establishment Hansen Yuncken HYer Standard 09 Site Establishment	Install safety/warning signage e.g. Construction Site Authorised Persons Only, All visite office Where a security fence is used to control unauthorised entry onto a construction site, the be constructed from suitable, dedicated materials with no holes or gaps; • be a suitable height to deter entry (for example, at least 1.8 metres high) • be soundly constructed (for example, gates and joints) • be secure and not present a weak point for entry • be stable and able to withstand anticipated loads or forces (for example, strong winds attempting to climb the fence) • be difficult to gain access under the fence and to scale the fence Where a fence is comprised of discrete panels, the joints should not weaken it and sho same level of security as the panels Sheets of reinforcing mesh should not be used as site fencing because it may allow ad foot hold for children to climb over the protruding ends Fencing with signage and shade cloth type coverings may require additional support to loadings. Gates should not represent a weak point and the closed gate should provide the same Cates to have locks and chains fitted										

					And hours occurry on one
Unauthorised access to work areas / Work areas not secured	В	4	Medium	SafeWork NSW Code Of Practice: WHS Consultation, coordination and cooperation HY Procedures - Work Permits, Excavations and Trenches, Working at Heights, Inexperienced workers	Barricading of excavations and trenches Signage in place (danger/caution/mandatory) Work Permit systems Exclusion zones Lock access to roof areas HRCW SWMS Safe access to work areas Communication of work areas/exclusion zones at daily prestart meetings Site specific induction
Visitors entering site without Hansen Yuncken permission would be unaware of site hazards eg, asbestos, gas lines etc	С	5	Low	SafeWork NSW Code Of Practice: WHS Consultation, coordination and cooperation	All visitors must sign in at the site office prior to entering site. Signs have been erected clearly stating this. Visitors must display a ID card and be escorted by an inducted guide at all times. Visitors entering site must have approval from the Site Manager.

PROJECT HSE RISK ASSESSMENT

RELEVANT PROCEDURE:	Project	HSE F	<u>Risk Assess</u>	ment	R	ISK ASSESSMENT			Consequer	nce				
PROJECT:	New Hi	iah Qua	ality Schools			TABLE	1	2	3	4	5			
			,			Likelihood	Significant	Major	Moderate	Minor	Insignificant			
JOB NO:	SC 126	6 (Estel	la Primary S	School)	Α	Very Likely	High	High	High	Medium	Medium			
				·	В	Likely	High	High	Medium	Medium	Medium			
ASSESSED BY:	James	Fuller			C	Possible Remotely Possible	High Medium	Medium Medium	Medium Medium	Medium	Low			
					E	Very Unlikely	Medium	Medium	Low	Low	Low			
ASSESSMENT DATE:	7-May-	-20			NA Not applicable NA NA NA NA NA									
	RISK	ASSE	SSMENT	CONTROLS (to be established in the following order of	priori	ty 1st=High Level Risks	s; 2nd = Mediu	ım Level Risk	s; 3rd = Low	Level Risks)				
HAZARD (Include additional project specific hazards as required)	L.	с	Class	Legislation, Standards & Codes of Practice			Enter Details	of Specific C	ontrols Requi	red				
Pedestrians/ workers walking around site being struck by vehicles/trucks/ plant moving around site	D	1	Medium	SafeWork NSW Code of Practice: Managing the risks of plant in the workplace SafeWork NSW Code of Practice - Moving Plant on Construction Sites	Bunted/fenced off pedestrian pathways have been erected on site to keep pedestrians clear of areas where there are high movements of vehicles/ trucks and plant. All subcontractors using move plant must have a HRCW SWMS which details how to protect other workers in the area from being structure by the plant. All plant must have a flashing light, horn and reversing beeper. Vehicles/ trucks must turn their flashing lights on. There is a 10km/h speed limit on site. All workers have been told at the site induction to be aware of moving plant on site and keep clear whenever possible. Only workers who are involved with the task are to be in the vicinity of the plant. HY have instructed all subcontractors to trair their workers through pre-start meetings on how to approach moving plant and equipment. Haul roads plant and vehicles are to be maintained. Pedestrians are to avoid walking on haul road whenever poss Plant operators are to keep reversing to a minimum. Pedestrians that need to approach moving plant at to do so from the front of the machine and are to gain the operator has stopped moving the machine and signalled that it is safe to approach. Spotters working with machines must always stand i area where they are visible to the operator. A site spotter/ delineation plan has been proposed to and approved by the site safety committee. This plan states areas where a spotter is mandatory for all plar and vehicle movements. This plan is posted on the site notice board.									
Public being struck by trucks entering and exiting site	D	3	Medium	SafeWork NSW Code Of Practice: How to manage work health and safety risks	Traffi	c control is in place ma	anaging vehicl	le and pedest	rian movemei	nts at main en	try to site			
Subcontractors bringing vehicles onto site without Hansen Yuncken permission	В	4	Medium	Traffic Construction Traffic Management Plan	All su trucks	bcontractors must seek s onto site.	approval from t	the Hansen Yu	incken Site Ma	anager prior to l	oringing vehicles/			
Workers slipping/ tripping over on muddy/ uneven ground	с	3	Medium	WHS Management Pan	Pedestrian pathways have been constructed to minimise slip and trip hazards. Wheel ruts, eroded ground, muddy haul roads and pathways are to be bladed back to solid ground as required. On rain days the foreman & safety committee (when established) is to walk the site prior to work commencing and determine which areas are safe for work and which areas are no go zones.									
Vehicles becoming bogged or losing traction whilst entering/ exiting and driving around site	Е	4	Low		Vehicles to be driven on solid ground only. No vehicles will be allowed to drive on muddy terrain									
Collisions between plant on site	Е	3	Low		Suffic worki	ient distance to be kept l ng. Plant and vehicles to	between all pla stay on haul ro	nt on site. Flas bads wheneve	shing light, hor r possible. Site	n and reversing e speed limit is) beeper must be 10km/h			
Too many vehicles parked on site creating restricted access around site	NA	4	NA		No Parking onsite unless approved by Site Manager									

PROJECT HSE RISK ASSESSMENT

					,									
RELEVANT PROCEDURE:	Project	HSE F	lisk Assess	ment	R	SISK ASSESSMENT			Consequer	ice				
PROJECT:	New H	igh Qua	ality School	S		TABLE	1	2	3	4	5			
		_	-			Likelihood	Significant	Major	Moderate	Minor	Insignificant			
JOB NO:	SC 126	6 (Estel	la Primary \$	School)	A	Very Likely	High	High	High	Medium	Medium			
					B	Likely	High	High	Medium	Medium	Medium			
ASSESSED BY:	James	Fuller				Possible Remotely Possible	High	Medium	Medium		Low			
					E	Very Unlikely	Medium	Medium	Low	Low	Low			
ASSESSMENT DATE:	7-May	-20			NA	Not applicable	NA	NA	NA	NA	NA			
	RISK	ASSE	SSMENT	CONTROLS (to be established in the following order of	priori	ty 1st=High Level Risks	; 2nd = Mediu	m Level Risk	s; 3rd = Low	Level Risks)				
HAZARD (Include additional project specific hazards as required)	L	с	Class	Legislation, Standards & Codes of Practice			Enter Details	of Specific C	ontrols Requi	red				
Dedicated parking area available					· · · ·									
					1									
Workers being exposed to the asbestos contaminated soil (ACM) at various locations around site	NA	3	NA	Working with asbestos guide 2008	Ford Civil / Zoic - Construction Waste Management Plan									
Unidentified finds of asbestos	В	3	Medium	HY Procedure SafeWork NSW Code of Practice: How to manage and control asbestos in the workplace SafeWork NSW Code of Practice: How to safely remove asbestos	lf asb hyien monit	If asbestos is found stop work immediately and notify HY site staff immediately whom will arrange fo hyienist to assess the area. Area to be closed off with bunting/ red white tape and warning signage. monitors to be installed and all workers in the area must wear appropriate PPE as defined in SWMS								
Atmosphere - Contaminated/ Flammable														
Flammable fumes from fuel containers	А	4	Medium	SafeWork NSW NSW Code of Practice: Managing risks of hazardous chemicals in the workplace	Fuel t refuel must	to be stored in fuel storag lling has been completed have a 'refuelling SWMS	e areas only. F . No refuelling '	uel drums are near any hot v	e to be placed vorks being un	back in the fue dertaken. All si	l storage area after ubcontractors			
Unsafe storage of fuel	С	4	Medium	AS/NZS 2430 Classification of hazardous areas	Fuel ı	must be stored in ventilat	ed cages. No f	uel to be store	ed in shipping o	containers				
Fumes from spray sealer application to carpark slab	D	4	Low	AS1318 Use of colour for the marking of physical hazards and the identification of certain equipment in industry	Applie not in	cators must wear mask w volved with the task are t	hilst spray pair to be clear of th	nting. Warning le area	g signage to be	erected and a	ll other personnel			
Biological Hazards				L										
Disease from unhygienic facilities and amenities	Е	4	Low	SafeWork NSW Code Of Practice: Control of work related exposure to Hepatitis and HIV (blood borne) viruses WHS Management Plan SafeWork NSW: Code Of Practice: Managing the work Environment and Facilities	A clea be ke at ent	aner has been engaged t pt clean and tidy at all tin trance to site. Antibacteri	by Hansen Yun nes. Anti bacter al handwash is	cken to clean ial soap has l available in a	amenities on a been provided Il crib rooms	a twice daily ba and a hygiene	sis. Amenities to station is available			
Bomb Threat														
Persons unaware of what to do in the event of an emergency	Е	5	Low	HY Emergency Response Plan AS 2293 Emergency escape lighting and exit signs for buildings AS 3745: 2002 Emergency Control Organisation and Procedures For Buildings, Structures and Workplaces	Emer drills	gency response procedu every 6 months to ensure	re is explained the system is	to all workers working.	at the site ind	uction. HY to p	ractice emergency			
Changes in design														
Changes in design could result in new hazards not being identified	D	4	Low	WHS Management Plan	All de by H\	esign changes must be ris / as required	sk assessed by	HY and Cons	sultants. Subc	ontractor SWM	IS will be reviewed			
Craning & Hoisting Operations														
Persons/ other trades on site walking into the crane slew area may be struck by crane or load	В	1	High	AS 2550: Cranes, hoists & winches - Safe Use WHS Plan	The v worke	vork area around all cran ers clear.	es must be full	/ barricaded e	g bunting and	signposted to I	keep other			
Slings or chains failing resulting in loss of load	А	1	High	AS 1418.1: Cranes, hoists and winches – General Requirements AS 4991 Lifting Devices WHS Plan	Subcontractors must keep an up to date register of all chains and slings. All equipment must be visually checked daily prior to use.									
Crane out riggers sinking in ground resulting in crane rolling over	А	1	High	NWHSC 1010: National Standard for Plant WHS Plan	Subce staff a under	ontractor SWMS to detai and obtain a plant setup p rground services or in un	craning and h permit prior to s stable ground o	oisting operati etting up crar conditions.	ions. Subcontra les to ensure c	actor to commu utriggers are n	unicate with HY ot set up over			
Crane striking structures whilst slewing	Α	2	High	AS 1418.10(Int): Cranes, hoists and winches - Elevating work platforms WHS Plan	Dogn from	nan and crane operator to dogman only.	constantly co	mmunicate wi	th each other.	Crane operato	r to take directions			

PROJECT HSE RISK ASSESSMENT

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

				Assessment (if applicable)	applicable) are also to be considered.										
RELEVANT PROCEDURE:	Project	HSE F	<u>kisk Assess</u> i	<u>ment</u>	R	ISK ASSESSMENT			Consequer	ice					
PROJECT:	New H	igh Qua	ality Schools			TABLE	1	2	3	4	5				
		<u> </u>			.	Likelihood	Significant	Major	Moderate	Minor	Insignificant				
JOB NO:	SC 126	6 (Estel	la Primary S	ichool)	A B	Very Likely Likely	High High	High High	High Medium	Medium Medium	Medium Medium				
ASSESSED BY:	James	Fuller			C D	Possible Remotely Possible	High Medium	Medium Medium	Medium Medium	Medium Low	Low Low				
ASSESSMENT DATE:	7-May	-20			E NA	Very Unlikely Not applicable	Medium NA	Medium NA	Low NA	Low NA	Low NA				
	RISK	ASSE	SSMENT	CONTROLS (to be established in the following order of	priorit	y 1st=High Level Risks	; 2nd = Mediu	m Level Risł	ks; 3rd = Low I	Level Risks)					
HAZARD (Include additional project specific hazards as required)	L	с	Class	Legislation, Standards & Codes of Practice			Enter Details	of Specific C	ontrols Requi	red					
Concrete															
Concrete Pumping - overload formwork structure	A	2	High	WHS Plan	Spotte	er to be used when positi	oning boom ov	ver formwork							
Trip hazard after excess concrete has cured	А	4	Medium	Environmental Protection Act 1994	Back t	to plant policy for large a	mounts of exc	ess concrete							
Slip hazard from excess water and slurry on the ground/ concrete washout	A	4	Medium	WHS Plan	Concr plastic placed	rete washout to be set up c is rolled out on the grou d in a skip bin the followin	o in area where Ind. The hoppe ng day	water will no r is washed c	t run over pede out onto the plas	strian pathway stic, the concre	s. Generally te cures then is				
Slurry and wet concrete entering stormwater drains	В	5	Medium	WHS Plan	The co detern	oncrete washout area wi nine where the wash out	ll constantly m area will be or	ove on site to h the day of ar	suite site cond	itions. The HY urs.	site foreman will				
No designated washout area could result in truck drivers washing out wherever they please leaving the site messy and untidy	D	4	Low	WHS Plan	Exces the sk	ss concrete from washing ip bin with a telehandler	g out the pump	is to be place	ed onto plastic,	allowed to set	then placed into				
Concrete cutting / coring - dust	в	4	Medium	WHS Plan	Water blade	must be used to minimi on an angle grinder. Rul	se dust. Demo oble to cleaned	lition saws tal up immediate	ke preference o ely. Slurry to be	ver dry cutting cleaned up im	with a masonry mediately				
Strike PT cables whilst cutting concrete	В	4	Medium	WHS Plan	Revie Cuttin	w As Constructed Drawi g and Coring Permit pric	ngs, consult Si r to any works	ructrular engi commencing	neer and obtair	n permission to	proceed. Enact				
Confined Space															
Poor ventilation inside in-ground pits	С	4	Medium	NWHSC 1009: Safe Working in a Confined Space AS 2865: Confined Spaces SafeWork NSW Code of Practice: Confined spaces	No ch times. minim	emicals are to be used in Lid to be kept open at a ise the need to enter the	nside in-ground Il times. Sparg pit afterwards	l pits. Close s ing up of pits i	upervision of a is to be conduc	ll men working ted as pit riser:	inside pits at all s are installed to				
Workers unable to easily enter and exit trenches	D	3	Medium	WHS Plan	All trei or stei	nches over 1.5m must b ps must be cut into the tr	e benched at 1 rench for easy	:1 at a maxim pedestrian ac	um of 1.5m or cess.	battered at 45	degrees. A ramp				
Workers being overcome by fumes building up in open trenches	D	3	Medium	NSW WHS Regulation 2017: Part 4.3 Confined spaces	All ope equipr	en trenching has good vo ment is kept clear of ope	entilation. Refu n trenching.	elling does no	ot occur inside o	open trenches.	Oxy acetylene				
Contaminated Soil															
Exposure to contaminated soil which has not been identified	С	3	Medium	AS 4482: Guide to the investigation & sampling of sites with potentially contaminated soil NSW Environment Operations Act 1997	All sub instruc take a	ocontractors that will exc cted at the site induction action to make the area s	avate onsite to to stop work in afe.	have a SWM	IS for 'unexpec Id notify Hanse	ted finds'. All v n Yunken site s	vorkers have been staff whom will				
Exposure to contaminated soil which has not been identified	с	3	Medium	WHS Plan	Ford (Civil / Zoic - Constructior	Waste Manaç	jement Plan							
Deliveries To Site															
Delivery vehicle drivers unaware of site hazards	А	4	Medium	SafeWork NSW Code of Practice: Moving Plant On Construction Sites: 2004	All del	livery drivers must comp	lete a 'delivery	driver inducti	on' prior to ente	ering site.					
Delivery vehicle unloading in an unsafe area eg. in an area where there is mobile plant or pedestrians frequently moving past	С	2	Medium	WHS Plan	The subcontractor supervisor must have good communication with the delivery driver and escort him to the work area where the delivery is to be unloaded. The s/c supervisor must take charge and assist the driver to unload materials from the truck. Exclusion zones to keep people clear of loading/unloading are will consist of flagging on bollards with Danger Loading/unloading area – no go zone signage Delivery Driver Safe Zone Three pedestrian control barriers will be installed off the exclusion zone "bollards and flagging" where the delivery driver safe zone must be on the same side of the vehicle where mobile plant is operating so the operator has line of sight with the delivery driver at all times. A "driver safe zone" sign will be attached to the barriers.										
Pedestrians/ other workers in the area being struck by materials as they are being unloaded from the truck	A	4	Medium	Ford Civil/ Traffix Construction Traffic management Plan	All delivery drivers are told at the 'delivery driver induction' to be aware of any pedestrians/ other workers in the area. Delivery drivers must ensure they have enough space to unload/ load materials from trucks safely. If they have any problems they must notify HY staff immediately whom will assist the driver to undertake their task safely. Subcontractors must manage and supervise their deliveries on site. Subcontractors must spot the driver whilst materials are being unloaded and warn other workers in the area to keep well clear.										

Untrained delivery drivers using plant to unload goods	Е	3	Low	WHS Plan	SWMS must be in place for subcontractors using plant to unload their delivery
Drugs & Alcohol					
Persons under the influence of drugs or alcohol are at high risk of injuring themselves or others	E	4	Low	Alcohol and other drugs in the workplace guide - 2006 Drug and Alcohol Management Plan	Persons assumed to be under the influence of drugs or alcohol will be stopped from working immediately. Their employer will be notified who will investigate and take appropriate action as per their drug and alcohol policy.

F

PROJECT HSE RISK ASSESSMENT

RELEVANT PROCEDURE:	Project	t HSE F	lisk Assess	sment	RISK ASSESSMENT Consequence									
PROJECT:	New Hi	igh Qua	lity School	s		TABLE	1	2	3	4	5			
		J . 200	,			Likelihood	Significant	Major	Moderate	Minor	Insignificant			
JOB NO:	SC 126	6 (Estel	a Primary	School)	A	Very Likely	High	High	High	Medium	Medium			
					В	Likely	High	High	Medium	Medium	Low			
ASSESSED BY:	James	Fuller			D	Remotely Possible	Medium	Medium	Medium	Low	Low			
ASSESSMENT DATE:	7-May-	-20			E NA	Very Unlikely Not applicable	Medium NA	Medium NA	Low NA	Low NA	Low NA			
	RISK	ASSE	SSMENT	CONTROLS (to be established in the following order of	priori	ity 1st=High Level Risks	s; 2nd = Mediu	um Level Risl	ks; 3rd = Low I	Level Risks)				
HAZARD (Include additional project specific hazards as required)	L	С	Class	Legislation, Standards & Codes of Practice			Enter Details	of Specific C	ontrols Requi	red				
Dust	<u> </u>													
Disruption/ nuisance to neighbours and client	D	5	Low	SafeWork NSW Code of Practice: Managing the risks of hazardous chemicals in the workplace Environmental Engagement Plan Zoic Construction Soil and Water Management Plan	Shad	le cloth installation to site	e perimeter fen	ce to contain :	all dust within th	ne construction	site.			
Eye injuries and respirable damage to workers	D	4	Low	AS/NZS 1336 Recommended practices for occupational eye protection	Wate dust s	er carts and hoses used to settled. Eye protection to	o keep dust to be worn for ar	a minimum. P ny task that cre	lant and trucks eates large amo	to move at low ounts of dust	/ speeds to keep			
Dust from wall chasing	NA	4	NA	AS/NZS 1715 Selection, use and maintenance of respiratory protective devices	Dust whils	must be minimised whils t wall chasing. Rooms are	t wall chasing e to be swept f	by way of vac requently to n	uum system. W ninimise dust	/orkers must w	ear dust mask			
Concrete cutting / coring	Е	4	Low	AS/NZS 1716 Respiratory protection devices NSW Cutting & Drilling Concrete & Other Masonry Products 1996 WHS Plan	Wate blade Cuttir	er must be used to minimi e on an angle grinder. Rul ng amnd Coring permit in	se dust. Demo oble to cleaned place.	lition saws tal d up immediat	ke preference o ely. Slurry to be	ver dry cutting cleaned up in	with a masonry mediately . HY			
Electricity														
Electrocution from faulty/ damaged electrical equipment	D	1	Medium	AS/NZS 3017: Electrical installations - Testing & inspection guidelines SafeWork NSW: Code Of Practice: Managing Electrical Risks	All po powe leads	ower tools/ leads must be er tools are not to be used s being damaged.	visually check I on site. Lead	ted daily and t are to be elev	ested and tagg ated off the gro	ed monthly. Da ound to minimis	maged leads and e risk of electrical			
Electrocution from faulty/ damaged Distribution boards	NA	1	NA	WHS Plan SafeWork NSW: Code Of Practice: Managing Electrical Risks	HY D inspe	DB Board checklist to be c ected, tested and tagged r	completed for a monthly. All RC	all DB boards. CD's to be pac	All temporary o llocked and onl	listribution boa y reset by a qu	rds will be alified electrician.			
Workers tripping on leads	С	4	Medium	AS/NZS 3199 Approval & test specification for cord extension sets SafeWork NSW: Code Of Practice: Managing Electrical Risks	All po move	ower leads must be eleva ements in the area whilst	ted off the grou using the powe	und. A maxim er tool.	um of 5m may	be on the grou	nd for general			
Electrocution from temporary construction wiring being damaged	В	1	High	SafeWork NSW: Code Of Practice: Managing Electrical Risks	All ter const	mporary construction mu truction wiring will be insp	st be labelled v bected and rec	with 'yellow ten orded on the s	mporary construstion site HSE inspect	uction wiring ta tion report wee	pe'. All temporary ekly.			
Working around energised live Substation	в	2	High	AS/NZS 3000: Electrical Installations SafeWork NSW: Code Of Practice: Managing Electrical Risks	All su plan v	ubcontractors conducting with existing underground	excavation wo services mus	orks must obta t be attached	in a ground wo to the permit to	rks permit from dig.	n HY site staff. A			
Workers piggy backing leads	С	3	Medium	AS 3012: Electrical Installations - Construction & Demolition Sites SafeWork NSW: Code Of Practice: Managing Electrical Risks	Porta powe	able generators must be u er source is close to the w	ised if electrica ork area.	al leads cant re	each from the [0B board to the	work area so a			
Disruption to the Facility from shutting down power without notification could have major implications	D	1	Medium	AS/NZS: 3000 Electrical Installations	Notic	e of disruption will be issu	ued to the clier	nt prior to pow	er being shut d	own				
				AS 3190: Approval & test specification - Residual current devices										
				AS/NZS 3001 Electrical installations - Relocatable premises and their site										
				Installations SafeWork NSW: Code Of Practice: Managing Electrical Risks										
		ļ		AS3760: 2010 In-service safety inspection and testing of electrical equipment										
				NSW Code Of Practice: Electrical Practices for Construction Work 2007										
Emergency Services Unavailability														
Injured person may not receive first aid treatment in a sufficient amount of time	E	3	Low	WHS Act 2011 SafeWork NSW Code of Practice: First Aid in the Workplace HY emergency response plan	Emer aid ro facilit Work may o	rgency contact details are bom. HY site staff have se ies have been setup in a cplace taking into account occur on site.	e displayed on enior first aid tr accordance wit	the site safety aining. There h SafeWork N f workers on s	notice board ir are first aid kits ISW Code Of P ite, response ti	n the lunch she is in the site offi ractice: First A mes and types	d and in the first ce. The first aid id in the of injuries which			

Site Emergencies	в	3	Medium	WHS Regulation 2017	HY emergency response plan details actions to be taken for different types of emergencies										
Erosion/ Loss of Topsoil	usion/ Loss of Topsoil														
Sediment entering stormwater systems	E	4	Low	Environmental Protection Act 1994 Zoic Soil and Water Managemetn Plan	All stormwater pits to be covered with sediment control fabric. Sediment barrier to be erected around the low perimeter of site perimeter fencing in accordance with the site sediment control plan. Sediment control to be inspected weekly and recorded on the site HSE inspection report. All de-watering of site must be pumped into damns or tanks. The water must be flocked, tested and approved by HY prior to being pumped into the existing stormwater system. Permit to discharge required to any release into the SW system.										
Erosion causing perimeter scaffolding to become unstable	NA	3	NA	Environmental Management Plan	All perimeter scaffolding to be checked following significant rainfall and rectified by scaffolder as required.										

PROJECT HSE RISK ASSESSMENT

) arc	0 4130 10	be considered.	1					
RELEVANT PROCEDURE:	Project	t HSE F	Risk Assess	ment	_	RISK A	SSESSMENT	1	2	Consequen	ce	F	
PROJECT:	New H	ligh Qua	ality School	S		Li	kelihood	i Significant	2 Maior	3 Moderate	4 Minor	o Insignificant	
JOB NO:	SC 126	6 (Estel	la Primary	School)	A	4 3	Very Likely	High	High	High Medium	Medium	Medium	
ASSESSED BY:	James	Fuller			C		Possible	High	Medium	Medium	Medium	Low	
ASSESSMENT DATE:	7-May	-20			E	E	Very Unlikely	Medium	Medium	Low	Low	Low	
	RISK	ASSE	SSMENT	CONTROLS (to be established in the following order of	i pric	ority 1st	=High Level Risk	NA s: 2nd = Mediu	IMA Im Level Risk	INA	evel Risks)	NA	
HAZARD (Include additional project specific bazards as required)	1	с.	Class	Legislation Standards & Codes of Practice				Enter Details	of Specific C	ontrols Requi	red		
	-	-	0.000										
					1								
Damage to existing services could cause major disruption to the client eg. live power, security cables etc.	D	3	Medium	Safework NSW Code Of Practice: Excavation Work WHS Plan	Sul	bcontrac	tors are available	to repair servic	es in the even	t they are dama	aged		
PLANT OPERATORS STRIKING UNDERGROUND SERVICES WHILST UNDERTAKING TRENCHING/ EXCAVATION WORKS	с	1	High	Ausgrid National Standard NS 156 - Working near or around underground cables WHS Plan	A g on exi: exc	ground w the site isting und cavation	rorks permit system plans. Pot holing a derground services works	n is in place on nd hand diggin s has been liste	this site. All ki g must occur v d as a hazard	nown existing s when working a on all subconti	ervices have around existing ractor SWMS	been marked up l services. Striking involving	
Excavators digging trenches accidently striking recently installed and charged up hydrant lines throughout the site	E	2	Medium	Jemena Guidelines Construction Activities Near & Over Jemena Gas Networks Assets A WHS Plan	A p	plan has	been issued to all	subcontractors	notifying them	n of existing se	rvices		
Explosive Powered Tools													
Eye and hearing damage	Е	4	Low	WHS Plan	Eye	e and he	aring protection m	ust be worn. W	orkers must b	e closely super	vised by their	supervisor	
Excavations					1								
Excavation over 1.5m	с	3	Medium	SafeWork NSW Code Of Practice: Excavation Work	All sta pec pos	trenches ated othe destrian ssible	s over 1.5m must b rwise by a geotech access.Shoring bo	be benched at inical engineers ixes to be used	l:1 at a maxim s report. A ram for trenches g	uum of 1.5m or np or steps mus greater than 1.5	battered at 45 st be cut into th 5 m deep if ber	degrees unless he trench for easy hching is not	
Large stockpiles of spoil creating blind spots for plant operators and truck drivers	E	3	Low	NSW Code Of Practice: Moving Plant On Construction Sites 2004	Pla Pla	ant opera ant opera	itors must neatly sl itors are to avoid s	tockpile all spoi tockpiling spoil	il and limit the next to bends	height of the st on haul roads.	ockpile to mai	ntain good vision.	
Trench collapse trapping workers	С	1	High	AS 2763 Vibration and shock - hand transmitted vibration - guidelines for measurement and assessment of human exposure	Any ber into	iy trenchi nching/ b o the enc	ng in unstable grou pattering is not prac d of trench for eme	und is to be ber ctical geotechn rgency access/	nched/ battere ical engineers / egress.	d. If the excava signoff is requi	ation reaches r red. A ramp m	ock or shale and ust also be cut	
Plant eg. mobile crane set up too close to a trench could result in trench collapse and plant roll over	С	2	Medium	WHS Management Plan	All	plant mu	ust be set up clear	of the zone of i	nfluence				
Plant outriggers sinking into ground resulting in plant roll over.	С	1	High	AS 3798 Guidelines on earthworks for commercial & residential developments	Pla rigg be	ant must gers. Sol constan	only be set up on s le plates are to be tly checked during	solid ground an used undernea and after rain f	d sufficient pic th EWP stabili all.	g sty packing/ s izers if the grou	ole plates plac ind is soft. Gro	ed underneath out ound conditions to	
Open trenches restricting access for vehicles and pedestrians around site	С	4	Medium	NSW Dial Before U Dig Legislation	Peo are	destrian e to be se	/ vehicle/ plant acc et up prior to trench	cess must be k ning across pat	ept clear at all hways and roa	times around s adways.	ite. Alternative	e access routes	
Building materials/ stockpiles stored near trench could result in trench collapse	С	3	Medium		Ма	aterials a	nd equipment mus	t not be stored	within the 'zor	ne of influence'			
Different trades working in the same area at the same time could strike each other with mobile plant	А	2	High		Dai trac	ily pre-st des eg. s	tarts and SWMS despotters, barricade	etail how to wo the work area,	rk around mov signage etc	ring plant on sit	e including pla	nt used by other	
Damage to existing buildings from vibrations caused by machinery	NA	4	NA		Vib	oration fro	om earthworks to b	be monitored by	y HY and subc	ontractors			
Formwork													
Formwork collapse	В	1	High	SafeWork NSW Code of Practice: Formwork	For loa On Pla stru	rmwork r ads that n ace engin ace plant ucture or	nust be certified by nay be applied by ieer's inspection co and materials on f deck is sufficiently	y a qualified en the concrete po omplete ensure formwork and fi y constructed s	gineer that it is our, workers, ro any additiona alsework only o it is able to b	s structurally so einforcement & Il back propping where allowed bear the load	ound and able crane lifted lo g is installed if for by the desi	to safely support ads. required. gn and when the	
Fall from heights	А	1	High	SafeWork NSW Code of Practice:Managing the risks of falls at the workplace	Spread first section of joist on beam from intermediate work platform and only access the deck to start laying ply once the joist are down and handrail is in place. Use scaffold to gain access to deck to start laying plywood When you sheet up to 1.8m from end of joist lay next section of joist NEVER sheet to the end of the joist even if there is a catch deck in place Lay joist across bearers fixed at a spacing of 450 maximum to prevent any possibility of falls while construction of the deck. Establish working areas for steelfixers & other trades. A 'formwork only' zone should be maintained behin the leading edge. This zone should be clearly demarcated by signage and a barrier. Protect open pnetrations with edge protection (e.g. handrails) or cover securely. Cast5in metal mesh wit a small aperture (e.g. 50 x 50 mm mesh size or smaller) for small pnetrations. Paint ply covers with appropriate warnings (e.g. "PENO" or similar) and fasten securely.								
Cuts/ impalement on starter bars	в	3	Medium		Sat	fety caps	s to be fitted to all s	starter bars whe	erever there is	a risk that a pe	erson may fall	on one.	
Fall prevention/ arrest equipment													
Failure of fall arrest equipment	В	1	High	HY emergency response plan AS/NZS 1891: Industrial fall arrest systems and devices	All cor etc Ma Ro Re har	safety hantrol and cantrol and cantenance oof anche escue pro rnesses	arnesses and lany other forms of fall ce and inspection r or points must be c ocedure for rescuin	ards must be v protection sho ecords in subc ertified prior to g persons in fa	isually checke uld be used su ontractor safet use Il arrest must l	d daily. Safety ich as perimete ty managemen be developed p	harness is the er scaffolding, l t plans to be ke prior to persons	last form of EWP, handrails opt up to date s using safety	

PROJECT HSE RISK ASSESSMENT

				· · · · · · · · · · · · · · · · · · ·	,		Consequence									
RELEVANT PROCEDURE:	Projec	<u>HSE R</u>	lisk Assessi	<u>ment</u>		RISK ASSESSMENT TABLE	1	2	Consequer 3	ce 4	5					
PROJECT:	New H	igh Qua	ality Schools	3		Likelihood	Significant	Major	Moderate	Minor	Insignificant					
JOB NO:	SC 12	δ (Estel	la Primary S	School)	A B	Very Likely Likely	High High	High High	High Medium	Medium Medium	Medium Medium					
ASSESSED BY:	James	Fuller			C D	Possible Remotely Possible	High Medium	Medium Medium	Medium Medium	Medium Low	Low Low					
ASSESSMENT DATE:	7-May	-20			E NA	Very Unlikely Not applicable	Medium NA	Medium NA	Low NA	Low NA	Low NA					
	RISH	ASSE	SSMENT	CONTROLS (to be established in the following order of	prior	ity 1st=High Level Risks	s; 2nd = Mediu	ım Level Risk	s; 3rd = Low I	_evel Risks)						
HAZARD (Include additional project specific hazards as required)	L	С	Class	Legislation, Standards & Codes of Practice			Enter Details	of Specific C	ontrols Requi	red						
Fall from heights	1															
Workers falling into open trenches	С	3	Medium	AS 1418.1: Cranes, hoists and winches – General Requirements	All open trenches must be bunted off at least 1m from the edge of the trench. Where there are high movements of pedestrians an plant then a solid barrier such as a temporary mesh											
Workers falling into open penetrations (eg in-ground pits)	с	3	Medium	WHS Regulation 2017 Part 4.4 Falls	All p plyw	enetrations to be covered ood/metal plate.	and secured a	and the wordin	g "peno" or "dc	not remove" s	sprayed onto the					
Workers falling from ladders	С	3	Medium	SafeWork NSW Code Of Practice: Managing the risk of falls at workplaces	Lado and Stan sma	ders are to used in accord other means of height acc dard A frame ladders can Il rooms where a scissor I	ance with the H cess should be be used but o ift will not fit. La	HY ladder polie used eg EWF nly for short de adders with 4 s	cy. Ladders are ''s, mobile scaf uration works o steps or less ar	the last resor folding, platfor r tight restricte e not permitte	t for height access m ladders etc. d spaces such as d on site					
Bricklayers falling from trestle scaffold	с	1	High	AS 4576: Guidelines for scaffolding	Bricł mus	klayers must install a hand t be set up correctly on so	Irail to the scaf lid ground	fold and a lad	der for safe aco	ess/egress. T	restle scaffold					
Fall from scaffold	E	3	Low	AS 1576: Scaffold general requirements	Mod Han with and scaf	ular stairs to be installed a drails must be installed fro trannys. Scaffolder will er a handover certificate has fold under any circumstan	at the same tim om deck below ect 'danger sca s been issued t ce.	ne as decks ar prior to acces affold incomple o HY. All trade	e installed for s sing the deck a ete' signage un es have been n	afe access to bove. Ends m til the scaffold nade aware no	each deck. ust be closed off is ready for use t to alter the					
Personnel falling into open trenches or off the edges of batters and excavations	D	3	Medium	Emergency Response Plan	All o trend	pen trenches and along th ch. Deep trenching must b	ne top edge of l be benched eve	batters must b ery 1.5m so th	e bunted off at at a person car	least 1m from n only fall a ma	the edge of the ximum of 1.5m.					
Fall from mobile scaffold	В	3	Medium	Scaffold erection guide (comes with scaffold)	All m in pla	nobile scaffolding must be ace. Any scaffold where a	built as per the person can fa	e manufacture Il more than 4	rs instructions. m must be erec	Handrails and ted by a licent	midrails must be ced scaffolder.					
Workers falling from heights	с	2	Medium	WHS Plan	Root hand Prac	f access permit must be o drail must be in place for fa tice: Safe Work On Roofs	btained by the all protection. S :: Part 1	roofer prior to Safety mesh m	accessing the just be installed	roof. Perimete I correctly as p	r scaffold or er Code Of					
Falls into bored piers	В	2	High	AS/NZS 1892 Portable Ladders	Bore Dee cond	ed piers must be fully cove p excavation signs are to crete as soon as possible.	ered with plywo be erected and	od or mesh to I the are fully I	eliminate risk ounted off. Bes	of workers falli practice is to	ng into the hole. fill the hole with					
Falling objects	1															
Pallets of blocks stacked too high could tip over and injure a person	А	4	Medium	Workcover Bricklayers guide	Palle	ets of blocks must be stac	ked on level gr	ound no more	than 2 pallets	high						
Scaffold parts could fall/ be knocked off the deck and injure workers below	NA	2	NA	AS 1576: Scaffold general requirements	All e scaf	xcess scaffold material m fold decks	ust remain on	the ground. No	o excess scaffo	ld material is t	o be left lying on					
Formwork and reo materials falling from deck onto persons below	В	2	High		All m	naterials must be stacked	neatly clear fro	om edge of de	ck and kick boa	rds must be p	ut in place					
Building material and tools falling from scaffold decks	NA	2	NA	WHS Plan	Edge and	e boards to be fitted to all removed from decks daily	scaffold decks . If possible do	. Materials sto not store mat	red on scaffold erials on scaffo	ing is to be ke old at all.	ot to a minimum					
Falling materials from EWP's	A	1	High	AS/NZS 2210 Occupational protective footwear	No v mus	vorker is to walk undernea t be fully barricaded off wi	ith an elevated th red/white tap	EWP. All EW be, bunting or	P operation mi flagging or sig	ist have a spo nage in place	tter or the area					
Loose materials and rocks from walls of trenches falling onto workers within the trench	D	3	Medium	AS/NZS 1800 Occupational protective helmets - Selection, care & use	No a requ	access to any open trench ired for trenching over 1.5	es for workers im	unless the wa	Ils of the trencl	n are stable. G	eotech sign off					
Materials left behind after works finish eg. loose bolts, off cuts etc	В	1	High	AS/NZS 1801 Occupational protective helmets	Wor	k areas at heights must be	e checked daily	/ and loose ite	ms brought do	wn to ground le	evel.					
Fauna (protected or endangered species)																
Snakes and insects in long grass	в	3	Medium	Environmental Protection Act Environmental Management Plan	Wee snip	eds and long grass alongs per	ide pedestrian	pathways aro	und the site are	to be cut bac	< with a whipper					
Fire	1				1											
Chemical and fuel spills may cause a fire	Е	1	Medium	Emergency Response Plan	A;BE	E Powder type fire extingu	ishers are insta	alled at severa	I locations stra	tegically place	d around the site					
Sparks from hot works eg welding, grinding may cause a fire	D	3	Medium	AS 2444: Portable fire extinguishers & fire blankets - selection and location AS/NZS 1850 Portable fire extinguishers - Classification, rating and performance testing	All s requ	ubcontractors must obtair ired for undertaking the ta	a hot works p sk	ermit from HY	staff. The perr	nit will detail ar	ny controls					
Flammable materials stored on site may ignite from hot works in the area	D	2	Medium	SafeWork NSW Code of Practice: Managing the risks of hazardous chemicals in the workplace	Hazardous materials must be stored in cool, dry areas away from ignition sources and flammable material signage installed.											
Fuel drums could catch on fire from sources of ignition	в	4	Medium	AS 3745 Emergency control organisation and procedures for buildings, structures and workplaces	Fuel	drums are to be put away	/ when not in u	se in a storag	e cage in a wel	ventilated are	a					
Workers could be seriously injured whilst attempting to extinguish fire	Е	1	Medium	AS 2444 Portable fire extinguishers and blankets - Selection & location	All w	vorkers are told at site indu	uction not to pla	ace themselve	es at risk and n	ot to try and fig	ht the fire					
Time taken to obtain fire extinguisher in the event of an emergency	D	1	Medium	AS/NZS 1841 Portable fire extinguishers	Fire are o	extinguishers are places on the site layout plan	strategically are	ound site for e	asy/ fast acces	s. Locations o	f fire extinguishers					
Poor maintenance of fire extinguishers	E	1	Medium	AS 2375 Guide to the selection, care & use of clothing for protection against heat & fire	Fire extinguishers are to be tagged every 6 months by a competent person											

PROJECT HSE RISK ASSESSMENT

RELEVANT PROCEDURE:	Projec	t HSE F	Risk Assess	ment	F				Consequer	ice				
PROJECT:	New H	ligh Qua	ality School	S		TABLE Likelihood	1 Significant	2 Major	3 Moderate	4 Minor	5 Insignificant			
JOB NO:	SC 12	6 (Estel	lla Primary	School)	A B	Very Likely Likely	High High	High High	High Medium	Medium Medium	Medium Medium			
ASSESSED BY:	James	Fuller			C D	Possible Remotely Possible	High Medium	Medium Medium	Medium Medium	Medium Low	Low Low			
ASSESSMENT DATE:	7-May	-20			E	Very Unlikely	Medium NA	Medium	Low	Low	Low			
	RISP	(ASSE	SSMENT	CONTROLS (to be established in the following order of	f prior	ity 1st=High Level Risks	s; 2nd = Mediu	Im Level Risk	(s; 3rd = Low	Level Risks)				
HAZARD (Include additional project specific hazards as required)	L	с	Class	Legislation. Standards & Codes of Practice			Enter Details	of Specific C	ontrols Requi	red				
First aid					1			•						
Persons unaware of what to do if an individual requires first aid	E	5	Low	WHS Regulation 2017	Eme room	rgency response plan po n and contact details for s	sted on site no ite first aiders.	ice board. All	workers explai	ned of the loca	ition of the first aid			
Injured person not receiving first aid treatment quickly enough due to the site being so large	D	3	Medium	Work injury management and workers compensation act 1988	Site ame	staff to communicate by nities. Within the first aid	way of mobile p room is a fixed	hones and 2 t type A kit and	way radios. A fi I portable type .	rst aid room is A kit for rapid r	set up in the HY esponse.			
It may not be possible to take the injured person to the first aid room because of the seriousness of their injuries	E	4	Low	SafeWork NSW Code of Practice: First aid in the workplace:	Acce	ess routes to be kept clea	r around site fo	r emergency	vehicles					
Inadequate first aid supply's	E	3	Low	WHS Plan	First sun work	aid room to be set up wit cream, eye wash and exa place	th portable and amination coucl	fixed first type as per Safe\	A first aid kits Work NSW Coo	, stretcher, def de of Practice:	ibrillator, ice packs, First aid in the			
Inadequately trained first aiders/ insufficient number of first aiders	E	3	Low	Emergency Response Plan	HY S First	Site Foreman must have aid certificate	Apply First Aid	type certificati	on. HY Safety (Officer must ha	ave Occupational			
Persons working alone unable to raise the alarm	Е	3	Low	Emergency Response Plan	No p work	erson is to work alone. T ters at site induction	here must be a	nother person	in the area at	all times. This	is told to all			
Heart attack/ stroke	Е	1	Medium	Emergency Response Plan	Defit	orillator to be kept in first a	aid room							
Number of buildings	E	5	Low	Emergency Response Plan	5 - a	Il easily accessible for pe	destrians or ve	hicles						
Maximum Number of levels on each building	Е	5	Low	Emergency Response Plan	13 -	All have internal stair acc	ess							
Time taken to walk to furthest point on site	D	4	Low	Emergency Response Plan	5 mi	nutes - from first aid room	n to furthest poi	nt on site						
Nearest Hospital	D	4	Low	Emergency Response Plan	Wag Docł Wag	ga base Hospital ker Street ga Wagga NSW 2650								
Nearest Medical centre	D	4	Low	Emergency Response Plan	Trial 69 T	St Medical Centre rail Street, Wagga Wagga	a NSW							
Maximum time to medical service	D	4	Low	Emergency Response Plan	7 mi	n								
Maximum number of workers	D	4	Low	Emergency Response Plan	>200)								
Site hours	E	5	Low	Emergency Response Plan	7:00 A firs	am - 6:00pm Monday - Fi st aid qualified person froi	riday 7:00ai m Hansen Yun	n - 5pm Satur cken is on site	day. No Works at all times	on Sundays o	or Public Holidays.			
Average hours worked by a worker	E	5	Low	Emergency Response Plan	Worl	kers generally work 8-9 h	ours per day							
Remote or isolated works	E	4	Low	Emergency Response Plan	Worl Due	kers are not permitted to to the nature of the site it	work alone. The tis unlikely any	ere must be a worker will be	tleast 2 workers isolated or wo	s in the same a rk alone	area at all times.			
Types of injuries over the last 12 months	E	4	Low	Emergency Response Plan	Majo strai	prity of types of injuries ind ns, back injuries and dislo	clude: cuts and ocations	abrasions, mi	inor eye injuries	s, insect bites,	sprains and			
Incidents not resulting in injury	E	5	Low	Emergency Response Plan	Incidents have occurred where excavator operators have struck existing live underground electrical cables - defibrillator will be required in the event persons are electrocuted									
Cuts and abrasions	С	4	Medium	Emergency Response Plan	Туре	A first aid kit has conten	its for treating t	nese types of	injuries					
Sprains and strains	D	4	Low	Emergency Response Plan	lce p	packs and instant cold pa	cks to be availa	ble						
Eye injuries	D	3	Medium	Emergency Response Plan	Eye	wash station to be set up	in first aid roor	n						
Burns	E	4	Low	Emergency Response Plan	Burn	cream and non adheren	t wound dressi	ngs						
Fractures	D	4	Low	Ernergency Response Plan	Type A first kit and a stretcher for moving injured workers									

Dislocations	D	4	Low	Emergency Response Plan	Type A first aid kit has triangle slings
Poisoning and toxic effect of substances	Е	5	Low	Emergency Response Plan	Safety data sheets available for all substances used.
Heat stroke	D	4	Low	Emergency Response Plan	Ice packs and cold water on standby. Subcontractors have been addressed at side induction to take breaks, work in shade wherever possible., job rotation etc

PROJECT HSE RISK ASSESSMENT

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RELEVANT PROCEDURE:	Project	t HSE F	Risk Assess	ment	R	ISK ASSESSMENT			Consequer	се	
PROJECT:	New H	iah Qua	ality Schools			TABLE	1	2	3	4	5
		5	, ,			Likelihood	Significant	Major	Moderate	Minor	Insignificant
JOB NO:	SC 126	6 (Estel	la Primary S	School)	A B	Very Likely Likely	High High	High High	High Medium	Medium Medium	Medium Medium
ASSESSED BY:	James	Fuller			C D	Possible Remotely Possible	High Medium	Medium Medium	Medium Medium	Medium Low	Low Low
ASSESSMENT DATE:	7-May	-20			E	Very Unlikely	Medium	Medium	Low	Low	Low
	RISK		SSMENT	CONTROLS (to be established in the following order of	nriorit	tv 1st=High Level Risks	a: 2nd = Medi		rs: 3rd = Low I	evel Risks)	NA
UAZADD (Include additional preject an affic hazarda as required)	1.01	0	Class		priorit		Entor Dotaila	of Specific C	ontrolo Bogui	rod	
HAZARD (include additional project specific hazards as required)	L	U	Class	Legislation, Standards & Codes of Practice			Enter Details	or specific c	ontrois Requi	eu	
Ground Collapse/poor ground											
Plant roll over from sinking in unstable ground conditions	С	3	Medium	WHS Plan	Subco unstal ground operati engine Site to prior to	ontractors to complete a ble ground conditions. If id prior to plant operating ting plant with outriggers eers report stating the gr o be inspected by the Situ to work commencing the	plant risk asse the ground is on it. All subc . Concrete bo ound is stable e Manager an next day	essment prior t too soft or une ontractors mu om pumps and and able to ta d subcontracto	o operating pla ven then the gr st obtain a HY I mobile cranes ke the weight c or WHS represe	nt. Plant will n ound will be bl plant setup per must obtain a f the crane and entatives follow	ot be operated in aded back to solid mit prior to geotechnical d load being lifted. ring heavy rain
Vehicles/ plant could become bogged in soft muddy ground	D	4	Low	National Standard For Plant: 10:10 (1994)	Temp unstat	oorary roadways have be ble ground accessed in v	en rolled and o wet weather pr	compacted to l restart to be co	keep ground stand stand	able, No plant each inclement	to work on weather event
Pedestrian slip and trip hazards from muddy/ uneven ground	E	3	Low	WHS Plan	Crush used t particu	ner dust has been spread to blade back ruts and m ularly on rain days	l over pedestri uddy ground t	an pathways t o minimise slip	o minimise slip o and trip hazar	and trip hazar ds for workers	ds. Plant is to be in the area
Trucks and vehicles tracking mud and dirt onto road from muddy tyres	Е	3	Low	WHS Plan Environmental Management Plan	Shake	er grid installed at site en	trance. High p	ressure water	blaster to be u	sed to wash ty	res if required
Pedestrians/ workers tripping over in deep wheel ruts left by plant movements	Е	3	Low	WHS Plan	Whee	el ruts are to be bladed/ le	evelled out to	minimise trip h	azards around	site	
Hazardous Chemicals											
Spillage of fuels and chemicals	с	3	Medium	AS 1940: The storage and handling of flammable and combustible liquids Environmental Management Plan	A spill set up 'Dang	l kit is kept in the site offi o a hazardous substance jer Fuel Storage area' etc	ce. Any drums storage are n c	of fuel larger ext to their site	than 20 litres m containers wit	nust be bunded h signage ered	l. All trades area to cted 'no smoking',
Unsafe storage of oxy acetylene equipment	С	3	Medium	AS 4332 The storage and handling of gases in cylinders Environmental Management Plan	Oxyge day ar	en and acetylene bottles nd appropriate warning s	are to be store ignage erecte	ed in separate d.	ventilated cage	es 3m apart at	the end of each
Mix matched storage of hazardous substances could cause a chemical reaction	С	3	Medium	NWHSC 2017 - 2001 Storage & Handling of Dangerous Goods	Only s	substances of the same	class can be s	tored together	as per the Saf	ety Data sheet	for the products
				AS 3780: The storage & handling of corrosive substances							
				NWHSC 2011: Preparation of Material Safety Data Sheets							
				WHS Plan							
				SafeWork NSW Code of Practice: Manging risks of hazardous chemicals in the workpace							
				NWHSC 1015 - 2001 Storage & Handling of Dangerous Goods							
				NWHSC 2011 - 2003 Preparation of Material Safety Data Sheets							
				NWHSC 2007 - 1994 Control of Workplace Hazardous Substances							
				NWHSC 2012 - 1994 Labelling of Workplace Hazardous Substances							
				NWHSC 2014 - 1995 Carcinogenic Substances							
Heat stress											
Sun burn	D	4	Low	SafeWork NSW Code Of Practice: How to manage work health and safety risks	Sun c induct	cream is available in the s tion to wear long sleeve	site office. Sing pants and shir	glets are bann ts.	ed. Workers an	e encouraged	at the site
Hot temperatures may cause persons to become dehydrated resulting in illness, headaches, fainting etc	Е	4	Low	NSW Hot & Cold Environments 2001	Air co	nditioned lunch sheds. S	Subcontractors	to work in sha	ided area wher	ever possible.	
				NSW Code Of Practice: Managing the work Environment and Facilities							
				WHS Plan							
Heavy lifting (over normal crane operation)											

PROJECT HSE RISK ASSESSMENT

RELEVANT PROCEDURE:	Project	t HSE F	Risk Assess	ment	R	SK ASSESSMENT			Consequer	nce	
PROJECT:	New H	igh Qua	ality Schools	6		TABLE	1	2	3	4	5
						Likelihood	Significant	Major	Moderate	Minor	Insignificant
JOB NO:	SC 126	6 (Estel	la Primary S	School)	A	Very Likely	High	High	High	Medium	Medium
					D C	Dossible	High	Medium	Medium	Medium	Low
ASSESSED BY:	James	Fuller			D	Remotely Possible	Medium	Medium	Medium	Low	Low
ASSESSMENT DATE:	7-May	-20			Е	Very Unlikely	Medium	Medium	Low	Low	Low
	DICK		COMENT	CONTROL 5 (to be actablished in the following order of	NA	Not applicable	NA 2nd = Modiu	NA m Laval Diak	NA	NA NA	NA
	RISP	ASSE	SSIMENT	CONTROLS (to be established in the following order of	priorit	y ist=nigh Level Risks	; zna = meaiu	III Level Kisk	s; sru = Low	Level Risks)	
HAZARD (Include additional project specific hazards as required)	L	С	Class	Legislation, Standards & Codes of Practice			Enter Details	of Specific C	ontrols Requi	red	
Manual handling injuries	E	4	Low	WHS Regulation 2017 Part 4.2 Hazardous Manual Tasks	Team lifts for heavy items. Mechanical lifts wherever possible						
Back injuries	Е	3	Low	WHS Plan	Bend knees, keep a straight back, don't twist						
Block and tackle use	NA	4	NA	NCOP for Manual Tasks 2007 National Standard for Manual Tasks - 2007 NCOP for the Prevention of Musculoskeletal Disorders Caused From Performing Manual Tasks	Use of block, tackle and slings is to be used in accordance with SWMS. Slings are to w solid structure only. Slings to be wrapped by dogman and riggers only				apped around a		
				NSW Manual Handling Resource 2004							
				SafeWork Code of Practice: Hazardous Manual Tasks							
Hot Works											
Sparks from welding, grinding or using oxy acetylene may cause a fire if flammable materials are in the area	С	4	Medium	AS 1674: Safety in welding and allied processes	A hot works permit must be obtained by the subcontractor All sources of ignition to be removed from the area prior to hot works occurring					removed from the	
Fire and injury to others from persons using angle grinders	А	4	Medium	hot works permit	Conduct all grinding away from flammable materials and other workers I the area. Be ware of direction of flying sparks				are of direction of		
Welders flash to other trades	В	4	Medium	WHS Plan	Weldi are wi	ng screens and warning thin a 10m radius of the	signage must l work area	be erected to	protect other tr	ades from wel	ders flash if others
				SafeWork NSW Code Of Practice: Welding Processes							
Hygiene (poor)					•						
Unhygienic facilities could result in workers becoming ill and contracting diseases	D	4	Low	SafeWork NSW Code Of Practice: Managing the work environment and facilities	A clea kept c	ner has been engaged b lean and rubbish bins er	by Hansen Yun nptied daily	cken to clean	amenities on a	a daily basis. A	Il amenities to be
Trades not putting rubbish and off cuts in bins provided creating trip hazards	D	4	Low	SafeWork NSW Code Of Practice: Managing the work environment and facilities	Impro	vement notices to be iss	ued to subcont	ractors who d	o not keep the	site neat and t	idy
Inadequate facilities for general site rubbish	D	4	Low	WHS Plan	Skip b	ins to be placed on site	at various loca	tions and char	nged over regu	ılarly	
Lifting Over Public/outside site					•						
Injury to pedestrians/ public	NA	4	NA	AS 1742.3-2009: Manual of uniform traffic control devices - Traffic control for works on roads WHS Plan Trafficl Management Plan Road Management Act 2004	No lifti place	ing of building materials and the subcontractor h	outside of the o as seeked appi	construction fe roval from the	ence unless tra HY Site Mana	ffic control and ger.	diversions are in
Manual Handling											
Back injuries/sprains and strains	с	3	Medium	HY Glove and clip policy	Team mater	lifts for heavy items. Me ial to be dropped off as c	chanical aids e close to the wo	eg. telehandler k area as pos	to be used wh sible to minimi	nerever possibl ise carrying dis	e. Building tance.
Cuts to hands	С	4	Medium	WHS Regulation 2017 Part 4.2 Hazardous Manual Tasks	Gloves to be worn for manual handling tasks as per Hansen Yuncken glove & c			ve & clip policy	/		
				SafeWork NSW Code Of Practice: Hazardous Manual Tasks							
				AS/NZS 2161 Occupational protective gloves							
				WHS Plan							

PROJECT HSE RISK ASSESSMENT

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RELEVANT PROCEDURE:	Project	HSE F	(ISK Assess	ment		RISK ASSESSMENT TABLE	1	2	Consequen	ice 4	5
PROJECT:	New H	igh Qua	ality School	S		Likelihood	Significant	2 Maior	Moderate	4 Minor	Insignificant
JOB NO:	SC 126	6 (Estel	la Primary	School)	A	Very Likely	High	High	High	Medium	Medium
ASSESSED BY:	James	Fuller			C	Possible	High	Medium	Medium	Medium	Low
ASSESSMENT DATE:	7-Mav	-20			E	Very Unlikely	Medium Medium	Medium Medium	Low	Low Low	Low
	RISK	ASSE	SSMENT	CONTROLS (to be established in the following order of	NA prior	Not applicable	NA s; 2nd = Mediu	NA .m Level Risk	NA s; 3rd = Low I	NA Level Risks)	NA
HAZARD (Include additional project specific hazards as required)	L	с	Class	Legislation. Standards & Codes of Practice			Enter Details	of Specific C	ontrols Requi	red	
Mobile Plant								•			
Mobile plant could strike a pedestrian worker on site	с	1	High	NWHSC 1010: National Standard for Plant	All trades are warned of moving plant at the site induction. High vis vests are to be worn at all times workers on site must keep well clear of plant on site and gain the operators attention prior to approa any plant. Only workers involved with the task are to be with in the work areas of plant. People work within the work area of plant must be visible to the operator at all times.					n at all times. All or to approaching People working	
Mobile plant could crash into a structure or open trench	D	3	Medium	WHS Plan	Traiı issu	ned, experienced, qualifie ed to HY for any plant wh	d workers to op ich does not re	perate plant on quire a legislat	ly. Plant opera ed ticket.	tor competenc	cy statement to be
Pedestrians/ workers being struck by mobile plant	С	1	High	AS 2294 Earth moving machinery - Protective Structures AS 4602 High Visibility Safety Garments	A co area pede subc area Vehi beer work subc equi side Pede the c appr oper	probination of controls mu- a, erect signage, use a spe- setrians clear of areas wh contractors using moving i from being struck by the icles/ trucks must turn the n told at the site induction kers who are involved with contractors to train their w ipment. Access routes for of access routes wheneve estrians that need to appr opperators attention by ma roach the machine until th roach. Spotters working w rator.	st be put into pl otter etc. Bunte ere there are h plant must hav plant. All plant tir flashing light to be aware of n the task are ti orokers through plant and vehi rer possible. Pl oach moving p oach moving p e operator has rith machines n	ace and detail d off pedestria igh movement e a SWMS wh must have a fi s on. There is moving plant to b be in the vici b be in the vici pre-start meet cles are to be a nat operators a lant are to do a stopped movin nust always sta	ed in sub contr n pathways ha s of vehicles/t ich details how ashing light, h a 10km/h spee on site and kee nity of the plan tings on how to maintained. Pe are to keep rev so from the froc ontact with the ng the machine and in an area	actors SWMS we been erect rucks and plar y to protect oth orn and revers d limit on site. p clear whene t. HY have ins approach mo destrians are ersing to a min nt of the mach operator. No e and signallec where they are	eg. barricade the ed on site to keep tt. All ter workers in the ing beeper. All workers have ever possible. Only tructed all ving plant and to walk along the himum. hine and are to gain person is to a that it is safe to a visible to the
Plant roll over on unstable ground	Е	3	Low	SafeWork NSW Code of Practice - Managing the Risks of Plant in the Workplace	Plant operator and HY site staff must assess conditions and determine if the ground is stable for the plant has out riggers then they must be fully extended. Subcontractors must obtain a 'plant see permit' from Hansen Yuncken prior to setting up any plant with outriggers eg. concrete boom pur cranes, frannas etc				stable for plant. If a 'plant setup boom pumps,		
Possibility of scissor lift being driven off edge of concrete slab resulting in scissor lift tipping over	NA	2	NA	SafeWork NSW Code of Practice - Managing the Risks of Plant in the Workplace	A tin of a	nber bump stop must be i slab	nstalled to the	edge of the sla	b whenever E	WP's are usec	I close to the edge
Crushing Injury from scissor or boom lift	NA	1	High	SafeWork NSW Code of Practice - Managing the Risks of Plant in the Workplace	Provide onsite training, Instruction and supervision Pre starts and Toolbox talks to be done as consultation with person's affected by the controls outline. Only person's with EWP ticket to operate Scissor Lift No Person to work isolated or alone on an EWP 2 person team as a minimum , whilst using a EWP, 1 person to spot and also assist with task All Personnel to be trained by a qualified person from the hire company on the specific EWP, as not EWP's are the same. Prior to use, completion of a logbook check is to be done All faults are to be immediately reported to supervisor and machine is to be tagged out Personnel using EWP must be aware of the emergency response protocol of that specific EWP Person operating scissor lift must be able to communicate clearly to spotter/work partner(team)				ntrols outlined. h task EWP, as not all fic EWP rr(team)		
Needle stick Injury											
Injured person could contract a disease	Е	2	Medium	SafeWork NSW Code Of Practice: Control of work related exposure to Hepatitis and HIV (blood borne) viruses	Wor	kers injured by needle sti	ck to be sent to	the nearest m	edical centre		
Workers unaware of what to if a needle is found	E	4	Low	WHS Plan	Wor HY ध	kers to be told at site indu staff immediately	uction that if the	y find a needle	e on site they a	re not to touch	i it and report it to
Inadequate disposal facilities for needles found on site	Е	4	Low	SafeWork NSW NSW: Code Of Practice: Managing the work environment and facilities	Sha	rps clean up kit to be kept	t in site office at	t all times			
Noise					I						
Hearing damage from general construction noise eg. power tool usage, jack hammering etc.	в	3	Medium	AS/ANZ 1269: Occupational Noise Management Acoustic Dynamics Construction Noise and Virbation Management Plan	Hea othe avai	ring protection to be worn r trades of excessive nois lable for use on site safet	when using po se. A noise mor y walks	ower tools or lo nitor is availab	ud equipment. le in the site of	Signage to b fice. The noise	e erected to warn e monitor is
Disruption to client and neighbours	D	5	Low	NWHSC 1007 - 2000 National Standard for Occupational Noise NWHSC 2009 - 2004 Noise Mgt & Protection of Hearing at Work	Noti cont	ce of disruption to be issu tract only	ed to client if re	equired. Work	to be conducte	d within appro	ved hours of DA
			-	AS/NZS 1269 Occupational noise management AS/NZS 1270 Acoustics - hearing protectors AS 2436 Guide to noise control on construction, maintenance & demolition sites							
				NSW Noise Management & Protection of Hearing at Work 1996							
				AS 2436: Guide to noise control on construction, maintenance & demolition							
				AS 2012: Acoustics – Measurement of Airborne Noise Emitted by Earthmoving Machinery & Agricultural Tractors							
		ļ	<u></u>	WHS Plan							
				AS/NZS 1270: Acoustics - hearing protectors							
Overhead Power lines	-										
				WHS Plan							
				SafeWork NSW Code of Practice: Work near overhead power lines 2006							

PROJECT HSE RISK ASSESSMENT

RELEVANT PROCEDURE:	Projec	t HSE F	Risk Assess	ment		RISK ASSESSMENT			Consequer	ice	
PROJECT:	New H	igh Qua	ality School	5		Likelihood	1 Significant	2 Major	3 Moderate	4 Minor	5 Insignificant
JOB NO:	SC 12	6 (Estel	lla Primary S	School)	A B	Very Likely Likely	High High	High High	High Medium	Medium Medium	Medium Medium
ASSESSED BY:	James	Fuller			C D	Possible Remotely Possible	High Medium	Medium Medium	Medium Medium	Medium Low	Low
ASSESSMENT DATE:	7-May	-20			E	Very Unlikely	Medium	Medium	Low	Low	Low
	RISH	ASSE	SSMENT	CONTROLS (to be established in the following order of	prior	ity 1st=High Level Risk	s; 2nd = Mediu	Im Level Risk	s; 3rd = Low	Level Risks)	NA .
HAZARD (Include additional project specific hazards as required)	L	с	Class	Legislation, Standards & Codes of Practice			Enter Details	of Specific C	ontrols Requi	red	
Plant & Equipment		<u> </u>	1		1						
Plant failure may cause serious injury to workers	D	3	Medium	NWHSC 1010: National Standard for Plant	HY p evid Plan supe	plant verification reports to ence machine is safe for t operators must conduct ervisors	o be completed operation. Plan t pre-start safet	for all plant. N t risk assessn y inspections o	Maintenance re nents to be con of their machine	cords to be su ducted for all I e daily and rep	bmitted to HY as high risk work. ort faults to their
Poorly maintained ladders and scaffolding failing/ collapsing	D	3	Medium	AS/NZS 1892: Portable Ladders	No t ladd ladd mon	imber ladder on HY sites. ers. All workers are awar ers must be tied off at the thly or after adverse wea	. Ladders must e of the HY lade e top landing. Se ther	be in good co der policy pos caffolding to b	ndition. Electric ted on the wall e visually chec	ians must use in the lunch sh ked daily and f	fibre glass led. Extension full inspection
Use of damaged ladders	D	3	Medium	AS 4576: Guidelines for scaffolding	Lado	ders to be checked for da	mage weekly o	n the site safe	ty walk		
Lifting gear failure	D	1	Medium	AS/NZS 4994: Temporary edge protection	All li lifting Han regis	fting gear: soft slings, liftir g gear is to be withdrawn sne Yuncken Sling verific ster.	ng chains must from service. L ation checklist	be visually ch ifting gear reg to be complete	ecked daily pri- ister to be supped for soft sling	or to use for da blied to Hansn s if not capture	amage. Damaged e Yuncken. ed on lifting
Scaffold collapse/ fall from scaffold	NA	1	NA	AS/NZS 1891.1 2007 Industrial fall arrest systems - harnesses and ancillary equipment	Scat insp Mob 4m r with	fold handover certificate ected minimum monthly a ile scaffolds to be built as must be erected by a licen scaffold is to be reported	to be issued to and after heavy per manufactunced scaffolder to the Site Mar	HY prior to an rain. Scaffold irers instructio . No person is nager immedia	yone accessin will also be ins ns. Scaffold wh to alter the sca ately.	g the scaffold. pected on weather a person affold what so	Scaffold to be ekly safety walks. can fall more than ever. Any issues
Multiple mobile plant interaction/ contact	D	1	Medium	WHS Plan	Plan	t operators must commu	nicate by way o	f 2 way radios	, eye contact a	and spotters	
Vehicle and plant exhaust fumes	D	4	Low	HY ladder policy	Use vent	of electric scissor lifts ins ilated areas	side buildings o	nly. All other d	iesel powered	machines are	used in open well
Post Tensioning	<u> </u>										
					Alls	subcontractors to obtain r	permit to cut co	ncrete/ core. T	his permit will	detail location	of PT cables if
Accidental drilling or cutting into P1 cable	D	2	Medium		appl	icable					
Plant & Equipment Washout	r		1		1						
Water from cleaning plant and equipment creating a muddy/ slippery surface	D	4	Low	Environmental Protection Act 1994	Was wate	hout area to be determin r to flow over pedestrian	ed on a daily ba foot paths	asis as the site	e changes. The	wash out area	a must not allow
Muddy and contaminated water entering stormwater system	D	4	Low	HY environmental management plan	Sedi	ment control to be placed	d around the wa	shout area			
Pressurised Gas Mains	•										
Excavator buckets striking UNDERGROUND GAS LINES	Е	1	Medium	SafeWork NSW Code Of Practice: Excavation Work	A pe plan usec haza	ermit to dig system is in pl s. Pot holing must occur d when digging in the vici ard on all subcontractor S	lace on this site when working a nity of gas lines WMS involving	. All known ex round existing . Striking exis excavation w	isting services g services. Only ting undergrou orks	have been ma y toothless buo nd services ha	arked up on the site kets are to be is been listed as a
				WHS Plan							
Scaffold											
Fall from heights over 2m	С	2	Medium	WHS Regulation 2017: Part 3.1 Managing risks to health and safety							
Fall from heights whilst forming up and pouring concrete	С	2	Medium	AS4576: Guidelines for scaffolding							
Insufficient egress from building in the event of an emergency	В	5	Medium	WHS Plan							
Inadequate development of scaffold plan	D	5	Low								
Possible scaffold overload resulting in scaffold collapse - materials and workers	С	4	Medium								
Scaffold sinking into soft ground compromising structural integrity	D	3	Medium								
Sediment and erosion control	-										
Mud, dirt and sediment polluting stormwater systems	С	4	Medium	Environmental Protection Act 1994	Zoic	Construction Soil and W	ater Manageme	ent Plan			
Mud, dirt and sediment polluting stormwater systems	с	4	Medium	Environmental Management Plan	Silt cove soci HY u	barriers to be installed a ered in silt control. All v ks to be placed in front using the Site HSE insp	around low are ehicles tyres r of stormwater ection report	eas of site to nust be wash drains in gut	catch all rain f ed clean of m ters. Inspectio	all. All storm ud prior to lea ns to be carr	water pits to be iving site. Silt led out weekly by

PROJECT HSE RISK ASSESSMENT

				(11)							
RELEVANT PROCEDURE:	Project	HSE F	Risk Assess	ment	RI	SK ASSESSMENT			Consequen	се	
PROJECT:	New H	iah Qua	ality Schools			TABLE	1	2	3	4	5
		5	· ·			Likelihood	Significant	Major	Moderate	Minor	Insignificant
JOB NO:	SC 126	6 (Estel	la Primary S	School)	A B	Very Likely Likely	High High	High High	High Medium	Medium Medium	Medium Medium
ASSESSED BY:	James	Fuller			C D	Possible Remotely Possible	High Medium	Medium Medium	Medium Medium	Medium Low	Low Low
ASSESSMENT DATE:	7-May∙	-20			E NA	Very Unlikely Not applicable	Medium NA	Medium NA	Low NA	Low NA	Low
	RISK	ASSE	SSMENT	CONTROLS (to be established in the following order of	oriority	/ 1st=High Level Risks	s; 2nd = Mediu	ım Level Risk	s; 3rd = Low I	_evel Risks)	
HAZARD (Include additional project specific hazards as required)	L	С	Class	Legislation, Standards & Codes of Practice			Enter Details	of Specific C	ontrols Requi	ed	
Site Lighting											
Sun glare restricting plant operators visibility	С	4	Medium	WHS Regulation 2017	Sungla times c	sses to be worn by plan of the day to stop the su	nt operators as n becoming ar	required. Cer issue.	tain tasks may	also be condu	cted at different
Lighting (Poor)	NA	5	NA	SafeWork NSW Code Of Practice: Managing the work Environment and Facilities	Ensure that task area has adequate natural light and if natural light is not adequate provide artificial lighting					ide artificial	
Slips/Trips											
Workers slipping or tripping on rough/ uneven/ muddy/ slippery ground	С	3	Medium	AS/NZS 2210 Occupational protective footwear WHS Plan	Pedestrian pathways to be kept clear of rubbish and material. Safe access around site all times. Gravel/ crusher dust to be placed on slipper//muddy surfaces. Blading back ground conditions to be conducted as required. Bunted off pedestrian pathways are in access routes throughout site for safe pedestrian access, this way people can use the branch out to their specific work area with minimal risk of slipping over in muddy condi				s around site t Blading back o nways are inst can use the p muddy conditio	o be maintained at f ruts and muddy alled around main iathway then ons	
Structural Support											
Masonry walls collapsing in high winds	D	1	Medium	National Code of Practice for Precast, Tilt Up and Concrete Elements in Building Construction 2008	Masonry walls must be adequately braced with timbers every 2m until core filled						
Formwork collapse	D	1	Medium	AS 3850:Tilt Up Concrete Construction	Engine	ers sign off required to	pouring of any	concrete			
Precast concrete panel collapse if structural steel is inadequately braced	D	1	Medium	NSW Code of Practice: Formwork 1998	Structu	Iral steel must be signe	d off by engine	er prior to inst	allation of prec	ast concrete p	anels
Structural steel collapse	D	1	Medium	AS 4991: Lifting devices	Structu Hanse	uctural steel must be erected by qualified dogmen and riggers. Subcontractor must submit ITP's to nsen Yuncken. Hansen Yuncken to complete QC Compliance audit report: Structural Steel checkl					ubmit ITP's to Steel checklist
Synthetic fibres											
Unsafe handling of roof insulation	D	4	Low	SafeWork NSW Code of Practice: Safe use of synthetic mineral fibres	Install I	roof insulation as per Sa	afety Data She	et and SWMS			
Temperature Extremes											
Dehydration	E	3	Low		Worke	rs are encouraged to dr	ink plenty of w	ater. Water bu	bbler available	at site lunch s	heds
Sunburn	С	3	Medium		Worke kept in	rs must wear are shirt o the site office	on site. Singlets	are not allow	ed. Sun cream	is available to	everyone and is
Heat stress	Е	3	Low		Worke require	rs are encouraged to we	ork in the shad	e wherever po	ossible and take	e regular break	s whenever
Tilt –up or Precast Concrete Work											
Structural steel support collapse	С	1	High	AS 3850:Tilt Up Concrete Construction	HY pre review	ecast panel installation c ed and approved by HY	hecklist must t prior to install	be completed ation of precas	and all relevan st panels	t documentatio	on submitted,
Injury to other workers/ trades	В	1	High	AS 4991: Lifting devices	Precas with S\ flaggin	t panel installation mus WMS . The work area a g or red/white tape. Spo	t be closely mo round the cran otters must be r	onitored by HY e must be clea used to	' Management arly closed off t	and conducted o other trades	l in accordance with bunting,
Plant failure	С	1	High	National Code of Practice for Precast, Tilt Up and Concrete Elements in Building Construction 2008	All mai	ntenance records and p	blant safety ver	ification repor	ts must maintai	ned and kept	up to date
Failure of lifting points on precast panels	С	1	High	AS 2550: Cranes, hoists & winches - Safe Use	Subcoi engine	ntractor ITP's must be s ered lifting points used	submitted and r to install preca	eviewed by H st. Lifting gear	Y prior to erect register in plac	ion of precast ce	panels ,
Concrete may not have cured to specified strength	С	2	Medium		HY pre review	ecast panel installation of ed and approved by HY	hecklist must t / prior to install	be completed ation of precas	and all relevan st panels	t documentatio	on submitted,
Crane roll over on unstable ground	В	1	High	AS 1418.1: Cranes, hoists and winches – General Requirements	Plant s	etup permit must be ob	tained by subc	ontractor prior	to standing cra	ane	
Exceed SWL of crane	В	2	High	AS 2321: Short link chain for lifting purposes	Work t	o SWL chart for crane a	at all times				
Lifting gear failure	A	3	High	National Code of Practice for Precast, Tilt Up and Concrete Elements in Building Construction 2008	Its in Riggers must inspect all lifting gear prior to use. Damaged lifting equipment must not be registers and certificates must be issued to HY prior to use.					used. Lifting gear	
Poor communication between crane operator and dogmen	С	3	Medium		Dogma from de	an and crane operator to ogman only.	o constantly co	mmunicate wi	th each other.	Crane operato	r to take directions

PROJECT HSE RISK ASSESSMENT

RELEVANT PROCEDURE:	Project	HSE R	lisk Assessi	ment	RISK ASSESSMENT Consequence							
PROJECT:	New H	igh Qua	lity Schools	Likelihood Significant Major Moderate Minor Insignificant								
JOB NO:	SC 126	6 (Estell	a Primary S	School)	A Very Likely B Likely	High High	High High	High Medium	Medium Medium	Medium Medium		
ASSESSED BY:	James	Fuller			C Possible D Remotely Possible	High M Medium M	Vedium Vedium	Medium Medium	Medium Low	Low Low		
ASSESSMENT DATE:	7-May	-20			E Very Unlikely NA Not applicable	Medium M NA	<mark>Vledium</mark> NA	Low NA	Low NA	Low NA		
	RISK	ASSE	SSMENT	CONTROLS (to be established in the following order of	priority 1st=High Level Risks	; 2nd = Medium L	Level Risks	s; 3rd = Low L	evel Risks)			
HAZARD (Include additional project specific hazards as required)	L	С	Class	Legislation, Standards & Codes of Practice		Enter Details of S	Specific Co	ontrols Requir	ed			
Traffic Management												
Vehicles/ trucks speeding on site	В	3	Medium	AS 1742.3-2009: Manual of uniform traffic control devices - Traffic control for works on roads	10km/h speed limits signs are inductions for all drivers enteri	erected around sit ng site. Hazard or	te. Drivers i flashing lig	must give way hts must be tu	to pedestrians ned on	s. Delivery driver		
Vehicles parking and blocking access roads	В	4	Medium		Vehicles to be used for loading work purposes	g/unloading purpos	ses only an	d are to be par	ked off site if r	not required for		
Blind spots creating collisions between vehicles	E	3	Low		Warning signs to be erected a	t blind spots						
Pedestrians entering site being struck by trucks and vehicles	A	2	High		A fenced off pathway from the street to the site office is in place to keep all pedestrians off the road used by plant and trucks. Pedestrians and vehicles have seperate entry/ exit by way of points					off the road used		
Tree lopping												
Tree lopping	А	4	Medium		Area to be delineated and HR	CW for falling from	n heights an	d Plant and Ed	quipment			
Vehicle & plant exhaust fumes	L				1							
Workers overcome by exhaust fumes from plant	Е	1	Medium	SafeWork NSW Code of Practice: Managing risks of hazardous chemicals in the workplace	Plant to be operated in open a buildings only. No petrol/ diese	reas with good ver l powered equipm	ntilation onl nent used in	y. Electric scis Iside buildings	sor lifts to be u	used inside		
Ventilation (poor)												
				SafeWork NSW Code of Practice: Managing risks of hazardous chemicals in								
Workers overcome by fumes when using chemicals	E	1	Medium	the workplace AS/NZS 1715 Selection, use and maintenance of respiratory protective devices AS/NZS 1716 Respiratory protective devices	SDS to be read and understood by all workers prior to work commencing							
Violence												
Workers arguing and fighting	D	4	Low	Violence in the workplace guide 2002	Zero tolerance for fighting on s	ite - instant dismis	ssal					
Waste Management/ Littering												
Inadequate bins on site to dispose of rubbish	Е	3	Low	WHS Act/ Regulation 2017 Zoic Construction Waste management Plan	Skip bins to be placed at vario to be placed at the front of all I	us locations aroun unch sheds	nd site whic	h are easy to a	ccess. Bins fo	or food scraps are		
Bins attracting rodents	D	4	Low	Zoic Construction Waste management Plan	Food scrap bins to be bagged	and changed regu	ularly					
Having to walk long distances to dispose of rubbish	D	4	Low		Numerous skip bins to be on site close to all work areas							
Workers littering the site with rubbish and off cuts instead of disposing of rubbish in bins provided	D	4	Low		Suspension/ improvement notices to be issued to subcontractors who leave the site untidy							
Water Contaminants												
Clean water around site becoming contaminated with mud	Е	4	Low	Zoic Soil and Water management Plan	Clean rain water is diverted ar	ound site by way o	of swales ar	nd sediment co	ontrol			
Working at Height above 2m				SofeWark NSW Code of Brastice: Managing the risk of falls in the workslope	"Danger workers above" signa	ge to be erected.	If there are	other trades in	the immediat	a area then		
Workers dropping tools and material onto persons below	С	1	High	NSW Code of practice: Safe work on roofs part 1	red/white tape will be erected	o create an exclus	sion zone.					
Scaffolders falling from heights during erection process	В	1	High	WHS Regulation 2017 Part 4.4 Falls	Install handrail, mid-rails and to using the approved control me	pe-boards where s thods such as the	scaffolders 1m rule or	are working fro Advanced gua	om deck below ardrail systems	while building		
Perimeter scaffold collapse	E	1	Medium	AS 4576: 1995 Guidelines for scaffolding	Check and confirm the suitability of the subgrade prior to basing out the scaffolding Confirm areas where trenches have been laid Visually check ground for stability, use sole boards where required or get others to compact are Do not allow scaffold to exceed 4.0 m in height without being tied to the structure and braced or to an approved design Do not allow standards to be erected and left unsupported Each standard will be braced in a minimum of two directions. A brace is defined as a ledger or to Scaffolds from which a person can fall more than 4 metres must be constructed and certified by scaffolder. Secure materials at height & isolate area below where there is risk of falling objects causing inju persons below. No scaffold alterations are to be undertaken except by licensed scaffolder. Close off access to incomplete scaffolds, for example, install tube barricades and warning signs Incomplete"				bact areas aced or stabilised dger or transom tified by a licensed sing injury to ng signs "Scaffold Scafftag.			
Workers falling from roof	A	1	High	HY HSE procedure 9.46 Working at height	Roof access permit must be obtained by the workers prior to accessing the roof. Perimeter scaffold or handrail must be in place for fall protection. Safety mesh must be installed correctly as per SafeWork NSW Code Of Practice: Safe Work On Roofs: Part 1					ter scaffold or er SafeWork		
Mobile scaffold collapse	В	1	High	SafeWork NSW Code of Practice: Managing the risk of falls at workplaces	s							
Workers falling from perimeter scaffold	NA	1	NA	AS 1577 Scaffold Planks	Perimeter scaffolds to be inspected weekly using the site HSE inspection report. All workers are advise at site induction strictly not to alter any scaffolding				kers are advised			
Fall from ladder	С	3	Medium	AS/NZS 4488 Industrial rope access systems - Selection, use & maintenance	enance Ladders must be used in accordance with HY ladder policy. EWP's, mobile scaffold and platform lade take first preference over standard A frame ladders.				l platform ladders			
Fall from EWP/ boom lift	В	1	High	AS/NZS 1891 Industrial fall arrest systems & devices AS/NZS 4994 Temporary edge protection	WP ticket required to operate boom lift >11m . EWPAA yellow car required for EWP <11m. Ground conditions to be checked prior to operation. Harnesses and lanyards must be maintained and kept in condition				m. Ground d and kept in good			
Fall from scissor lift	в	1	High	NWHSC - Prevention of Falls in General Construction 2008	Timber or angle to be installed to the edge of concrete slabs to stop scissor lifts accidently being driv edge of slab. Scissor lift operators must have a EWPAA yellow card or WP type ticket. Stabilizers ar sole plates must be used for rough terrain scissors used on soft ground				tly being driven off Stabilizers and			
Inadequately installed roof perimeter handrail	В	1	High	NSW Identification Tool for Aluminium Mobile Scaffolds 2008	Installation certificate must be available on site so it can be c specifications.	issued to HY prior onfirmed the hand	⁻ to any wor Irail has bee	ker accessing en installed as	roof. Installation per the manuf	on manual to be acturers		

PROJECT HSE RISK ASSESSMENT

				······································	,						
RELEVANT PROCEDURE:	Project	HSE F	lisk Assess	ment	R	ISK ASSESSMENT			Consequer	ice	
PROJECT:	New Hi	igh Qua	lity Schools	3		TABLE	1	2	3	4	5
		<u> </u>				Likelihood	Significant	Major	Moderate	Minor	Insignificant
JOB NO:	SC 126	6 (Estel	a Primary S	School)	A	Very Likely	High	High	High	Medium	Medium
					в	Likely	High	High	Modium	Medium	
ASSESSED BY:	James	Fuller			D	Remotely Possible	Medium	Medium	Medium	Low	Low
ASSESSMENT DATE:	7-May-	-20			E	Very Unlikely	Medium NA	Medium NA	Low	Low	Low
	RISK		SSMENT	CONTROLS (to be established in the following order of	priorit	ty 1st=High Level Risks	s; 2nd = Mediu	ım Level Risk	s; 3rd = Low	Level Risks)	101
HAZARD (Include additional project specific hazards as required)	L	С	Class	Legislation, Standards & Codes of Practice			Enter Details	of Specific C	ontrols Requi	red	
Potential Emergencies - preparation for and response to potential emergency	v events	asses	sed high o	r medium risk to be defined in the Emergency Response Plan							
Arrested fall in a harness	в	2	High	HY Procedure for Emergency Response	All subcontractors using harnesses in boom lifts must have a rescue procedure as p Generally rescue will be by using the ground controls at the base of the machine or boom lift to retrieve the suspended casualty.					edure as part nachine or by u	of their SWMS. sing a second
Bomb threat	Е	4	Low	HY Procedure for Emergency Response	Procedure for bomb threats is part of the HY Emergency Response Plan						
Confined Space Rescue	Е	3	Low	HY Procedure for Emergency Response	Procedure for confined space rescue is part of the HY Emergency Response Plan						
Cyclone	NA			HY Procedure for Emergency Response	N/A						
Drowning	Е	5	Low	HY Procedure for Emergency Response	Trenches are to be de-watered prior to any person working in around the area.						
Electric shock	D	1	Medium	HY Procedure for Defibrillators	Electric shock procedure detailed in the HY Emergency response plan						
Emergency services unavailability				HY Procedure for Emergency Response	N/A						
Fire	D	2	Medium	AS 3745 Emergency control organisation and procedures for buildings, structures and workplaces AS/NZS 1221 Fire hose reels AS/NZS 1841 Portable fire extinguishers AS/NZS 1850 Portable fire extinguishers - Classification, rating and performance testing AS 1851 Maintenance of fire protection systems & equipment AS 2375 Guide to the selection, care & use of clothing for protection against heat & fire AS 2444 Portable fire extinguishers and blankets - Selection & location	Fire procedure detailed in the HY emergency response plan						
First Aid (inadequate resources)	Е	3	Low	HY Procedure for Emergency Response	First a sun ci asses	aid room to be set up wit ream, eye wash and exa ssment)	h portable and amination coucl	fixed first type n as per Code	A first aid kits of Practice: Fi	, stretcher, defi rst Aid . (Refer	brillator, ice packs, to first aid
Gas line contact or damage	D	2	Medium	HY Procedure for Emergency Response	Jeme	na contact details are pa	art of the HY Er	nergency resp	oonse plan		
Major Fuel/Chemical Spill	Е	3	Low	HY Procedure for Emergency Response	Fuel/	Chemical spill is part of	the HY emerge	ncy response	plan		
Medical Emergency	D	3	Medium	HY Procedure for Emergency Response	Medic	cal emergency is part of	the HY emerge	ncy response	plan		
Overhead power line contact or arcing	В	3	Medium	HY Procedure for Emergency Response	Contact with overhead power lines is part of the HY emergency response plan						
Precast Panel Collapse	D	1	Medium	HY Procedure for Emergency Response	Precast panel collapse is part of the HY emergency response plan						
Structural failure/collapse	D	1	Medium	HY Procedure for Emergency Response	Structural collapse is part of the HY emergency response plan						
Trench collapse	D	1	Medium	HY Procedure for Emergency Response	Trenc	h collapse is part of the	HY emergency	response pla	n		



A.5 Construction Traffic and Pedestrian Management Sub-plan

asongroup

Prepared for HANSEN YUNCKEN PTY LTD NSW DEPARTMENT OF EDUCATION

Construction Traffic and Pedestrian Management Plan State Significant Development 9494 (Main Works)

Lot 1 in DP 1253855 New Estella Road Public School, Wagga Wagga

Ref: P1047r03v03 19/06/2020

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Document Control

Project No:	P1049
Project:	State Significant Development 9494 (Main Works) Lot 1 in DP 1253855 Estella Road, Estella
Client:	Hansen Yuncken
File Reference:	P1049r03v03 SSD CTPMP New Estella Road Public School, Wagga Wagga

Revision History

Revision	Date	Details	Author	Approved by
-	9/10/2019	Draft	D Budai	
1	22/10/2019	Issue I	T. Lewis	D. Budai
2	7/5/2020	Issue II	J. Laidler	D. Budai
3	19/06/2020	Issue III	J. Laidler	J. Laidler

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Appendices

Appendix A:	Driver Code of Conduct Proforma
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- Appendix B: Traffic Control Plans
- Appendix C: Swept Path Analysis
- Appendix D: Curriculum Vitaes
- Appendix E: Evidence of Consultation

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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 Plan (CTPMP) for the main works of the New Estella Road Public School, Wagga Wagga (the School), located in Estella Road, Estella (the Site). This CTPMP has been prepared to support the State Significant Development Application and demonstrates the proposed management of the impacts in relation to construction traffic addressing the following:

- a) assessment of cumulative impacts associated with other construction activities (if any)
- b) an assessment of road safety at key intersection and locations subject to heavy vehicle construction traffic movements and high pedestrian activity
- c) details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process
- d) details of anticipated peak hour and daily construction vehicle movements to and from the site
- e) details of on-site car parking and access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle and
- f) details of temporary cycling and pedestrian access during construction

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

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

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



1.2 Statutory Requirements

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

Condition	Condition Requirements	Document Reference
	Management Plans required under this consent must be prepared in accordance with	
	relevant guidelines, and include:	
	a) detailed baseline data;	Section 3.1
	b) details of	
	 i) the relevant statutory requirements (including any relevant approval, license or lease conditions); 	Section 1.2
	ii) any relevant limits or performance measures and criteria; and	Section 5
	iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	
	c) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	
	d) a program to monitor and report on the:	
B11	i) impacts and environmental performance of the development;	Section 6, Appendix A
	ii) effectiveness of the management measures set out pursuant to paragraph (c) above;	
	e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	
	f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Appendix A
	 g) a protocol for managing and reporting any: i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); 	
	ii) complaint;	
	iii) failure to comply with statutory requirements; and	
	h) a protocol for periodic review of the plan and any updates in response to incidents or matters of non-compliance	
B14	The Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) must be prepared to achieve the objective of ensuring safety and efficiency of the road network and address, but not limited to, the following;	
	a) be prepared by a suitably qualified and experienced person(s);	Appendix D
	b) be prepared in consultation with Council;	Section 1.3
	c) detail the measures that are to be implemented to ensure road safety and network efficiency during construction in consideration of potential impacts on general traffic, cyclists and pedestrians and bus services; and	Section 3
	d) detail heavy vehicle routes, access and parking arrangements	Section 2.43.4


B16	 A Driver Code of Conduct must be prepared and communicated by the Applicant to heavy vehicle drivers and must address the following: a) minimise the impacts of earthworks and construction on the local and regional road network b) minimise conflicts with other road users c) minimise road traffic noise; and d) ensure truck drivers use specified routes 	Section 3.3 Appendix A
B30	Prior to the commencement of construction, compliance with the following requirements must be submitted to the Certifier:	
	a) During both construction and operation, all vehicles must enter and leave the Site in a forward direction	Section 2.4
	c) the swept path analysis of the longest construction 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 AS2890.2; and	Appendix C
	d) the safety of vehicles and pedestrians accessing adjoining properties, where shared vehicle and pedestrian access occurs, is to be addressed for both construction and operation	Section 3

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 CTPMP, including meetings, workshops and site inspections held in Wagga Wagga on 26/11/19, 13/01/20 and 28/01/20.

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 1 in DP 1253855, with a street address of Estella Road, Estella. The Site has an area of approximately 3 hectares and is currently zoned SP2 – Infrastructure: Educational Establishment. The Site is located at the southern boundary of Charles Sturt University (CSU), on Estella Road, Estella (Wagga Wagga). It is bounded to the north and west by CSU, to the east by recreational facilities—currently on CSU land, but soon to be transferred to Wagga Wagga City Council ownership—and to the south by the residential estates of Estella.



1.5 Road Hierarchy

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

- Estella Road: a collector road that currently runs along the southern boundary of the Site, generally east-west between Boorooma Street and Pine Gully Road. In the vicinity of the Site, the unmarked, 6.5m average width pavement provides one lane in each direction, as well unsealed shoulders suitable for parking on both sides of the road, and has a posted speed limit of 70km/h. A shared path is provided on the southern side of Estella Road between Boorooma Street and Gunn Drive,
- Boorooma Street: A sub-arterial road that runs generally north-south to the east of the Site and intersects with Estella Road. It provides one traffic lane in each direction for two-way flow, as well as indented parking lanes on both sides of the road as well as unsealed shoulders suitable for parking on both sides. The posted speed limit is 70km/h. A shared path is provided on the western side of Boorooma Street between Estella Road and Darnell Smith Drive.
- Pine Gully Road: A collector road that runs generally north-south to the west of the Site and intersects with Estella Road. It provides one traffic lane in each direction for two-way flow, as well as indented parking lanes on both sides of the road as well as unsealed shoulders suitable for parking on both sides. The posted speed limit is 70km/h.
- Local Roads: Given the internalisation of future School trips within the suburbs of Gobbagombalin, Estella and Boorooma, the majority of trips are expected to be generated to and from local roads intersecting with the key roads identified in sections above. The roads all have the same general profile, with two traffic lanes for two-way flow, adequate provision for parking or parking lanes on both sides of the road and local speed limits of 50km/h.

With regard for the above, the Site is suitably located to disperse construction traffic onto the arterial road network and direct access can be achieved via Boorooma Drive to Colin Knott Drive / Olympic Highway (A41).



Figure 1: Location Plan



2 Overview of Works

2.1 Staging and Duration of Works

Recognising the purpose of this CTPMP, the total duration of construction works is currently unknown. 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 Estella Road.
- 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 may vary depending on the phase of construction and associated activities and includes both construction and design personnel. 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 is proposed via the access in the location of future connections to Estella Road.

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



Figure 2: Construction Site Plan

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 appropriate for the proposed construction vehicle types and are to be utilised by all construction vehicles travelling to and from the site. They represent 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 future car park area so that movement to/from the site 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.

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Figure 3: Construction Vehicle Route



2.5 Fencing Requirements

Temporary exclusion fencing will be erected along the entire boundary of the site as shown in **Figure 2** 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 would be provided within Estella Road 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 Estella Road. All materials handling shall be undertaken off public roadways, however in the event materials handling is required from a public roadway, then prior approval shall be sought and obtained from the relevant Authorities. If required Works Zones may be 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 contractor movements to and from the Site. Contractors would be comprised of project managers, various trades and general construction employees. Over the full period, the peak workforce represents the worst-case scenario for vehicle movements during the morning or evening road network peak hour. The workforce arrival and departure periods (6:30-7:00AM and 6:00-6:30PM) represent the peak construction traffic periods.

It is expected that the Heavy Vehicles would generally arrive outside of peak periods, therefore not contribute to the estimated peak hour volumes.

Whilst the construction traffic volumes are yet to be determined (these volumes will be finalised post SSD Approval), it is expected that these volumes will not exceed to the proposed operational volumes. In this regard, it is noted that the school when operational, is expected to generate far less traffic.

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.

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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 crash history surrounding the site indicates that there is no crash history.

3.3 Driver Code of Conduct

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

3.4 Employee Parking

It is intended that all contractor and construction light vehicle parking utilise the designated construction access gate as shown in **Figure 2**. At no time shall parking be permitted on the public roadway.

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

The swept path of the longest construction vehicle expected to enter and exit the Site in association with the new work in accordance with AS 2890.2 is contained in **Appendix C** and shows that the vehicle encroaches over the kerb of the final design during entry and exit movement. Accordingly, a temporary, wider access should be provided to accommodate this vehicle during the phases that it will be used. Additionally, an on-site turning area shall be provided within the future car park area so that movement to/from the site is undertaken in a forward direction at all times.

3.5 Pedestrian and Cyclist Access

Some external construction activities will occur on Estella Road at some point during the build. Accordingly, the pedestrian footpath shall be managed by an accredited Traffic Controller during crossover works and deliveries to 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 as 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.

P1049r03v03



3.6 Public Transport

There is minimal existing public transport on surrounding roads. Two services travel between Estella Road and the Wagga City Centre. The frequency of these services is low (one per peak) 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.

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.

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 CTPMP shall be established by the lead contractor. It is not anticipated that the monitoring of the processes will have any material cost implications.

This CTPMP 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 CTPMP shall occur monthly, however a weekly review would be preferred.

- All and any reviews undertaken should be documented, however key considerations regarding the review of the CTPMP 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 CTPMP.

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 resident 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 locked at all times outside of construction hours.
 - Continual review of the CTPMP 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,
 - 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 Conclusions

Ason Group has been commissioned by Hansen Yuncken to examine the access, traffic and parking characteristics of the proposed New Estella Road Public School, Estella Road, Wagga Wagga. Further to our assessment Ason Group has concluded that:

- 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 can be 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.
- A detailed Construction Traffic Management Plan will be formalised prior to the commencement of the pipeline development construction for approval by the relevant Local and State Government authorities.

Appendix A

Driver Code of Conduct

- Driver Code of Conduct -

Drivers Code of Conduct

Safe Driving Policy for New Estella Road Public School.

Objectives of the Drivers Code of conduct

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

Code of Conduct

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

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

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

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

Driver Responsibilities

All Drivers on site must:

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

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

The Site Team Responsibilities

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

This will be achieved by undertaking the following:

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

Crash or incident Procedure

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

Environmental Procedures.

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

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

Appendix B

Traffic Control Plan(s)





Appendix C

Swept Path Analysis





Notes:	Document Info:	Project:	Date:
This drawing is provided for information purposes only and should not be used for construction.	Drawn by: JamesLaidler	1049	23-Apr-20
	File name: AG1049d01v02 Wagga Wagga.dwg	High Quality Classrooms (Wagga Wagga)	Scale@A3:
	Client:	DrawingTitle:	[scale]
	Hansen Yuncken Pty Ltd	Site Exit	Drawing Numbe
		Truck & Dog	AG02



Curriculum Vitae

Tim Lewis

Principal Traffic Engineer – Ason Group Email: <u>tim.lewis@asongroup.com.au</u> Phone: +61 2 9083 6601

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

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

QUALIFICATIONS & EDUCATION

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

KEY SKILLS

- Traffic Impact Assessments
- Master Planning & Feasibility Studies
- Sustainable Transport Planning
- Green Travel Plans & Transport Access Guides
- Local Area Traffic Management (LATM) Plans

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

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

PROFESSIONAL BACKGROUND

- 2016 Present Ason Group
 Principal Traffic Engineer
- 2006 2015 TRAFFIX
 Associate / Senior Engineer
- Transportation Modelling Analysis
- Car Park & Loading Dock Design & Assessment
- Construction & Occupancy Certification
- Construction Traffic Management Plans
- Project Management

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 proves through the Planning and Assessment Commission.

Tim Lewis

Principal Traffic Engineer – Ason Group Email: <u>tim.lewis@asongroup.com.au</u> Phone: +61 2 9083 6601

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

97 Waterloo Road, Macquarie Park

A commercial development comprising 120,000m² 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 al minimising impacts on local business and general activity in the area.

North Belmont Supermarket

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

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

Industrial

Light Horse Interchange Industrial Hub

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

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

Bungarribee Industrial Estate

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

Road Safety Audits

Austral and Riverstone RSAs

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

Woolworths Shopping Centre

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

Dan Budai

Senior Traffic Engineer – Ason Group

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

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

Past projects involved leading teams to ensure the planning, development, enhancement, delivery and

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

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

QUALIFICATIONS & EDUCATION

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

PROFESSIONAL BACKGROUND

Project Management

Transport Modelling

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

KEY SKILLS

- Traffic & Transport Planning
- Master Planning / Structure Planning

KEY PROJECTS & EXPERIENCE

Residential, Commercial & Mixed Use Developments

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

State Government

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

NSW that were capable of being used for major NSW Government investment decisions.

Local Government

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

James Laidler

Traffic Engineer – Ason Group

Email: james.laidler@asongroup.com.au

Phone: +61 2 9083 6601

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

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

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

Past projects have ranged in size from detailed design advice in relation to intersection upgrades, the preparation of reviews and due diligence advice, to the preparation of Traffic Management Plans, Traffic Control Plans, and Traffic Impact

QUALIFICATIONS & EDUCATION

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

KEY SKILLS

- Traffic Impact Assessments
- Master Planning & Feasibility Studies
- Sustainable Transport Planning (Green Travel Plans & Transport Access Guides)
- Transportation Modelling Analysis (SIDRA)

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.

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.

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
- Australian Standards (AS2890 & AS 1158) Compliance
- Construction Traffic Management Plans
- Traffic Control Plans (Rapid Plan)
- Streetlighting assessment and feasibility studies.

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.

asongroup

Appendix E

Evidence of Consultation



Post Approval Consultation Record

Identified Party to Consult:	Wagga Wagga City Council
Consultation type:	Email Correspondence
When is consultation required?	Prior to commencement
Why	 B14 – A Construction Traffic and Pedestrian Management Sub- Plan (CTPMSP) must be prepared to achieve the objective of ensuring safety and efficiency of the road network and address, but not be limited to, the following (b) be prepared in consultation with council
When was consultation scheduled/held	25 th March 2020
When was consultation held	25 th March 2020
Identify persons and positions who were involved	WWCC Representatives Cameron Collins Hansen Yuncken – Design Coordinator & Traffic Consultant Dan Budai (Ason Group)
Provide the details of the consultation	 Providing a draft of the Construction Traffic and Pedestrian Management Sub-Plan for review by council including: Evidence of preparation by a suitably qualified and experience person Detail of measure 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 Detail heavy vehicle routes, access and parking arrangements.
What specific matters were discussed?	 Discussion: Overview of works Assessment of Traffic and Transport impacts Traffic Controls Monitoring and Communication strategies Recommended mitigation measures Driver Code of Conduct Proforma Traffic Control Plans
What matters were resolved?	Document was reviewed by Council
What matters are unresolved?	Comment from Council "Our development engineer has reviewed the document and noted that the right-hand turn from Olympic Hwy into Boorooma Street is not possible. See suggested change in attached image. This will need to be amended"



Any remaining points of disagreement?	No
How will SINSW address matters not resolved?	Document was updated accordingly, issued back to council on 25 March 2020 and approved by council on 1 st April 2020.

Paul Nelson

From:	Collins, Cameron <collins.cameron@wagga.nsw.gov.au></collins.cameron@wagga.nsw.gov.au>
Sent:	Wednesday, 1 April 2020 9:04 PM
То:	Montanna Green
Cc:	Paul Nelson; Dylan Screpis; Paul Todhunter; Seghers, Keith
Subject:	RE: DA19/0624 - RE: Condition C4
Attachments:	Construction Traffic Management Plan.pdf

Thanks Montana

I can confirm that Council has reviewed the revised CTMP (attached) and can now issues its approval of the plan as per the requirements of Condition C4 of the consent.

If you require any further clarification, please let me know.

Cameron

Cameron Collins Development Assessment Coordinator

1300 292 442 **d** +61 2 6926 9577 | **m** 0407 931 873 **e** <u>Collins.Cameron@wagga.nsw.gov.au</u> <u>Wagga Wagga City Council</u> · 243 Baylis Street (PO Box 20) · Wagga Wagga NSW 2650



From: Montanna Green <MGreen@hansenyuncken.com.au>
Sent: Wednesday, 25 March 2020 4:41 PM
To: Collins, Cameron <Collins.Cameron@wagga.nsw.gov.au>
Cc: Paul Nelson <PNelson@hansenyuncken.com.au>; Dylan Screpis <DScrepis@hansenyuncken.com.au>; Paul Todhunter <PTodhunter@hansenyuncken.com.au>
Subject: RE: DA19/0624 - RE: Condition C4

Hi Cameron,

Please see updated CTMP attached.

Thanks,

Montanna Green BIM/VDC Design Coordinator



Hansen Yuncken Pty Ltd Sydney Corporate Park Building 1 South, L3, 75-85 O'Riordan Street This communication (which includes any attachments) is confidential. If you are not the intended recipient (i.e. you have received this communication in error) you must not use or disclose this communication and we ask that you delete it. Hansen Yuncken Pty Ltd does not guarantee that this communication is virus free.

From: Collins, Cameron <<u>Collins.Cameron@wagga.nsw.gov.au</u>>
Sent: Wednesday, 25 March 2020 3:32 PM
To: Montanna Green <<u>MGreen@hansenyuncken.com.au</u>>
Cc: Paul Nelson <<u>PNelson@hansenyuncken.com.au</u>>; Dylan Screpis <<u>DScrepis@hansenyuncken.com.au</u>>; Paul
Todhunter <<u>PTodhunter@hansenyuncken.com.au</u>>;
Subject: RE: DA19/0624 - RE: Condition C4

Hi Montana

Our development engineer has reviewed the document and noted that the right hand turn from Olympic Hwy into Boorooma Street is not possible. See suggested change in attached image. This will need to be amended.

Cameron

Cameron Collins Development Assessment Coordinator

1300 292 442 **d** +61 2 6926 9577 | **m** 0407 931 873 **e** <u>Collins.Cameron@wagga.nsw.gov.au</u> **Wagga Wagga City Council** · 243 Baylis Street (PO Box 20) · Wagga Wagga NSW 2650



From: Montanna Green <<u>MGreen@hansenyuncken.com.au</u>>
Sent: Wednesday, 25 March 2020 2:51 PM
To: City of Wagga Wagga <<u>Council@wagga.nsw.gov.au</u>>
Cc: Collins, Cameron <<u>Collins.Cameron@wagga.nsw.gov.au</u>>; Paul Nelson <<u>PNelson@hansenyuncken.com.au</u>>;
Dylan Screpis <<u>DScrepis@hansenyuncken.com.au</u>>; Paul Todhunter <<u>PTodhunter@hansenyuncken.com.au</u>>;
Subject: DA19/0624 - RE: Condition C4

Hi,

Please see attached required documentation for the following condition (C4) in relation to the development application **DA19/0624**:

The submitted Construction Traffic and Pedestrian Management Plan shall be amended to show Construction Vehicle Routes not using Farrer Road. The amended plan shall be submitted to and approved by Council prior to the commencement of any works on the site

NOTE: It is likely that Farrer Road will be unavailable for heavy vehicle use during the proposed construction phase of the development as a result of scheduled road improvement works.

Regards,

Montanna Green



Hansen Yuncken Pty Ltd Sydney Corporate Park Building 1 South, L3, 75-85 O'Riordan Street Alexandria NSW 2015 <u>mgreen@hansenyuncken.com.au</u> T 9770 7632 M 0448 985 926 hansenyuncken.com.au

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A.6 Construction Noise and Vibration Management Sub-plan



A1

NEW PUBLIC SCHOOL IN WAGGA WAGGA ASSESSMENT OF CONSTRUCTION NOISE AND VIBRATION Rp 003 r01 20191068 | 26 June 2020



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Project: NEW PUBLIC SCHOOL IN WAGGA WAGGA

Prepared for: Hansen Yuncken Level 3, Building 1 75-85 O'Riordan Street

Alexandria NSW 2015

- Attention: Marco Beretta
- Report No.: **Rp 003 r01 20191068**

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MARSHALL DAY

EXECUTIVE SUMMARY

Marshall Day Acoustics (MDA) has been engaged by Hansen Yuncken to conduct an assessment of noise and vibration from the development of Lot 1 in DP 1253855, Estella Rd, Estella NSW. The proposed development of Lot 1 is to provide a new public school (the Project).

This assessment considers Development Consent Conditions B15, C4, C7, and C12 to C17 of the Planning Secretary's Environmental Assessment Requirements Application Number: SSD 9494, issued 17 June 2020.

A suite of noise control recommendations to be adopted on site have been developed. With the inclusion of these recommendations noise levels from construction activities have been calculated at noise sensitive receivers based on plant/equipment information, staging, and work areas as described by Hansen Yuncken, in addition to equipment noise levels primarily taken from BS5228-1-2009 and AS2436-2010.

In accordance with the NSW EPA's Interim Construction Noise Guideline (ICNG) noise has been calculated for "Average" and "Worst Case" scenarios, considering the derived "Noise Affected" goals and proscriptive "Highly Noise Affected" goals.

A "Worst Case" scenario assessment assumes that all equipment is operating simultaneously with noise sources either closest to the noise sensitive receiver and/or not screened by existing site structures.

The "Average" scenario assessment assumes a reduced number of plant items operating, with noise sources located towards the centre of the subject work area.

It should be noted that for most of the time during construction works, noise levels are likely to be more in line with that predicted by the "Average" noise levels.

"Average" noise levels predicted at the most noise sensitive receiver within the Estella Rd Residences may be up to 7 to 15 dB above the "Noise Affected" goal depending on the work phase.

Exceedances of "Noise Affected" goals are typical of construction sites in suburban areas as background noise levels tend to be relatively low. Further, since all construction work is restricted to take place only during the daytime, noise impacts will not be experienced during the most sensitive time period i.e. night-time.

The "Highly Noise Affected" levels are not predicted to be exceeded at any receivers during typical operations.

The ICNG recommends that for situations in which the "Noise Affected" management levels are exceeded; all feasible and reasonable work practises should be adopted. Such measures are reflected in the provided noise control recommendations.

Additionally, as construction noise levels are predicted to be above the "Noise Affected" goals for the Estella Rd Residences, due diligence by the site operator requires community consultation and negotiation. A construction noise management plan is included in this document, with a discussion of community consultation, noise monitoring, work scheduling, site arrangement, development of respite periods and complaints handling.

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1.0 INTRODUCTION

Marshall Day Acoustics (MDA) has previously conducted acoustic assessments of construction noise and vibration emissions related to the development of Lot 1 in DP 1253855, Estella Rd, Estella NSW. The proposed development of Lot 1 is to provide a new public school (the Project).

Previous assessments have been summarised in MDA reports *Rp 001 20191068 New Public School in Wagga Wagga – Assessment of Noise and Vibration*, providing an overall assessment of construction and operational noise, submitted as part of the Environmental Impact Statement (EIS), and *Rp 002 20191068 EWDA Educational Establishment – Assessment of Noise and Vibration* providing an assessment of noise and vibration related to Site Preparation and Bulk Earthworks only, submitted as part of the Early Works Development Application.

The assessment detailed in this report provides updated predicted noise levels based on refined construction schedules and equipment proposed by Hansen Yuncken and evaluates impact on nearby noise sensitive receivers in line with the guidance provided in the NSW EPA's *Interim Construction Noise Guideline* (ICNG). A Construction Noise and Vibration Management Sub-Plan is also provided with recommendations with respect to community consultation, information distribution, complaints management and contingency measures.

The consultant who prepared this report, Alexander Stoker, is a Senior Consultant working in the Sydney office of Marshall Day Acoustics. He has over 10 years' experience in acoustics and has completed numerous, previous acoustic assessments for state significant developments. He is a registered member of both the Australian Acoustical Society (AAS) and the Institute of Acoustic (IOA, UK). A Curriculum Vitae is provided in Appendix A.

Technical terms used throughout this report are described in 0. The assessment is based on measurements conducted on-site by MDA alongside information with respect to construction scheduling and equipment as provided by Hansen Yuncken.

This report was updated on 26 June 2020 to provide further information on project community consultation.

2.0 PROJECT AND SITE DESCRIPTION

2.1 Site Location

The Project site is located within an existing greenfield lot (Lot 1 in DP 1253855) currently owned by Charles Sturt University and currently zoned SP2 – Infrastructure – Educational Establishment in the City of Wagga Wagga Local Environment Plan 2010. The Project site is bounded by a car park related to Charles Sturt University to the north, an empty greenfield lot to the west currently zoned SP2 – Infrastructure – Educational Establishment, assorted residential receivers over Estella Rd to the south west, south and south east, and Charles Sturt University's Peter Hastie Oval to the east.

Noise sensitive receivers selected for assessment are described in Table 1 below. 'Worst case distance' represents a distance from the closest point of the project site to the receiver, 'Average distance' is the distance from the middle of the project site to the nearest point of the receiver.

Receiver	Land Use	Distance to development (Average), m	Distance to development (Worst Case), m
Estella Rd Residences	Residential	100	50
Peter Hastie Oval	Active Recreation	135	70

Table 1: Noise sensitive receivers and approximate distances

An aerial view of the site and surrounding area is provided in Figure 1.

MARSHALL DAY

Figure 1: Aerial view of the Project site



2.2 Project Description

The Project consists of the design and construction of a new primary school, including new pedestrian and vehicular access points from Estella Road.

This assessment considers construction activities during the excavation, piling, and structural and finishing construction. Construction works are proposed to commence at the end of May 2020 and finish in December 2020.

A site plan and general layout of the site is provided in Appendix C denoting the general project building design, car parking, landscaping and building forms in relation to Estella Rd residential receivers.

3.0 BACKGROUND NOISE SURVEY

A survey of background noise levels was conducted at a location within the proposed lot between 26 July 2018 and 6 August 2018 using an ARL El-316 noise logger (S/N: 16-707-018).

Spot measurements conducted during the site visit indicated that the noise environment in the vicinity of the proposed site was similar for all noise sensitive receivers. Traffic volumes along Estella Rd were low with infrequent vehicle trips. As such, the selected logger position provided a representative environment for measurements of background noise at all nearby receivers. This scenario is common at sites in which no localised sources of background noise exist.

The logging position is shown in Figure 1. Measurement equipment was calibrated before and after the survey with no significant drift observed.

Average background noise L_{A90} and ambient noise L_{Aeq} levels measured during the survey are shown in Table 2 and have been derived in accordance with standardised EPA data exclusion rules as detailed in their Noise Policy for Industry. Only Day time noise levels are reported as there are no construction works are proposed outside of this timeframe. Full measurement data for the noise survey is provided in Appendix D.

Table 2: Measured average	background noise levels
---------------------------	-------------------------

Period	Time of day	RBL L _{A90, 15min} dB	L _{Aeq, 15min} dB
Day	0700-1800hrs	32	47

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4.0 PROJECT ASSESSMENT REQUIREMENTS

4.1 Planning Secretary's Environmental Assessment Requirements

Key Issue requirements applicable to the Project are detailed in the Planning Secretary's Environmental Assessment Requirements (SEARs) (Application Number: SSD 9494) issued 17 June 2020. The SEARs provide the following conditions of consent requirements for Noise and Vibration:

Construction Environmental Management Plan

- B15. The Construction Noise and Vibration Management Sub-Plan must address, but not be limited to, the following:
 - (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);
 - (c) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;
 - (d) include strategies that have been developed with the community for managing high noise generating works;
 - (e) describe the community consultation undertaken to develop the strategies in condition B15(d);
 - (f) include detail of intra-day respite periods for construction activities that are identified as annoying;
 - (g) implement noise reducing work practices, including regular noise checks of equipment;
 - (h) include a complaints management system that would be implemented for the duration of the construction; and
 - (i) include a program to monitor and report on the impacts and environmental performance of the development and the effectiveness of the management measures in accordance with condition B11(d).

Construction Noise Limits

- C12. The development must be constructed to achieve the construction noise management levels detailed in the Interim Construction Noise Guideline (DECC, 2009). All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the management and mitigation measures identified in the approved Construction Noise and Vibration Management Plan.
- C13. The Applicant must ensure construction vehicles (including concrete agitator trucks) do not arrive at the site or surrounding residential precincts outside of the construction hours of work outlined under condition C4.
- C14. The Applicant must implement, where practicable and without compromising the safety of construction staff or members of the public, the use of 'quackers' to ensure noise impacts on surrounding noise sensitive receivers are minimised.

Vibration Criteria

C15. Vibration caused by construction at any residence or structure outside the site must be limited to:



- (j) for structural damage, the latest version of DIN 4150-3 (1992-02) Structural vibration Effects of vibration on structures (German Institute for Standardisation, 1999); and
- (k) for human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: a technical guideline (DEC, 2006) (as may be updated or replaced from time to time).
- C16. Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in condition C15.
- C17. The limits in conditions C15 and C16 apply unless otherwise outlined in a Construction Noise and Vibration Management Plan, approved as part of the CEMP required by condition B15 of this consent.

Construction works and associated deliveries are proposed to be conducted during standard construction hours only, as required by condition C4:

C4. Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:

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

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

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

With additional restrictions on noisy activities as per condition C7:

- C7. Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:
 - (a) 9am to 12pm, Monday to Friday;
 - (b) 2pm to 5pm Monday to Friday; and
 - (c) 9am to 12pm, Saturday.

4.2 Construction Noise and Vibration Policies and Guidelines

The relevant policies and guidelines applicable for Project related construction are outlined in the following documents:

- Interim Construction Noise Guideline, Department of Environment and Climate Change (ICNG)
- Assessing Vibration: A Technical Guideline 2006, NSW Environment Protection Authority (AV:ATG)

Noise and vibration management levels and criteria have been derived considering these policies, as well as the construction method, staging and equipment as provided by Hanson Yuncken.

A full derivation of applicable management levels and criteria is provided in Appendix E

4.2.1 Interim Construction Noise Guideline

Noise management levels applicable to the site derived in accordance with the ICNG are summarised in Table 3. Management levels apply to airborne noise emissions related to construction activity during the recommended standard hours only.



Receiver	Receiver Type		Management Level, L _{Aeq (15 min)}	
		Noise Affected	Highly Noise Affected	Active Recreation
Estella Rd	Residential	42	75	
Peter Hastie Oval	Active Recreation			65

Table 3: Interim Construction Noise Guideline airborne noise criteria

The "Noise Affected" level is the point above which there may be some community reaction to noise. The "Highly Noise Affected" level represents the point above which there may be a strong community reaction to noise.

Where the "Noise Affected" management level is predicted to be exceeded, the ICNG requires that all feasible and reasonable work practices be employed. Where it is predicted that the "Highly Noise Affected" management level will be exceeded, respite periods may need to be considered.

4.2.2 Assessing Vibration: A Technical Guideline

Vibration criteria for human exposure applicable to the site, derived in accordance with the Technical Guideline are summarised in Table 4. These criteria apply to vibration events at residential receivers related to construction activity. Only Day time criteria is provided as no out of hours construction activities are proposed.

Table 4: Acceptable vibration dose values for intermittent vibration (m/s^{1.75})

	Day-time ¹	
Receiver type	Preferred value, VDV	Maximum value, VDV
Residences	0.20	0.40

1: Day-time 0700-2200hrs.

The preferred values indicate a low probability of adverse comment, and the maximum values indicate that adverse comments may be expected.

4.2.3 DIN 4150-3

DIN 4150-3 provides short-term vibration limits below which any cosmetic damage to buildings is unlikely. The vibration limits are detailed in Table 5.

Table 5: Vibration limits used to assess the effects of short-term vibration according to DIN 4150-3				
Table 5. Vibration limits used to assess the effects of short-term vibration according to Div 4150-5	Tabla E. Vibratian limita usa	d to accord the offects of ch	ort torm vibration according	+ + 0 DINI /11E0 2
	I dule 5. Vibration limits use	0 10 85555 116 61615 01 51	OLL-LELLI VIDIALION ACCOLUM	2 10 1111 4130-3

Line Type of structure		Guidel velocit	Guideline values for vibration velocity (mm/s) at foundation		Guideline values for vibration velocity
		Less than 10Hz	10 to 50Hz	50 to 100Hz	(mm/s) in horizontal plane of highest floor, at all frequencies
I	Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20 to 40	40 to 50	40
II	Dwellings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15



Line	Type of structure	Guidel velocit	ine values fo y (mm/s) at	or vibration foundation	Guideline values for vibration velocity	
		Less than 10Hz	10 to 50Hz	50 to 100Hz	(mm/s) in horizontal plane of highest floor, at all frequencies	
111	Structures that, because of their particular sensitivity to vibration, cannot be classified under lines I and II and are of great intrinsic value (e.g. listed buildings under preservation order)	3	3 to 8	8 to 10	8	

5.0 CONSTRUCTION NOISE SOURCES AND METHODOLOGY

Hansen Yuncken have provided details with respect to specific methodology, staging and equipment for the Project.

Staging is summarised as:

- Excavation (Bulk and Detail)
- Piling
- Construction (Structure)
- Construction (Finishes)

Plant and equipment to be used during each stage are summarised in Table 6. Sound power data for these plant items is provided in Appendix F.

Table 6: Construction staging and proposed equipment

Phase	Equipment
Excavation (Bulk and Detail)	- 20T Excavator
	- Truck and Dog
	- Grader
	- 15T Vibrating Pad Foot Roller
	- Whacker Packers (plate compactor)
	- 10T Roller
	- 5T Front Tipper
	- Generator
	- 3.2T Telehandler
	- Water Cart
	- 6T Dozer
Piling	- 10T Piling Rig
	- 5T Excavator
	- Concrete Agitator Trucks
	- Needle Vibrator
	- Water Cart



Phase	Equipment
Construction (Structure)	- Concrete Boom/Line Pump (up to 40m)
	- Concrete Agitator Trucks
	- Mobile Crane
	- Grinder
	- Needle Vibrator
	- Boom Lift (up to 16m)
	- Scissor Lift (up to 8m)
	- Cement Mixer
	- Generator
	- 3.2T Telehandler
	- Water Cart
	- Air Compressors
	- Jack Hammer
	- Brick Saw
Construction (Finishes)	- Scissor Lift (up to 8m)
	- Boom Lift (up to 16m)
	- Grinder
	- 3T Front tipper (for concurrent landscaping)
	- Air Compressor
	- Brick Saw

Piling is proposed to be conducted with a 10T piling rig, with up to 20 piles driven to a depth of approximately 2.5m in very low to medium strength rock. Hansen Yuncken have indicated that piling will be limited to the area shown in Appendix G.

Additional information provided by Hansen Yuncken indicates that:

- Blocks A to D will generally comprise a combination of concrete and steel structures
- Blocks E and F will be prefabricated, modular buildings constructed offsite with minimal related on-site structural works
- Excavation for structural foundation will generally be limited to Blocks A to E
- Works during Finishes stage will generally be limited to Blocks A to D (minors works related E and F as they will be mostly finished off-site)
- Roller equipment used during Excavation will generally be limited to the areas highlighted in green in Appendix H

5.1 Noise Control Recommendations

In order to ensure that noise from specific plant items is well controlled, the noise control measures shown in Table 7 must be implemented as part of general work practises for the site. Predicted noise levels calculated as part of the construction noise assessment include the effect of these recommendations.

	Decommondation			
	Recommendation			
All phases				
All activities	 All excavation, piling, construction, landscaping and delivery activities are only permitted to occur during the standard hours stipulated by C4 of SSD 9494 			
Piling, jack hammering	- These activities are only permitted during the times stipulated by C of SSD 9494			
Excavators Dozers Rollers Trucks Grader Tippers Telehandler Scissor Lift Boom Lift Water Cart	- Where practicable and without compromising the safety of construction staff or members of the public, reversing alarms must be a broadband "quacker" type device			
Excavation				
Generator	 Where practical and feasible localised noise barriers should be utilised when this equipment is in use. 			
	 Barriers should be mobile and extend to a height 1m above noise source. 			
	 Barrier should envelope the work location to ensure no direct line of site to nearby receivers. 			
	 Practical and feasible measures should be taken to allow the noise barrier to be located within 4m of the noise source. 			
Piling				
10T Piling Rig	- A piling dolly must be used at all times			
	 Provide respite periods during operation (further information is provided in Section 6.0) 			
Construction - Structure				
Grinders Generator	 Where practical and feasible localised noise barriers should be utilised when this equipment is in use. 			
Air Compressor Jack Hammer	 Barriers should be mobile and extend to a height 1m above noise source. 			
BLICK 29M	- Barrier should envelope the work location to ensure no direct line of site to nearby receivers.			
	 Practical and feasible measures should be taken to allow the noise barrier to be located within 4m of the noise source. 			
Scissor Lift Boom Lift Mobile Crane	- Electric units must be selected where feasible and practicable			
Grinders Jack Hammer Brick Saw	- Provide respite periods to break up extended periods of operation (further information is provided in Section 6.0)			

Table 7: Noise Control Recommendations



Equipment/Location	Recommendation			
Construction - Finishes				
Grinders Air Compressor	 Where practical and feasible localised noise barriers should be utilised when this equipment is in use. 			
Brick Saw	 Barriers should be mobile and extend to a height 1m above noise source. 			
	- Barrier should envelope the work location to ensure no direct line of site to nearby receivers.			
	 Practical and feasible measures should be taken to allow the noise barrier to be located within 4m of the noise source. 			
Grinders Brick Saw	 Provide respite periods to break up extended periods of operation (further information is provided in Section 6.0) 			
Scissor Lift Boom Lift Mobile Crane	- Electric lift units must be selected where feasible and practicable			

5.2 Summary of Construction Noise Assessment

Predicted noise levels from proposed construction activities have been calculated. A detailed assessment, including predicted noise levels, is provided in Appendix I.

Predicted L_{Aeq} levels from the proposed construction equipment indicate that noise from all phases of work will be below the "Noise Affected" management levels for Peter Hastie Oval for both "Worst Case" and "Average" scenarios.

For the most noise affected receiver within the Estella Rd Residences, "Worst Case" noise throughout all phases of construction may exceed the "Noise Affected" management level by up to 26 dB whilst remaining below the "Highly Noise Affected" management levels.

It should be noted that for most of the time during construction works, noise levels are likely to be more in line with that predicted by the "Average" noise levels.

Within standard ICNG construction hours (Monday – Friday: 0700-1700hrs, Saturday 0800-1300hrs) the "Average" noise levels from typical operations at the most noise affected receiver within the Estrella Rd Residences would be;

- Excavation activities are calculated to be:
 - o Up to 12 dB above the "Noise Affected" goals
- Piling activities are calculated to be:
 - o Up to 10 dB above the "Noise Affected" goals
- Construction Structure activities are calculated to be:
 - o Up to 15 dB above the "Noise Affected" goals
- Construction Finishes activities are calculated to be:
 - o Up to 7 dB above the "Noise Affected" goals

Exceedances of "Noise Affected" goals are typical of construction sites in suburban areas as background noise levels tend to be relatively low. Further, since all construction work is restricted to take place only during the daytime, noise impacts will not be experienced during the most sensitive time period i.e. night-time.



The "Highly Noise Affected" levels are not predicted to be exceeded at any receivers during typical operations.

As construction noise levels are predicted to exceed the "Noise Affected" goals for the Estella Rd Residences, due diligence by the site operator requires community consultation and negotiation. Notification should be provided of the proposed construction activities to nearby residents and non-residential receivers.

The ICNG recommends that for situations in which the "Noise Affected" management levels are exceeded; all feasible and reasonable work practises should be adopted. Additionally, all potentially impacted residents should be informed of the nature of the works, expected noise levels and duration, as well as contact details for site representatives. These requirements are described in detail in the noise control recommendations in Section 5.1 and the Construction Noise and Vibration Management Plan described in Section 6.0.

5.3 Summary of Construction Vibration Assessment

Based on the proposed plant and equipment summarised in Table 6, the distances between the proposed site and the residential receivers is sufficiently great such that even the most significant vibration generating equipment that may be used on-site is unlikely to give rise to vibration levels exceeding the human exposure or structural damage criteria.

On this basis vibration impacts from construction works related to the Project are not expected to require any specific control beyond the work practises highlighted in Section 6.0.

6.0 CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN

Many complaints about construction noise are due to preventable activities during construction periods. Hansen Yuncken must ensure that the following guidance is accommodated into the wider Environmental Management Plan for the site and implemented proactively.

The information provided below includes details with respect to:

- General noise reducing work practises
- Community consultation
- Complaints management
- The management of high noise generating works including the implementation of respite periods
- Review program for the implemented management measures

6.1 General noise reducing work practises

Hansen Yuncken must:

6.1.1 General

- Ensure that workers and contractors and regularly trained (such as at toolbox talks) to use equipment in ways to minimise noise.
- Implement the equipment specific noise control measures detailed in Table 7
- Include in tenders, employment contracts, subcontractor agreements and work method statements clauses that require minimisation of noise and compliance with directions from management to minimise noise.
- Avoid the use of radios or stereos outdoors where neighbours can be affected.
- Avoid the overuse of public address systems.
- Avoid shouting and minimise talking loudly and slamming vehicle doors.



- Determine vehicle access routes and ensure truck drivers are well informed of routes, parking locations, acceptable delivery hours or other relevant practices (for example, minimising the use of engine brakes, and no extended periods of engine idling).
- Develop a one-page summary of approval or consent conditions that relate to relevant work practices and pin it to a noticeboard so that all site operators can quickly reference noise information.

6.1.2 Plant and Equipment

In terms of both cost and results, controlling noise at the source is one of the most effective methods of minimising the noise impacts from any construction activities.

Hansen Yuncken must:

Use Quieter Methods

- Where feasible use alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electric controlled units where feasible and reasonable. Where there is no electricity supply, use an electrical generator located away from residences (and provided with a localised barrier). Containerised and silenced generator sets are available for this purpose. Additionally, Hansen Yuncken must ensure that:
 - To the extent possible air intake and discharges do not face residential areas
 - Exhaust flues discharge vertically

Use Quieter Equipment

- Examine different types of machines that perform the same function and compare the noise level data to select the least noisy machine. For example, rubber wheeled tractors can be less noisy than steel tracked tractors.
 - o Noise labels are required by NSW legislation for pavement breakers, mobile compressors, chainsaws and mobile garbage compactors. These noise labels can be used to assist in selecting less noisy plant.
- Select super silenced compressors, silenced jackhammers and damped bits where possible.
- Select quieter items of plant and equipment where feasible and reasonable.
- Select, where feasible and reasonable, the most effective mufflers, enclosures and low-noise tool bits and blades.

Operate Plant In A Quiet And Efficient Manner

- Reduce throttle setting and turn off equipment when not being used.
- Examine and implement, where feasible and reasonable, the option of reducing noise from metal chutes and bins by placing damping material in the bin.

Maintain Equipment

- Regularly inspect and maintain equipment to ensure it is in good working order. Also check the condition of mufflers.
 - Degradation of maintenance standards can lead to increased noise emissions from heavy plant items. In order to minimise noise creep from heavy plant items such as excavators, dozers, rollers, tippers and graders the manufacturers maintenance intervals must be strictly adhered to. Where a plant item is in use for a period longer than 6 weeks, measurements of noise emissions must be taken at 6-week intervals. Measurements must be conducted by an appropriately qualified acoustic specialist implementing a methodology pertinent to the subject plant item.



- Where noise increase from equipment is attributed to maintenance issues the equipment item must not be operated until it is maintained or repaired, where maintenance or repair would address the annoying character of noise identified.
- Check that doors and door seals to enclosed machinery are in good working order and that the doors close properly against the seals.
- Return any hired equipment that is causing noise that is not typical for the equipment the increased noise may indicate the need for repair.
- Ensure air lines on pneumatic equipment do not leak.

6.1.3 On Site

The subject construction site has the capacity to be arranged such that additional noise control benefits can be achieved. This includes:

Maximise Shielding

- Sequence construction such that existing structures are reused for screening purposes for the duration of the construction phases. The initial construction of Blocks A, B and C would help shield noise from works occurring on Blocks D, E and F.
- Use temporary site buildings and materials stockpiles as noise barriers. Site office containers/portable building should be located to the Estella Rd boundary to provide shielding benefits.

Alternatives To Reversing Alarms

- Avoid use of reversing alarms by designing site layout to avoid reversing, such as by including drive through for parking and deliveries.
- Install where feasible and reasonable less annoying alternatives to the typical 'beeper' alarms taking into account the requirements of the Occupational Health and Safety legislation; examples are smart alarms that adjust their volume depending on the ambient level of noise and multifrequency alarms that emit noise over a wide range of frequencies.
- In all circumstances, the requirements of the relevant Occupational Health and Safety legislation must be complied with.

6.2 Consultation and Negotiation

The community is more likely to be understanding and accepting of noise if the information provided is frank, does not attempt to understate the likely noise level, and if commitments are firmly adhered to. Hansen Yuncken must implement a program of community consultation. The below is provided for guidance.

Notification Before and During Construction

- Provide, reasonably ahead of time, information such as total building time, what works are expected to be noisy, their duration, what is being done to minimise noise and when respite periods will occur.
- Provide information to neighbours before and during construction through media such as letterbox drops, meetings or individual contact. In some areas, the proponent will need to provide notification in languages other than English. A website could also be established for the project to provide information.
- Use a site information board at the front of the site with the name of the organisation responsible for the site and their contact details, hours of operation and regular information



updates. This signage should be clearly visible from the outside and include after-hours emergency contact details.

- Maintain good communication between the community and project staff.
- Appoint a community liaison officer where required.
- Provide a toll-free contact phone number for enquiries during the works.
- Facilitate contact with people to ensure that everyone can see that the site manager understands potential issues, that a planned approach is in place and that there is an ongoing commitment to minimise noise.

Further information with respect to project community consultation is detailed in Hansen Yuncken comments below:

"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 J

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."

6.3 Complaints Handling

Prior to commencement of works Hansen Yuncken must establish a complaint handling procedure. This will assist in the processing of unpredicted noise impacts and provide contingency measures. The following is provided for guidance with an example procedure and complaints log detailed in Appendix K:

- Provide a readily accessible contact point, for example, through a 24-hour toll-free information and complaints line.
- Give complaints a fair hearing.
- Have a documented complaints process, including an escalation procedure so that if a complainant is not satisfied there is a clear path to follow.
- Call back as soon as possible to keep people informed of action to be taken to address noise problems. Call back at night-time only if requested by the complainant to avoid further disturbance.
- Provide a quick response to complaints, with complaint handling staff having both a good knowledge of the project and ready access to information.
- Identify equipment or plant that is this source this is the subject of the complaint
- Carry out noise check in order to compare measured noise levels with the source levels detailed in this report.
- Implement all feasible and reasonable measures to address the source of complaint.



• Keep a register of any complaints, including details of the complaint such as date, time, person receiving complaint, complainant's contact number, person referred to, description of the complaint, work area (for larger projects), time of verbal response and timeframe for written response where appropriate.

6.4 Periodic Monitoring and Review

The impacts and environmental performance of the development must be monitored and reviewed on a regular basis. This will allow the effectiveness of the management measures to be evaluated. To achieve this Hansen Yuncken must:

- Conduct a weekly review of the complaints register, following up on any incidents and undergoing further consultation with the complainant to determine if modifications or improvements to the management plan are required
- As part of the proposed community consultation ensure that community comments are reviewed within 3 days of receipt by a Hansen Yuncken representative or community liaison officer. Wider community consultation and letter drops must inform the community of any modifications to the management plan and highlight instances where community consultation has led to direct improvement in the management of the site. This will ensure the community remains engaged and the environmental performance of the development continues to integrate with the amenity of the local residents.

6.5 Management of high noise activities

High noise or annoying activities relating to the proposed works include

- Piling
- Jack hammering
- Sawing brick
- Grinding

High noise activities have the potential to be intrusive and/or annoying to noise sensitive receivers. In addition to the noise control measures detailed in Table 7 the following management practises must be adopted proactively. In the case of complaint works may need to be delayed to a less noise sensitive time period, broken up over multiple shorter periods or executed with alternative, quieter methodology.

6.5.1 Work Scheduling

Scheduling noisy work during periods when people are least affected is an important way of reducing noise impact. Hansen Yuncken must:

Provide intraday respite periods and schedule activities to minimise noise impacts

- Construction works to occur during the recommended standard hours only.
- Consult with affected residents to schedule works to less noise sensitive periods of the day as per Condition C7
- Consult with the community to establish appropriate work and respite periods for high noise or annoying activities. Based on a typical suburban environment these are likely to be:
 - o 0930-1130hrs and 1330-1530hrs on weekdays only. This provides respite over midday for nearby residents and restricts high-noise activities to a limited time per day

MARSHALL DAY

Organise deliveries and access

- Optimise the number of vehicle trips to and from the site movements can be organised to amalgamate loads rather than using a number of vehicles with smaller loads.
- Provide on-site parking for staff and on-site truck waiting areas away from residences and other sensitive land uses. Truck waiting areas may require bunding or walls to minimise noise.
 Positioning the car park and waiting area to north of Blocks D, E and F would provide the greatest effect.

6.5.2 Transmission Path

Physical methods to reduce the transmission of noise between the construction works and residences or other sensitive land uses are generally suited to works where there is longer-term exposure to the noise.

- Temporary barriers to small, noisy equipment items must be used as per Table 7
- Temporary noise barriers can be constructed from hoarding (plywood boards, panels of steel sheeting or compressed fibre cement board) with no gaps between the panels at the site boundary. Stockpiles, shipping containers and site office transportables can be effective barriers.
- Temporary noise barriers must be erected before work commences to ensure their efficacy applies throughout the operation of the item
- Consult with most affected neighbours about how effective the proposed noise mitigation measures will be in addressing their concerns. This must be investigated and determined as part of the monitoring program.

6.6 Noise monitoring program

Noise levels from construction works are predicted to exceed the Noise Affected management levels derived in accordance with the ICNG. On this basis there may be some community reaction to noise.

Monitoring of construction noise is recommended to ascertain the impact of construction noise on the nearest affected receivers once construction activities commence. The measured noise level data will be used to determine the effectiveness of the recommended noise control measures and management practices.

The following noise monitoring methodology is proposed:

- Attended noise monitoring to be conducted for a representative period during each phase of construction. (Bulk Excavation, Piling, Construction Structure and Construction Finishes)
- Hansen Yuncken must ascertain the noisiest period during each construction phase (Bulk Excavation, Piling, Construction Structure and Construction Finishes) which will be chosen for monitoring. The dates of these measurement visits cannot be anticipated at this time.
- The results of the monitoring will be compiled in a report, comparing the measured noise levels at each identified receiver with the predicted construction noise levels identified for each phase.
- Any exceedances over and above those predicted shall be commented on, and if particular works are identified as creating excessive noise, the construction noise management plan would be reviewed with further noise mitigation options explored and employed if possible. This review is intended to provide periodic refinement of the plan, determination of the effectiveness of noise control measures and an assessment of on-site work practises.
- This report should be presented to NSW Department of Planning at their request. It is recommended that results are also made readily accessible to the community.
- Records of all monitoring will be maintained and kept readily available.



Additional noise monitoring is recommended on an as-required basis in response to receipt of any complaints. Typically, investigations and monitoring should occur following receipt of 3 or more complaints in a single day.



APPENDIX A ALEX STOKER – CURRICULUM VITAE



ALEX STOKER Senior Acoustic Consultant

Alex Stoker is a Senior Consultant with the Sydney office working across a broad range of the acoustics field, including building acoustics, environmental acoustics, underwater acoustics and vibration. Since graduating from the BSc Acoustics discipline at the University of Salford, UK, he has spent more than 10 years working in the wider field of acoustics, including four years in the offshore geophysical industry as a seismic engineer. The remainder of his time has been spent in acoustic consultancies in the UK and Australia, joining Marshall Day in 2013.

Within the field of building acoustics Alex has established a speciality in design for acoustically critical spaces, with a particular focus on projects in which the acoustic quality of a building has direct outcomes on the user experience. Results of effective acoustic design can range from improved speech clarity and vocal health, to inherent benefits in user behaviour, engagement and comfort levels. This design experience extends from early planning noise modelling and assessment, building envelope design, room acoustics evaluation, internal finishes specification, mechanical services noise control and open-plan acoustic zoning

In the environmental acoustics field Alex has extensive experience in environmental noise monitoring, DA applications, local environmental planning assessments, construction noise and vibration assessments and assessment of licensed premises. Recent work includes a comprehensive audit and assessment of the Sydney International Container Terminal to allow for compliance with EPA licence conditions and project work for TfNSW Freight Rail division requiring the evaluation of distance, height and shielding effects throughout residential areas for passenger and freight train movements.

Alex's experience with construction noise and vibration assessments ranges from small scale local residential and commercial development, technical close, proximity urban excavation and large scale state significant projects

He has worked in high risk environments both offshore and on land and is skilled in risk assessment and mitigation.

QUALIFICATIONS

- BSc(Hons) Acoustics, Salford University
- MAAS Australian Acoustical Society Member
- MIOA Institute of Acoustic UK Member
- NSW Rail Safety Worker

APPENDIX B GLOSSARY OF TERMINOLOGY

Noise	A sound that is unwanted by, or distracting to, the receiver.
Ambient	The ambient noise level is the noise level measured in the absence of the intrusive noise or the noise requiring control. Ambient noise levels are frequently measured to determine the situation prior to the addition of a new noise source.
SPL or L _P	Sound Pressure Level A logarithmic ratio of a sound pressure measured at distance, relative to the threshold of hearing (20 μ Pa RMS) and expressed in decibels.
SWL or L _w	Sound Power Level A logarithmic ratio of the acoustic power output of a source relative to 10 ⁻¹² watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.
dB	<u>Decibel</u> The unit of sound level.
	Expressed as a logarithmic ratio of sound pressure P relative to a reference pressure of Pr=20 μ Pa i.e. dB = 20 x log(P/Pr)
dBA	The unit of sound level which has its frequency characteristics modified by a filter (A-weighted) so as to more closely approximate the frequency bias of the human ear.
A-weighting	The process by which noise levels are corrected to account for the non-linear frequency response of the human ear.
L _{Aeq (t)}	The equivalent continuous (time-averaged) A-weighted sound level. This is commonly referred to as the average noise level.
	The suffix "t" represents the time period to which the noise level relates, e.g. (8 h) would represent a period of 8 hours, (15 min) would represent a period of 15 minutes and (2200-0700) would represent a measurement time between 10 pm and 7 am.
L _{A90} (t)	The A-weighted noise level equalled or exceeded for 90% of the measurement period. This is commonly referred to as the background noise level.
	The suffix "t" represents the time period to which the noise level relates, e.g. (8 h) would represent a period of 8 hours, (15 min) would represent a period of 15 minutes and (2200-0700) would represent a measurement time between 10 pm and 7 am.
L _{A10 (t)}	The A-weighted noise level equalled or exceeded for 10% of the measurement period. This is commonly referred to as the average maximum noise level.
	The suffix "t" represents the time period to which the noise level relates, e.g. (8 h) would represent a period of 8 hours, (15 min) would represent a period of 15 minutes and (2200-0700) would represent a measurement time between 10 pm and 7 am.
Vibration	When an object vibrates, it moves rapidly up and down or from side to side. The magnitude of the sensation when feeling a vibrating object is related to the vibration velocity.
	Vibration can occur in any direction. When vibration velocities are described, it can be either the total vibration velocity, which includes all directions, or it can be separated into the vertical direction (up and down vibration), the horizontal



transverse direction (side to side) and the horizontal longitudinal direction (front to back).

- AmplitudeThe measurement of energy or movement in a vibrating object. Amplitude is
measured and expressed in three ways: Displacement (commonly in mm); Velocity
(commonly in mm/s); and Acceleration (commonly in m/s²). Amplitude is also the y-
axis of the vibration time waveform and spectrum, it helps define vibration severity.
- FrequencyThe repetition rate of a periodic vibration, per unit of time, determined by taking the
reciprocal of the period (T). Frequency is expressed in three ways: Hz (number of
cycles per second) cycles per second (cps) or cycles or revolutions per minute (rpm);
Frequency is also the x-axis of the vibration spectrum.
- **Frequency response** This is a characteristic of a system which has a measured response resulting from a known applied input. In a mechanical structure, the frequency response function, also called the FRF, is the spectrum of the vibration of the structure divided by the spectrum of the input force to the system. To measure the frequency response of a mechanical system, one must measure the spectra of both the system input force and the vibration response.
- Hertz (Hz)Vibration can occur over a range of frequencies extending from the very low, such as
the rumble of thunder, up to the very high such as the crash of cymbals. The
frequency of vibration and sound is measured in hertz (Hz). Once hertz is one cycle
per second. Structural Vibration is generally measured over the frequency range
from 1Hz to 500Hz (0.5kHz).
- PPV
 Peak Particle Velocity

 For Peak Particle Velocity (PPV) is the measure of the vibration aptitude, zero to maximum. Used for building structural damage assessment.
- VDV
 Vibration Dose Value

 Vibration Dose Value is based on British Standard BS 6472:1992 Guide to Evaluation of Human Exposure to Vibration in Buildings (1Hz to 80Hz) and provides guidelines for the evaluation of whole body exposure to intermittent vibration.

VDV can be used to take into account the weighted measured RMS vibration from many vibration sources including rail vehicles, construction equipment such as jackhammers and industry. VDV takes into account the duration of each event and the number of events per day, either at present or in the foreseeable future and calculates a single value index.



APPENDIX C SITE PLAN









APPENDIX D DAILY SURVEY DATA

































APPENDIX E NOISE AND VIBRATION GUIDELINES

E1 Interim Construction Noise Guideline

The Interim Construction Noise Guideline (ICNG) aims to provide a clear understanding of ways to identify and minimise noise from construction works through applying all 'feasible' and 'reasonable' work practises to control noise impacts. The guideline identifies sensitive land uses and recommends construction hours, provides quantitative and qualitative assessment methods, and subsequently advises on appropriate work practises.

For the Project site, residential receivers along Estella Rd, as well as the active recreation facility Peter Hastie Oval, have been identified as sensitive land uses for consideration.

It is understood that construction activities on-site will not extend outside of the recommended standard hours detailed in Table E 1.

Nork Type Recommended standard hours of work	
Normal Construction	Monday to Friday 0700 to 1800hrs Saturdays 0800 to 1300hrs No work on Sundays or public holidays

Table E 1: Interim Construction Noise Guideline recommended standard hours of work

Residential Receivers

Based on the recommended standard hours, the guideline provides airborne noise management levels for residences based on the measured background noise level for the area. In the ICNG the background noise level is referred to as the Rating Background Level (RBL). Measured RBL's for the project are detailed in Table E 2.

Table E 2: Measured average background noise levels

Period	riod Time of day		L _{Aeq, 15min} dB
Day	0700-1800hrs	32	47

The ICNG provides management levels for the quantitative assessment of noise at residences. These are used as indicators for construction managers to avoid or minimise noise that, if not considered, could delay construction work. The intent is for the management levels to be used as trigger points at which noise controls or other practises should be considered. There are two types of management levels:

Noise Affected Management Level

This is derived based on an RBL + 10 dB principle and represents the point above which there may be some community reaction to noise.

- Where the predicted or measured L_{Aeq (15 min)} (from construction works) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level.
- The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.

Highly Noise Affected Management Level

This is independent of the RBL and is set to $L_{Aeq (15 min)}$ 75 dB. 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:

1. 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

2. if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

Other Noise Sensitive Receivers

In addition to the Estella Rd residences the nearby Peter Hastie Oval would be considered a noise sensitive receiver, as per guidance in the ICNG. Classed as an Active Recreation receiver the ICNG provides a prescriptive management level of $L_{Aeq (15 min)} 65 \text{ dB}$.

Project Specific Management Levels

Based on the guidance of the ICNG the management levels applicable to Project construction works are detailed in Table E 3.

Table F 3: Interim	Construction	Noise	Guideline	airborne	noise criteria
	construction	NOISC	Guiacinic	ansonic	noise enterna

Dessiver	Receiver Type	Management Level, L _{Aeq (15 min)}			
Receiver		Noise Affected	Highly Noise Affected	Active Recreation	
Estella Rd Residences	Residential	42	75		
Peter Hastie Oval	Active Recreation			65	

Additional criteria are provided for ground borne noise from construction vibration, applicable during the Evening and Night periods only. As construction will not occur during these periods, ground borne noise has not been assessed.

E2 Assessing Vibration: A Technical Guideline

The ICNG refers assessment of vibration effects on people to the EPA document *Assessing Vibration: A Technical Guideline*.

The Technical Guideline is designed to assist in evaluating and assessing the effects on amenity of vibration emissions from industry, transportation, and machinery, and provides a useful reference in assessing the vibration impacts caused by the construction of new developments.

Construction activities typically give rise to vibration events defined in the Guideline as Intermittent, with interrupted periods of continuous or repeated periods of impulsive vibration that varies significantly in magnitude.

The Guideline provides acceptable values for intermittent vibration based on Vibration Dose Values. These criteria, applicable to residential receivers, are summarised in Table E 4. The Guideline also allows for assessment for other receiver types such as offices, schools, and places of worship however none of these types are located close to the Project site and have been omitted.



Table E 4: Acceptable vibration dose values for intermittent vibration (m/s^{1.75})

	Day-time ¹			
Receiver type	Preferred value, VDV	Maximum value, VDV		
Residences	0.20	0.40		

1: Day-time 0700-2200hrs.

The preferred values indicate a low probability of adverse comment, and the maximum values indicate that adverse comments may be expected.

E3 DIN 4150-3

For assessment of vibration effects on structures the German standard *DIN 4150-3 Structural vibration: Effects* of vibration on structures is used. DIN 4150-3 provides short-term vibration limits below which any cosmetic damage to buildings is unlikely. The vibration limits are detailed in Table E 5.

Table E 5: Vibration limits used to assess the effects of short-term vibration according to DIN 4150-3

	Type of structure	Guideline (r	values for vibr nm/s) at found	Guideline values for vibration velocity (mm/s)	
Line		Less than 10 Hz	10 to 50Hz	50 to 100Hz	in horizontal plane of highest floor, at all frequencies
I	Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20 to 40	40 to 50	40
II	Dwellings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15
111	Structures that, because of their particular sensitivity to vibration, cannot be classified under lines I and II and are of great intrinsic value (e.g. listed buildings under preservation order)	3	3 to 8	8 to 10	8

APPENDIX F CONSTRUCTION NOISE SOURCES

Hansen Yuncken has advised that a variety of excavation, piling and construction equipment will be used for this project. Table F 1 provides a schedule of proposed equipment with associated noise taken from:

- Australian Standard AS2436-2010 (R2016): Guide to noise and vibration control on construction, demolition and maintenance sites
- British Standard BS5228-1-2009: Code of practice for noise and vibration control on construction and open sites Part 1: Noise

Table F 1: Construction noise source sound power levels , LAen dB	BW
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Equipment	Sound Power Level, L _{Aeq} dBW	Source
Excavation		
20T Excavator	99	BS5228-1-2009
Truck & Dog	102	BS5228-1-2009
Grader	110	AS2436-2010
15T Vibrating Pad Foot Roller	104	BS5228-1-2009
Whacker Packers (plate compactor)	100	BS5228-1-2009
10T Smooth Drum Roller	96	AS2436-2010
5T Front Tipper	94	BS5228-1-2009
Generator	99	AS2436-2010
Telehandler	106	AS2436-2010
Water Cart	107	AS2436-2010
Piling		
6T Dozer	106	BS5228-1-2009
10T Piling Rig	106	BS5228-1-2009
5T Excavator	99	BS5228-1-2009
Concrete Agitator trucks	109	AS2436-2010
Needle Vibrator	103	AS2436-2010
Water Cart	107	AS2436-2010
Construction - Structure		
Concrete Boom/Line Pump (40m)	97	BS5228-1-2009
Concrete Agitator truck	109	AS2436-2010
Mobile Crane	88	BS5228-1-2009
Grinder	98	BS5228-1-2009
Needle Vibrator	103	AS2436-2010
Boom Lift (up to 16m)	105	AS2436-2010
Scissor Lift (up to 8m)	96	BS5228-1-2009

Equipment	Sound Power Level, L _{Aeq} dBW	Source
Cement Mixer	93	BS5228-1-2009
Generator	99	AS2436-2010
Telehandler	106	AS2436-2010
Water Cart	107	AS2436-2010
Air Compressor	105	AS2436-2010
Jack Hammer	121	AS2436-2010
Brick Saw	107	BS5228-1-2009
Construction - Finishes		
Scissor Lift (up to 8m)	96	AS2436-2010
Boom Lift (up to 16m)	105	AS2436-2010
Grinder	98	BS5228-1-2009
3T Front Tipper	94	BS5228-1-2009
Air Compressor	101	AS2436-2010
Brick Saw	107	BS5228-1-2009



APPENDIX G MARK UP OF PILING ZONE



Rp 003 r01 20191068 - New Public School in Wagga Wagga - Assessment of Construction Noise and Vibration.docx



APPENDIX H MARK UP OF ROLLER PLANT WORK AREAS





APPENDIX I CONSTRUCTION NOISE IMPACT ASSESSMENT

Noise levels during the Excavation, Piling, Construction – Structure and Construction – Finishes phases have been calculated at the nominated receivers. These noise levels have been predicted based on the guidance provided by the EPA's *Interim Construction Noise Guideline* in addition to data summarised in *AS2436-2010 Guide to noise control on construction, maintenance and demolition sites* and *BS 5228-1-2009 Code of practise for noise and vibration control on construction and open sites*.

Levels have been calculated for "Worst-Case" situations where noise sources will either be closest to the noise sensitive receiver and/or not screened by existing site structures. Noise levels have also been calculated for the "Average" situation, with noise sources located towards the centre of the site. **The latter is likely to be representative of the long-term noise emissions.**

I1 Equipment Operating Periods

For the purpose of our calculation, the following plant items will be working together simultaneously for between 25 to 100% of the time over a 15-minute period for each of the proposed phases. The scenarios described in Table I 1 have been reviewed by Hansen Yuncken and confirmed to be representative of likely "Worst Case" and "Average" work periods.

Equipment	% of time operating in representative 15-minute period			
	"Worst Case"	"Average"		
Excavation				
20T Excavator	50	50		
Truck & Dog	25			
Grader	25			
15T Vibrating Pad Foot Roller	25			
Whacker Packers (plate compactor)	25	25		
10T Smooth Drum Roller	50			
5T Front Tipper	25	25		
Generator	100	100		
Telehandler	25	25		
Water Cart	25	25		
Piling				
6T Dozer	50	50		
10T Piling Rig	5 ¹	2.5 ²		
5T Excavator	25			
Concrete Agitator trucks	25			
Needle Vibrator	25	25		
Water Cart	25			
Construction - Structure				
Concrete Boom/Line Pump (40m)	50	25		
Concrete Agitator truck	50	25		

Table I 1: "Worst Case" and "Average" equipment operation scenarios

MARSHALL DAY 7	
Acoustics)

Ferriemont	% of time operating in representative 15-minute period				
Equipment	"Worst Case"	"Average"			
Mobile Crane	25	25			
Grinder	25				
Needle Vibrator	50	25			
Boom Lift (up to 16m)	25				
Scissor Lift (up to 8m)	25				
Cement Mixer	25	25			
Generator	100	50			
Telehandler	25	25			
Water Cart	25	25			
Air Compressor	25	25			
Jack Hammer	50				
Brick Saw	25				
Construction - Finishes					
Scissor Lift (up to 8m)	50	25			
Boom Lift (up to 16m)	50	25			
Grinder	50	25			
3T Front Tipper	50	25			
Air Compressor	50	25			
Brick Saw	50	25			

0/ of time executive in representative 15 minute region

¹ Noise levels for "Worst Case" piling is based on a single pile being struck 50 times during the representative 15-minute period

² Noise levels for "Average" piling is based on a single pile being struck 25 times during the representative 15-minute period

On this basis, noise levels at the nominated noise sensitive receivers from the various phases of construction have been predicted. For residential receivers, noise levels have been calculated at a position at the receiver that is most exposed to noise from construction activities. For the Active Recreation receiver noise has been calculated at the nearest position at which recreation activities or spectating may occur

12 **Excavation Phase**

Table I 2 details the predicted noise levels at the nominated receivers during the Excavation phase. Calculated noise levels include the effects of the noise control recommendations detailed in Section 5.1.

The calculated levels indicate that noise from Excavation activities is below the "Active Recreation" management level for the "Worst Case" and "Average" scenarios for Peter Hastie Oval.

For the Estella Rd Residences, predicted noise levels are expected to up to 23 dB above the "Noise Affected" goals for the "Worst Case" position and up to 12 dB above the "Noise Affected" goal for the "Average" position.

13 **Piling Phase**

Table I 3 details the predicted noise levels at the nominated receivers during the Piling phase. Calculated noise levels include the effects of the noise control recommendations detailed in Section 5.1.



The calculated levels indicate that noise from Piling activities is below the "Active Recreation" management level for the "Worst Case" and "Average" scenarios for Peter Hastie Oval.

For the Estella Rd Residences, predicted noise levels are expected to up to 20 dB above the "Noise Affected" goals for the "Worst Case" position and up to 10 dB above the "Noise Affected" goal for the "Average" position.

I4 Construction - Structure Phase

Table I 4 details the predicted noise levels at the nominated receivers during the Construction - Structure phase. Calculated noise levels include the effects of the noise control recommendations detailed in Section 5.1.

The calculated levels indicate that noise from Construction - Structure activities is below the "Active Recreation" management level for the "Worst Case" and "Average" scenarios for Peter Hastie Oval.

For the Estella Rd Residences, predicted noise levels are expected to up to 26 dB above the "Noise Affected" goals for the "Worst Case" position and up to 15 dB above the "Noise Affected" goal for the "Average" position.

I5 Construction - Finishes Phase

Table I 5 details the predicted noise levels at the nominated receivers during the Construction - Finishes phase. Calculated noise levels include the effects of the noise control recommendations detailed in Section 5.1.

The calculated levels indicate that noise from Construction - Finishes activities is below the "Active Recreation" management level for the "Worst Case" and "Average" scenarios for Peter Hastie Oval.

For the Estella Rd Residences, predicted noise levels are expected to up to 18 dB above the "Noise Affected" goals for the "Worst Case" position and up to 7 dB above the "Noise Affected" goal for the "Average" position.



Table I 2: Predicted noise levels during Excavation works

Receiver	Period	Assessment	Calculated noise	"Noise affected"		"Highly noise affected"	
			level ² , dB L _{Aeq, 15min} ³	Management level, dB L _{Aeq, 15min}	Exceedance, dB	Management level, dB L _{Aeq,15mins}	Exceedance, dB
Estella Rd	Within guideline hours ¹	Worst-case	65	42	23	75	
Residences		Average	54	42	12	75	
Peter Hastie	Within guideline hours ¹	Worst-case	62	C.C.		NI/A	NI / A
Oval		Average	52	60		IN/A	IN/A

¹ Monday – Friday: 0700-1700hrs, Saturday 0800-1300hrs

² Calculations included the recommended noise controls detailed in Section 5.1

³ For residential receivers, unless noted otherwise, noise level calculated at 1.5m above ground level at the property boundary most exposed to construction noise in accordance with the requirements of the ICNG. Noise levels at upper floors without shielding are likely to be higher. For the Active Recreation receiver noise has been calculated at the nearest position at which activities or spectating may occur

Table I 3: Predicted noise levels during Piling works

Receiver	Period	Assessment	Calculated noise	"Noise affected"		"Highly noise affected"	
			level ² , dB L _{Aeq, 15min} ³	Management level, dB L _{Aeq, 15min}	Exceedance, dB	Management level, dB L _{Aeq,15mins}	Exceedance, dB
Estella Rd	Within guideline hours ¹	Worst-case	62	42	20	75	
Residences		Average	52	42	10		
Peter Hastie	Within guideline hours ¹	Worst-case	62	C C		NI / A	NI / A
Oval		Average	53	60		IN/A	IN/A

¹ Monday – Friday: 0700-1700hrs, Saturday 0800-1300hrs

² Calculations included the recommended noise controls detailed in Section 5.1

³ For residential receivers, unless noted otherwise, noise level calculated at 1.5m above ground level at the property boundary most exposed to construction noise in accordance with the requirements of the ICNG. Noise levels at upper floors without shielding are likely to be higher. For the Active Recreation receiver noise has been calculated at the nearest position at which activities or spectating may occur



Table I 4: Predicted noise levels during Construction - Structure works

Receiver	Period	Assessment	Calculated noise	"Noise affected"		"Highly noise affected"	
			level ² , dB L _{Aeq, 15min} ³	Management level, dB L _{Aeq, 15min}	Exceedance, dB	Management level, dB L _{Aeq,15mins}	Exceedance, dB
Estella Rd	Within guideline hours ¹	Worst-case	68	42	26	75	
Residences		Average	57	42	15	75	
Peter Hastie	Within guideline hours ¹	Worst-case	64	C C		N/A	NI/A
Oval		Average	54	60		IN/A	N/A

¹ Monday – Friday: 0700-1700hrs, Saturday 0800-1300hrs

² Calculations included the recommended noise controls detailed in Section 5.1

³ For residential receivers, unless noted otherwise, noise level calculated at 1.5m above ground level at the property boundary most exposed to construction noise in accordance with the requirements of the ICNG. Noise levels at upper floors without shielding are likely to be higher. For the Active Recreation receiver noise has been calculated at the nearest position at which activities or spectating may occur

Table I 5: Predicted noise levels during Construction - Finishes works

Receiver	Period	Assessment	Calculated noise	"Noise affected"		"Highly noise affected"	
			level ² , dB L _{Aeq, 15min} ³	Management level, dB L _{Aeq, 15min}	Exceedance, dB	Management level, dB L _{Aeq,15mins}	Exceedance, dB
Estella Rd	Within guideline hours ¹	Worst-case	60	40	18	75	
Residences		Average	49	42	7		
Peter Hastie	Within guideline hours ¹	Worst-case	50	C C		NI / A	NI / A
Oval		Average	44	CO		N/A	N/A

¹ Monday – Friday: 0700-1700hrs, Saturday 0800-1300hrs

² Calculations included the recommended noise controls detailed in Section 5.1

³ For residential receivers, unless noted otherwise, noise level calculated at 1.5m above ground level at the property boundary most exposed to construction noise in accordance with the requirements of the ICNG. Noise levels at upper floors without shielding are likely to be higher. For the Active Recreation receiver noise has been calculated at the nearest position at which activities or spectating may occur



APPENDIX J PROJECT UPDATE LETTER BOX DROP

NSW Department of Education – School Infrastructure



New primary school in Estella, Wagga Wagga 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 Estella Road to support the growing community. The school will include:

- 16 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 480 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 on 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 www.schoolinfrastructure.nsw.gov.au/projects/n/newprimary-school-in-estella-wagga-wagga.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





NSW Department of Education – School Infrastructure

Managing construction impacts

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

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

You can view the consent conditions, including those required for managing construction impacts via the project webpage at https://www.schoolinfrastructure.nsw.gov.au/projects/n/new-primary-school-in-estella-wagga-wagga.html.

Your feedback

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

Provide your feedback via email or phone by Friday 26 June 2020.

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

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

schoolinfrastructure.nsw.gov.au





NSW Department of Education – School Infrastructure

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



schoolinfrastructure.nsw.gov.au





NSW Department of Education – School Infrastructure

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 mirigation 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 Estella, Wagga Wagga is among the second wave of projects with assessments fast-tracked. Having the SSD application fast tracked will mean the projects can get underway sconer 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.

schoolinfrastructure.nsw.gov.au

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-apublic-school/enrolment.

If you would like to express an interest in enrolments at the new school, please contact the Wagga Wagga Education Office on 6937 3812.

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 can I contribute my feedback to the school?

Help us inform and develop the identity of the new primary school in Estella, Wagga Wagga.

Please take the survey online at https://www.surveymonkey.com/r/QP9TN52 or click or scan the QR code to fill out the survey.



The survey will be open for feedback until Friday 10 July 2020



MARSHALL DAY

APPENDIX K COMPLAINTS RESPONSE PROCEDURE

In the interest of maintaining good relationships and in being compliant with SSDA requirements, Hansen Yuncken adopts the following complaint response procedure:

- 1. The Hansen Yuncken will have two main points of contact, (XXXXXX) and (XXXXXX). They will be the responsible people and will be contactable by a dedicated customer service mobile number once the site is live.
- 2. The Hansen Yuncken representative who receives the call via the service line, will record the details and the nature of the complaint on the site-specific Customer Service Line Log.
- 3. The Hansen Yuncken representative will assess if the problem can be simply resolved by reducing noise levels through implementation of the various work practises detailed in the Construction Noise Management Plan
- 4. The Hansen Yuncken representative who receives the call will advise the complainant of the action taken and record all details of the conversation, including the complainants' name, number and nature of complaint.
- 5. A copy of the Customer Service Line Log will be filed internally with the site's daily reports and will be issued to NSW Department of Planning or relevant authority

K1 Customer Service Line Log

ITEM	Comments
Date and Time of Call:	
Name and location of caller:	
Phone number:	
Nature of Call:	
(If noise complaint, note on-site activities at the time)	
Action taken:	
NSW Department of Planning notified: (Y/N)	



A.7 Biodiversity Management Plan



BIODIVERSITY MANAGEMENT PLAN

HANSEN YUNCKEN

New Estella Road Public School Wagga Wagga

April 2020

Project Number: 20-112



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Final V1.0	7/04/2020	E. Matthews	Sarah Hillis WWCC	Natasha Arens

NGH Consulting prints all documents on environmentally sustainable paper including paper made from bagasse (a by-product of sugar production) or recycled paper.

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W. www.nghconsulting.com.au

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Biodiversity Management plan

New Estella Road Public School Wagga Wagga

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Biodiversity Management plan

New Estella Road Public School Wagga Wagga

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ACRONYMS AND ABBREVIATIONS

BC Act	Biodiversity Conservation Act 2016 (NSW)
BDAR	Biodiversity Development Assessment Report
Biosecurity Act	Biosecurity Act 2015 (NSW)
BMP	Biodiversity Management Plan
CEMP	Construction environmental management plan
Cwth	Commonwealth
DPIE	(NSW) Department of Planning, Industry and Environment
DEE	(Cwth) Department of Environment and Energy
EEC	Endangered ecological community – as defined under relevant law applying to the proposal
EIS	Environmental impact statement
EPBC Act	(Cwth) Environment Protection and Biodiversity Conservation Act 1999
EP&A Act	(NSW) Environmental Planning and Assessment Act 1979
EWMS	Environmental Work Method Statements
ha	hectares
Heritage Act	(NSW) Heritage Act 1977
JHR	John Holland Rail
km	kilometres
m	Metres
MNES	Matters of National environmental significance under the EPBC Act (c.f.)
MWREF	Minor Works Review of Environmental Factors
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NSW	New South Wales
OEH	(NSW) Office of Environment and Heritage, formerly Department of Environment, Climate Change and Water
REF	Review of Environmental Factors

Biodiversity Management plan

New Estella Road Public School Wagga Wagga

- REP Regional Environmental Plan
- sp/spp Species/multiple species
- TARP Trigger Action Response Plan
- TPZ Tree Protection Zone

1. INTRODUCTION

1.1. PURPOSE AND OBJECTIVES

Hansen Yuncken is proposing to undertake early works clearing and earthworks for Estella Primary School (the proposal) on a parcel of land in the suburb of Estella. The proposal would develop approximately 2.15 ha of the 3.1 ha development site. The proposal is in the Wagga Wagga Local Government Area NSW, within the grounds of Charles Sturt University, between Estella Road and Darnell Smith Drive (Figure 1-1). The subject land is Lot 1 DP 1253885, which is approximately 3.1 ha in size and is owned by Schools Infrastructure NSW (SINSW). Land surrounding the development site, is mostly cleared and comprised of sporting ovals to the east, residential land to the south, cleared agricultural paddocks to the west and university grounds to the north.

This Biodiversity Management Plan (BMP) forms part of the Construction Environmental Management Plan (CEMP) for Estella Primary School, and has been prepared to address the construction requirements of:

- Wagga Wagga City Council Conditions of Consent (CoC)
- All applicable legislation, during the construction and operation of the Project.
- Mitigation and management measures and commitments in the Estella Primary School Biodiversity Development Assessment Report (BDAR) dated November 2019.

The purpose of this BMP is to provide a framework for the management of biodiversity issues during the early works of the Project. Management measures applicable during the early works include the following:

- Ground disturbance
- Vegetation clearance
- Unplanned Threatened Species Finds
- Weed and Pest Management
- Vehicle Hygiene
- Vegetation Constraint Management

Implementing this BMP will ensure that the Project Team meets the Project requirements in a systematic manner and continually improves its performance.

1.2. THE PROJECT

The Scope of Works under the contract includes site establishment works for future educational establishment including bulk earthworks and vegetation removal, temporary security fencing, temporary construction access, on-site construction parking and site office facilities. This will include the clearing 2.15 ha of native vegetation.

During construction and operation, the site will be accessed off Estella Road.

In terms of timing:

• The construction period will last for up to 2 months from the commencement of site establishment works. Construction hours will be limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1pm.

1.3. CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN OVERVIEW

The BMP is part of Hansen Yuncken's environmental management framework for the Project, as described in the overall Construction Environmental Management Plan (CEMP).

Used together, the CEMP, BMP and other sub-plans, procedures and Environmental Work Method Statements (EWMS) form management guides that clearly identify required environmental management actions for reference by Hansen Yuncken Infrastructure personnel and contractors.

The review and document control processes for this plan are described in the CEMP.

1.4. ENVIRONMENTAL POLICY

The environmental policy describes Hansen Yuncken's commitment to minimise the environmental impacts and enhancing the social and economic benefits of their products.

The environmental policy is displayed at the site office and communicated to employees and other interested parties via inductions and ongoing awareness programs.

A copy of the environmental policy is provided in the CEMP.

1.5. CONTINUAL IMPROVEMENT

Management reviews are undertaken as part of the continual improvement process. The review process will be detailed in the CEMP.

Communication is also key for continual improvement.

1.6. CONSULTATION

NGH provided the draft BMP to WWCC on 24 March for their input and review. Comments were received on both 1 April and 7 April, which were addressed by NGH.

Council have now approved and adopted the final BMP.

New Estella Road Public School Wagga Wagga



Figure 1-1 Site map showing extent of native vegetation.

2. PLANNING

2.1. LEGISLATIVE AND OTHER ENVIRONMENTAL MANAGEMENT REQUIREMENTS

2.1.1. Legislation

Legislation relevant to biodiversity management includes:

- Environmental Planning and Assessment Act 1979 (EP&A Act).
- *Biodiversity Conservation Act 2016* (BC Act).
- Protection of the Environment Operations Act 1997 (POEO Act).
- Biosecurity Act 2015.
- Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Relevant provisions of the above legislation are explained in the register of legal and other requirements included in the CEMP.

2.1.2. Guidelines and Standards

The main guidelines, specifications and policy documents relevant to this BMP include:

- NSW National Parks & Wildlife Service. 2001. *Policy for the Translocation of Threatened Fauna in NSW: Policy and Procedure Statement No. 9* Threatened Species Unit, Hurstville NSW.
- Australian Standard AS 4373 Pruning of Amenity Trees.
- Australian Standard 4970 2009 Protection of Trees.

2.2. OBJECTIVES AND TARGETS

2.2.1. Objectives

The key objective of the BMP for the school early works is to ensure that the impacts of this project on biodiversity are managed and are within the scope permitted by the planning approval.

To achieve this objective, Hansen Yuncken will:

- Ensure appropriate controls and procedures are implemented to avoid (where necessary) or minimise potential adverse impacts to biodiversity values in the Project footprint.
- Ensure appropriate measures are implemented to address the mitigation measures detailed in the BDAR and CoCs.
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in section 2.1.1 and section 2.1.2 of this BMP.

2.2.2. Targets

The following targets have been established for the management of biodiversity impacts for the Project:

- Ensure full compliance with the relevant legislative requirements.
- Ensure full compliance with relevant requirements of the BDAR and CoCs.
- No disturbance to biodiversity outside the construction footprint.
- Minimise disturbance to biodiversity in the project area.
- Survey weed abundance in exclusion zones, and use as a basis for implementing seasonal targeted weed control measures in each zone.
- Survey and map weed distribution across the project site and use to implement targeted weed control measures to control all mapped infestations.
- Targeted weed control measures to be implemented for any seasonal weed outbreaks within a year of discovery.
- No native fauna mortality or injury during works.
- No pollution or siltation of endangered ecological communities or threatened species habitat.

2.3. CONDITIONS OF CONSENT

WWCC issued approval for the Project on 31 January 2020.

Specific conditions relating to biodiversity which detail specific requirements for mitigation and management measures are detailed in Table 2-1.

Table 2-1 Conditions of Consent relating to biodiversity.

Schedule C. The 15 ecosystem credits for 'Blakely's Red Gum – YellowThis reportPre-	
CoC 2Gum – grassy tall woodland of the NSW South Western Slopes Bioregion' must be retired to offset the residual biodiversity impacts of the development. The requirement to retire credits may also be satisfied by payment to the Biodiversity Conservation Fund of an amount equivalent to the 15 Ecosystem credits for 'Blakely's Red Gum – Yellow Box – grassy tall woodland of the NSW South Western Slopes Bioregion' as calculated by the BAM Credit Calculator.Comme of earlyEvidence of the retirement of credits or payment to the Biodiversity Conservation Fund must be provided to CouncilImage: State Sta	ncement works

New Estella Road Public School Wagga Wagga

Condition of Consent	Condition requirement	Reference	Timing
Schedule C CoC 3	rior to the commencement of any works on site, a Biodiversity lanagement Plan must be prepared to the satisfaction of the onsent authority. The Biodiversity Management Plan shall be corporated or referenced within the required Construction nvironmental Management Plan referred to in condition C5 f this consent. he Biodiversity Management Plan must: Section 6,		Pre- commencement of early works
	 Identify the development site as per the approved Biodiversity Development Assessment Report (BDAR) and approved plans. Identify areas of land that are to be retained as outlined in the approved BDAR. Ensure the implementation of all measures proposed in the approved BDAR to mitigate and manage impacts on biodiversity outlined in Section 8 and Table 8-1 of the approved BDAR, including performance measures for each commitment. Ensure the implementation of all management and protection measures recommended by the approved 	Figure 1-1 Section 6.1 & Appendix C Section 7 Section 6.2.2	
	 Arboricultural Assessment Report. 5. Ensure that construction impacts are restricted to the development site and do no encroach into areas of retained native vegetation and habitat. All materials stockpiles, vehicle parking, machinery storage and other temporary facilities must be located within the areas for which biodiversity impacts were assessed in the BDAR. 	Section 6.2.1	
Schedule C CoC 5.2	 A final Construction Environmental Management Plan (CEMP) shall be prepared and submitted to Council prior to the commencement of any works. The CEMP shall be updated to address, as a minimum, the following matters: 2. Incorporation of the approved Biodiversity Management Plan referred to in condition C3 of this consent including all associated recommendations. 	Construction requirement covered by this report Section 6	Pre - commencement of early works

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Condition of Consent	Condition requirement	Reference	Timing
Schedule C CoC 9	The existing trees to be retained within the property of the proposed development shall be protected from all construction works. All care must be taken to protect existing trees to be retained from damage, including street trees and trees located adjacent to the proposed development. The developer shall identify all trees to be retainer prior to commencement of construction works. A Tree Protection Zone (TPZ) shall be constructed for all existing trees to be retained within the development in accordance with Australian Standards – AS 4970-2009 Protection of Tree on Development Sites. Construction of Tree Protection Zone's shall be completed and inspected by Council's Supervisor of Tree Planning and Management, prior to the commencement of any site works. Contact can be made by phoning 1300 292442 during normal business hours. Removal, relocation or disruption of the Tree Protection Zone fencing will be considered as a breach of this consent. TPZ fences shall remain in place until the end of construction. If damage of any sort should occur to any protected trees/vegetation within the development, contact shall be made with Council's Supervisor of Tree Planning and Management to determine what remedial action should be taken. Throughout the construction period regular inspections of protected trees shall be carried out to ensure trees retained are of good health and vigour.	Section 6.1 & 6.2	Pre- commencement of early works, early works, post-early works.
Schedule C CoC 19	Tree removal from the subject site is restricted to that identified within recommendations of the approved Arboricultural Assessment Report. All recommendations of the report shall be implemented including all management and protection works recommended for retained vegetation. Further consent under Council's Tree Preservation Order is not required for removal of the subject trees. The approved works shall be executed so as to comply with the NSW Work Cover Code of Practice – amenity tree industry 1998 No.034. Any works associated with tree removal shall be carried out in Accordance with Australian Standards – AS 4373-2007, Pruning of Amenity Trees. All tree stumps shall be removed below ground level and the surface area reinstated to prevent potential injury. All waste material from the subject trees shall be removed from site in conjunction with clearing.	Section 6.1 & 6.2	Early works

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Condition of Consent	Condition requirement	Reference	Timing
Schedule C CoC 20	Temporary access through Tree Protection Zones during construction requires the approval of Council's Supervisor of Tree Planning and Management who shall be notified of such need and a site inspection will be carried out to determine the level of access. A root protection layer shall be installed over the root zone to help minimise the effects of soil compaction to the tree's root system. A 150 mm layer of coarse woodchip or other like material shall be placed over the trafficable surface. This should not be considered for long term use. Services that require passing through or within close proximity of protected tree's root zone shall be installed underground and under barred. Under barring shall be installed underground	Section 6.1.1	Early works
	and under bored. Under boring shall start and finish two (2) meters outside of the tree's drip zone with a minimum depth of 900 mm. Utility authorities should make use of a common trench where possible to minimise impact to the tree's root system.		

2.4. COMMITMENTS

Commitments to protect biodiversity over the life of the Project were contained in the BDAR The commitments listed in Table 2-2 are in addition to the CoCs in Section 2.3.

Table 2-2 Commitments of the Proponent and Project Contractors.

Commitment reference	Commitment requirement	Location in the BMP	Timing
BDAR	 Implement clearing protocols during tree clearing works, including pre-clearing surveys, daily surveys and staged clearing, with the presence of a trained ecologist or wildlife handler using the following: Pre-clearing checklist. Tree clearing procedure. 	Sections 6.2.3, Error! Reference source not found. and 6.2.6	Early works
BDAR	 Relocate habitat features (fallen timber, hollow logs) from within the development site by implementing Tree-clearing procedure including relocation of habitat features to adjacent area for habitat enhancement. 	Sections 6.2.5, 6.2.6 and 6.2.7	Early works
BDAR	 Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed. Approved clearing limits to be clearly delineated with temporary fencing or similar prior to construction commencing. 	Section 6.1, 6.2, and 6.4.	Early works

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Commitment reference	Commitment requirement	Location in the BMP	Timing	
	No stockpiling or storage within dripline of any mature trees			
	 In areas to clear adjacent to areas to be retained, chainsaws would be used rather than heavy machinery to minimise risk of unauthorised disturbance. 			
	Strict weed protocol must be observed at all times.			
BDAR	Temporary fencing to protect vegetation to protect vegetation to be retained. Prior to construction commencing, exclusion fencing and signage would be installed around habitat to be retained.	Section 6.2.1	Early works	
BDAR	Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas.	Section 6.4 & 6.5	Early works	
	 A Weed Management procedure would be developed for the proposal to prevent and minimise the spread of weeds. This would include: Management protocol for declared priority weeds under the <i>Biosecurity Act 2015</i> during and after construction. Weed hygiene protocol in relation to plant, machinery, and fill. 			
	• Any occurrences of pathogens such as Myrtle Rust and Phytophthora would be monitored, treated, and reported.			
	• The weed management procedure would be incorporated into the Biodiversity Management Plan.			
BDAR	 Staff training and site briefing to communicate environmental features to be protected and measures to be implemented. Site induction. Toolbox talks. 	Section 8.2	Early works	
BDAR	Erosion and sediment controls. An erosion and sediment control plan would be prepared in conjunction with the final design and implemented.	Separate ESCP to this plan. The ESCP is a requiremen t of the CEMP.	Pre-early works	

2.5. ROLES AND RESPONSIBILITIES

The Hansen Yuncken Project Team's organisational structure and overall roles and responsibilities are outlined in the CEMP.

The Environmental Management Team includes the following roles and responsibilities:

Table 2-3 Construction team roles and responsibilities (from the CEMP).

Role	Responsibility		
Project Manager	 Ensure resources are made available to enable works to comply with EMS and other environmental management requirements. Ensure that all procedures are followed adequately. Ensure appropriate approvals and licences are held. Ensure all staff and contractors are aware of environmental compliance requirements and environmental controls. Responsible for maintaining and implemented the EMP Responsible for reporting pollution incidents. 		
Health Safety and Environment Officer (HSE)	 Undertake routine environmental site inspection. Maintaining environmental records. Ensuring materials and chemicals and ensuring all items are appropriately stored. Responsible for addressing corrective actions arising from Environmental Inspections. Responsible for reporting pollution incidents Monitoring and reporting environmental compliance. 		
Site Manager	 Responsible for maintaining environmental management controls. Responsible for the induction of staff and contractors. Responsible for all aspects of the worksite including the coordination and management of all staff and contractors. Responsible for having input into the EMP Responsible for reporting pollution incidents 		

Further details regarding specific responsibilities for the implementation of environmental controls are detailed in the CEMP.

3. EXISTING ENVIRONMENT

3.1. SOILS

Full details of the soil characteristics are contained in the EIS and Geotechnical Report. Details below are relevant to this BMP.

The subsurface comprises of brown to grey brown silty sand topsoil over brown/red, light brown to yellow brown sandy clay with increasing gravels and weathered rock. Based on the results of the site investigations, the report provides advice on the geotechnical aspects of the proposed civil and

structural design. These recommendations relate to excavation, retention, footings, anchors, pavements and drainage. The EIS confirms that based on the subsurface conditions the proposal can be successfully constructed on the site.

3.2. FLORA

The development site has been subject to past agricultural clearing and has undergone restoration activities over the last 30 years. Three planted tree lots occur along the fence lines of the site, comprised of a diverse mix of local and non-local native species. The western boundary contains plantings about 20 to 30 years old. This tree lot contains some older Yellow Box (*Eucalyptus melliodora*) and Red Box (*Eucalyptus polyanthemos*), however is mostly dominated by native plants not local to the area such as Cootamundra Wattle (*Acacia baileyana*) and White Cedar (*Melia azedarach*). The southern boundary plantings are comprised of a stand of semi-mature Yellow Box, densely planted in rows and of a uniform age. The eastern boundary of the site is comprised of a mix of local native species about 5 to 10 years old.

The remaining area of the development site is a derived native grassland dominated almost exclusively by Red Grass (*Bothriochloa macra*). Isolated juvenile Yellow Box trees (*Eucalyptus melliodora*) are regenerating throughout the grassland.

The entire study area (3.1 ha) is considered to be comprised of native vegetation. The Project will impact approximately 2.15 ha of vegetation.

Vegetation communities

One Plant Community Type (PCT) was identified in the development site:

 Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (PCT 277).

This PCT is listed as an Endangered Ecological Communities (EEC).

Blakely's Red Gum – Yellow Box grassy tall woodland

Within the development site, this PCT occurred as:

- 0.94 ha planted vegetation
- 2.15 ha derived native grassland

The vegetation has been cleared in the past and very little remnant vegetation remains. One mature Yellow Box remains on the development site but it is unclear whether this has been planted in the past.

PCT277 is widespread in the locality and the dominant vegetation type mapped in the locality. The planted vegetation is comprised of species that would occur in this community such as Yellow Box, Blakley's Red Gum and Silver Wattle. The understory grasses, Red Grass, Spear Grass and Native Wheat Grass are also typical of this community. The gentle slope of the landform and clay soils are also consistent with the PCT. Based on these factors, PCT 277 is considered the best fit for the planted vegetation and native grassland.

PCT277 can form part of the Endangered Ecological Community (EEC) - White Box Yellow Box Blakely's Red Gum Woodland.

The planted vegetation along the Eastern and Southern boundary are comprised of native species that are characteristic to the EEC and these areas are considered to form part of the Endangered community. However, the planted vegetation along the Western Boundary is comprised of planted species that are not representative of the community such as Cootamundra Wattle and White Cedar and this area is not considered to form part of the EEC.

The grassland vegetation is partially intact with native grasses and comprises the EEC although in a degraded state.

3.3. FAUNA

The field surveys identified one threatened species, Superb Parrot (*Polytelis swainsonii*), which is listed as vulnerable in NSW.

The assessment determined that the habitat within the project site is unlikely to be preferred habitat of the Superb Parrot. No hollow bearing trees were identified within the development site, and all trees are less than approximately 40 years old and not mature enough to develop hollows. With the absence of hollows, it is unlikely any breeding population of Superb Parrots could occur in the development site. The development site does not fall within a mapped important area for the Swift Parrot and Regent Honeyeater (OEH, 2018) and these species are not considered to occur within the development site.

3.4. WEEDS AND PESTS

Two non-native fauna species were recorded during targeted surveys: Rabbit (*Oryctolagus cuniculus*) and Fox (*Vulpes vulpes*). Two priority weeds listed on NSW WeedWise were recorded: *Lycium ferocissimum* (African Boxthorn) and *Hypericum perforatum* (St. Johns Wort). These species are listed as having a general biosecurity duty, and African boxthorn has an additional prohibition on dealings duty.

4. ENVIRONMENTAL ASPECTS AND IMPACTS

The project has the potential to impact biodiversity values at the site in ways that cannot be avoided. This would occur through direct impacts such as habitat clearance and installation of infrastructure, and indirect impacts including weed ingress, soil and water contamination, and generation of excessive dust, light, or noise.

Key aspects of the Project that could result in impacts to biodiversity as reported from the BDAR have been described in Table 4-1.

Nature of impact	Extent	Frequency	Duration and timing	Consequence	
Direct impacts					
Habitat clearance for permanent and	nce 2.15 ha (One-off	Dne-off Construction phase: Short- term	• Direct loss of native flora and fauna habitat.	
construction facilities.				• Potential over-clearing of habitat outside proposed development footprint.	
				 Injury and mortality of fauna during clearing of fauna habitat and habitat trees. 	
				• Disturbance to stags, fallen timber, and bush rock.	
Displacement of resident fauna.	Unknown	Regular	Construction, operation	• Direct loss of native fauna.	
				Decline in local fauna populations.	
Injury or death of	Unknown	own Regular	Construction	Direct loss of native fauna.	
				Decline in local fauna populations.	
Indirect impacts (those listed below are included in the BAM)					
Inadvertent impacts on adjacent habitat	Unknown	Rare	re Construction Phase: Short-term	• Direct loss of native flora and fauna habitat.	
or vegetation.				 Injury and mortality of fauna during clearing of fauna habitat and habitat trees. 	
				• Disturbance to stags, fallen timber, and bush rock.	
-				Increased edge effects.	
Transport of weeds and pathogens from the site to adjacent vegetation.	Unknown	Irregular	Construction & Operational Phase: Long- term	 Degradation of White Box- Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland EEC through weed encroachment. 	
				• Minor loss of native flora and fauna habitat.	

Table 4-1 Potential biodiversity impacts as a result of the Project.

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Nature of impact	Extent	Frequency	Duration and timing	Consequence
				The combined impacts are likely to be minor in nature if they occur at all and would result in a negligible consequence for bioregional persistence.
Rubbish dumping	Unknown	Irregular	Construction & Operational	• Degradation of White Box- Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland EEC

5. WORK SCHEDULES

5.1. CONSTRUCTION ACTIVITIES

The following work schedule is indicative of the staging that will be implemented at the project site. Some activities may occur in parallel, particularly given the size of the project site.

The schedule in Table 5-1 is indicative of construction sequencing and mitigation measures. These mitigation measures, where relevant, would be incorporated into EWMSs.
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Table 5-1 Schedule of construction works.

Project phase	Potential disturbance	Key actions and mitigation	Performance target
Site set up	 Disturbance to native groundcover from vehicle movements. Disturbance and removal of fauna habitat including woody debris. Spread of priority weeds. Collision with wildlife causing injury or death. Disturbance of native fauna by light or noise at night. 	 Prior to the commencement of work, a physical vegetation clearing boundary at the approved clearing limit is to be clearly demarcated and implemented. The delineation of such a boundary may include the use of temporary fencing, flagging tape, para-webbing etc. Stockpiling materials and equipment and parking vehicles will be avoided within the dripline (extent of foliage cover) of any native tree. Wash and inspect plant and vehicles as per Vehicle Hygiene Procedure. Pre-clearing surveys will be carried out by an ecologist and will include general fauna surveys, general tree hollow inspections and dam/waterway inspections. Habitat trees will be clearly marked with flagging tape. If clearing outside this period cannot be achieved, pre-clearing surveys would be undertaken to ensure these species do not occur. Include awareness training in site inductions regarding site speed limits. Site speed limits to be enforced. Avoid night works. Where night works cannot be avoided, work must not take place within 100 m of exclusion zones. Direct lights away from vegetation. Noise-emitting plant will be oriented so that noise will be directed away from exclusion zones wherever possible. 	 No disturbance to biodiversity outside the approved construction footprint. Minimise disturbance to biodiversity in the project area. Protect exclusion zones from adverse impacts during construction. Weeds and pests are controlled. Speed limits will be enforced. No native fauna mortalities during construction. No works causing light or noise impacts occurring near exclusion zones at night.

Project phase		Potential disturbance	Key actions and mitigation	Pe	Performance target				
Removal of temporary equipment	•	Disturbance to existing native fauna from lights and noise Disturbance of groundcover from stockpiles. Spread of priority weeds	 Machinery, trucks and equipment will be restricted to designated parking areas. No parking on roadside vegetation will occur. Stockpiles and storage of materials and machinery will avoid the dripline (extent of foliage cover) of any native tree. Stockpiles and storage will occur only on designated direct disturbance areas. Direct any lighting away from vegetation. Plant and vehicles will be inspected and washed as per Traffic Management Procedure. Install and maintain ERSED controls 	• • •	Weeds and pests are controlled. Speed limits will be enforced. No native fauna mortalities during construction. No pollution or siltation of aquatic ecosystems, wetlands, endangered ecological communities or threatened species habitat. Protect exclusion zones from adverse impacts during construction.				

6. ENVIRONMENTAL MANAGEMENT MEASURES

The following protocols and procedures have been developed to manage the environmental impacts of the project.

6.1. GROUND DISTURBANCE PROTOCOL

A ground disturbance permit process will be implemented during construction. The ground disturbance permit process is integral to communicate the distinction between vegetation protection areas and the ground disturbance footprints in which construction contractors will be working. This process is also vital to enable the construction contractor to track and control vegetation clearing on a daily, weekly, and monthly basis.

The ground disturbance permit process is managed by the HSEQ Manager and is summarised below.

- Contractors are informed in their contract and site induction that all ground disturbing activities require them to obtain a ground disturbance permit prior to undertaking the work.
- The ground disturbance permit must be submitted to the HSEQ Manager via email at least 48 hours before the work is undertaken.
- The HSEQ Manager will compare the proposed ground disturbance area to the project footprint detailed in the current approved development design.
- The HSEQ Manager will visit the site and conduct a pre-clearing survey (Section 6.2.4) to digitally capture and display clearance boundaries, with captured data uploaded to the project GIS database, and mark out vegetation projection areas.
- The HSEQ Manager will either issue the permit unamended or contact the contractor for further clarification.
- Once the permit has been issued, the construction contractor may undertake ground works as per their contract.
- Once the work has been completed (date specified in the permit), the HSEQ Manager will inspect the site, request any additional clean up or remediation activities and sign-off that the conditions of the permit have been met.
- The HSEQ Manager will then record the disturbed area as part of a running total disturbed area for the Project.

The ground disturbance permit form is provided in Appendix B.1.

6.1.1. Access through tree protection zone

Temporary access through Tree Protection Zones during construction requires the approval of Council's Supervisor of Tree Planning and Management who shall be notified of such need and a site inspection will be carried out to determine the level of access.

All trees and retained vegetation should be fenced or delineated so that trees and the soil around the trees are protected from adverse development impacts, including storage of materials, waste, plant and vehicle parking. Fencing of delineation should prevent entry and can used star posts, tape/flags or any other method that delineates and prevents entry. Temporary fence is recommended

close to construction site, along with the erecting no entry signs on the TPZ fencing. Site workers will have an induction including the requirements of TPZs and their importance.

A root protection layer shall be installed over the root zone to help minimise the effects of soil compaction to the tree's root system (only if required). A 150 mm layer of coarse woodchip or other like material shall be placed over the trafficable surface. This should not be considered for long term use.

Services that require passing through or within close proximity of protected tree's root zone shall be installed underground and under bored. Under boring shall start and finish two (2) meters outside of the tree's drip zone with a minimum depth of 900 mm. Utility authorities should make use of a common trench where possible to minimise impact to the tree's root system.

6.2. VEGETATION CLEARANCE PROCEDURE

The vegetation clearance procedure will be implemented for vegetation clearance during construction.

6.2.1. Vegetation Exclusion Zones

Exclusion fencing will define any vegetation to be retained.



Figure 6-1 Example of exclusion zone signage.



Figure 6-2 Example of exclusion zone fencing.

6.2.2. Arboricultural Assessment Report

An Arboricultural Assessment Report has been prepared by Wade Ryan Contracting (Appendix C). Ten trees will be removed during construction, none of these are considered significant. Trees to be removed include three Cootamundara wattles (*Acacia baileyana*) under 8m, five Red Box (*Eucalyptus polyanthemos*) trees, and two yellow box (*Eucalyptus melliodora*) trees. A brief summary of trees to be retained and removed is provided in Table 6-1 below. A map showing the location of each tree is shown in Figure 6-3. Please see Appendix C for further details.

Tree Number	Species	Recommendation
1	Eucalyptus melliodora	Remove
2	Eucalyptus melliodora	Retain
3	Eucalyptus melliodora	Retain
4	Acacia baileyana	Remove
5	Eucalyptus polyanthemos	Remove

Table 6-1 Summary of trees to be removed and retained (refer to Figure 6-3 for locations).

Tree Number	Species	Recommendation
6	Acacia baileyana	Remove
7	Acacia baileyana	Remove
8	Eucalyptus polyanthemos	Remove
9	Eucalyptus polyanthemos	Remove
10	Eucalyptus polyanthemos	Remove
11	Eucalyptus polyanthemos	Remove
12	Eucalyptus polyanthemos	Retain
13	Eucalyptus polyanthemos	Retain
14	Acacia sp.	Retain
15	Acacia sp.	Retain
16	Eucalyptus melliodora	Retain
17	Eucalyptus melliodora	Retain
18	Eucalyptus melliodora	Retain
19	Eucalyptus melliodora	Retain
20	Eucalyptus melliodora	Retain
21	Eucalyptus melliodora	Retain
22	Eucalyptus melliodora	Retain
23	Eucalyptus melliodora	Retain
24	Eucalyptus melliodora	Remove
25	Eucalyptus melliodora	Retain and prune
26	Eucalyptus melliodora	Retain
27	Eucalyptus melliodora	Retain
28	Eucalyptus melliodora	Retain and prune
29	Eucalyptus melliodora	Retain
30	Eucalyptus melliodora	Retain
31	Eucalyptus melliodora	Retain
32	Eucalyptus melliodora	Retain
33	Eucalyptus melliodora	Retain and prune
34	Eucalyptus melliodora	Retain and prune
35	Eucalyptus melliodora	Retain
36	Eucalyptus melliodora	Retain
Block C	Mixed Native Species	Retain

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Figure 6-3 Location of trees to be retained and removed within proposal area showing tree protection zones (TPZ)

6.2.3. Monitoring total clearing footprint

Vegetation clearance is only permitted in the areas identified in the BDAR (Figure 1-1) and Arborist Report (Figure 6-3, Appendix C). No more than 2.15 ha of native vegetation will be removed in total. The study area consists of 0.94 ha of planted PCT 277 (0.53 ha mature vegetation, 0.41 ha juvenile vegetation) and 2.15 ha derived grassland PCT 277(1.96 ha low condition, 0.18 moderate condition). Any additional clearance required will first require a project modification.

Prior to vegetation clearing, the HSEQ Manager will digitally capture and display clearance boundaries within the site. Survey teams and GIS databases will be used to inform and record vegetation clearing and site rehabilitation.

The cumulative amount of vegetation cleared will be progressively monitored by the HSEQ Manager. Prior to undertaking any vegetation clearing, this value will be compared to the total approved area to be cleared.

Demarcation of the development footprint is the responsibility of the construction contractor and will be determined by them. Typical measures will include:

- Use of temporary fencing
- Flag tape or rope
- Physical separation such as by an earth bund or drain

6.2.4. Pre-clearing surveys

Pre-clearing surveys will be carried out by the HSEQ prior to any vegetation clearing. The following pre-clearing surveys will be carried out when habitat trees are to be removed, including mature trees and other woody vegetation:

- Identifying any potential breeding/roosting habitat
- Recording number, location and type of tree hollows present for use during hollow-bearing tree removal (not anticipated at this site)
- Clearly marking habitat trees with flagging tape and demarcating area to be cleared

The results of these surveys will be provided to site staff (including equipment operators) involved in vegetation clearing, through site inductions, toolbox talks, and targeted training (Section 8.1), as well as through the issuing of ground clearance permits (Appendix B.1).

6.2.5. General process

When undertaking vegetation clearing, the process shown in Figure 6-4 will be followed to minimise the area of disturbance and the amount of vegetation to be cleared.



Figure 6-4 Vegetation clearance procedure. Lopping, pruning and trimming procedure

Heavy machinery will not be used for pruning or trimming. Appropriate tools to use are loppers, chain saws and vehicle mounted saws.

Tree limbs are to be removed using the three cut method as shown below in Figure 6-5.

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Figure 6-5 Three-cut method of removing branches.

6.2.6. Removal of trees outside the approved clearing limits

The approved clearing limit is the line between the vegetation to be removed and the vegetation to be retained. It will be shown on all design plans as required. Some construction activities will require tree removal or trimming that has not been included in the design.

Where additional impacts to trees are required, the following process will be followed:

- 1. The Site Manager will notify the HSEQ Manager of the location and need for the tree impact via the ground disturbance permit process
- 2. The HSEQ Manager will assess that the tree (or other vegetation type) is not heritage listed, a habitat tree, nominated for retention or protected under relevant legislation and is legally able to be removed and/or trimmed. Alternatives to removing the tree will also be investigated at this stage.
- 3. The HSEQ Manager will consult a heritage specialist if heritage significance is suspected.
- 4. The Supervisor will await written confirmation from the HSEQ Manager prior to restarting works around the tree(s).
- 5. .

6.2.7. Re-use of coarse woody debris (CWD)

Felled timber greater than 200 mm and less than 600 mm in diameter will be used as CWD for habitat enhancement and to maximize the salvage of resources within the disturbance area for beneficial reuse. CWD can be used to enhance habitat values in existing vegetation and rehabilitated areas including derived native grassland (either in offset areas or areas adjoining impacted areas). CWD can provide:

- Habitat for micro-invertebrates.
- Habitat for macro-invertebrates.
- Habitat for vertebrates using fallen timber for shelter, e.g. skinks, geckoes.
- Habitat for vertebrates using fallen timber for foraging, e.g. treecreepers, robins.
- A source of nutrients for native vegetation.

• Increased habitat complexity.

CWD will be placed as discrete logs rather than in piles to reduce fire risk and potential for use as shelter by feral animals such as foxes and rabbits. CWD will be placed at discrete intervals at densities to ensure that the CWD Benchmark for the receiving PCT is not exceeded. For PCT 277 (Blakely's Red Gum – Yellow Box grassy tall woodland), this benchmark is listed as 49 m per 1000 m². That is, in any 50 x 20 m plot, the total linear length of CWD greater than 10 cm in diameter will not exceed 49 m in total. The density of CWD must take into account existing fallen timber. Removal, transportation, and placement of CWD will be carried out in a manner that minimises disturbance to native vegetation, including the canopy, trees, shrubs, standing dead timber, fallen timber, and groundcover, as well as topsoil.

Felled timber greater than 600 mm in diameter (primarily tree trunks) will be used as CWD where practicable or left on site where it is too large to transport.

Felled timber between 10 and 200 mm in diameter will be chipped and used for disturbed area rehabilitation.

6.2.8. Re-use of soil resources

Topsoil will be salvaged where possible within the approved disturbance area and stockpiled for beneficial reuse in the enhancement or rehabilitation of the site, as per the Weed Management Procedure (section 6.4.1).

Stockpiles and storage of materials and machinery will avoid the dripline (extent of foliage cover) of any native tree.

6.3. THREATENED SPECIES FINDS PROCEDURE

The threatened species finds procedure will be implemented whenever a threatened species is unexpectedly found throughout construction and operation.

Any nests found in habitat features to be removed will be inspected by the Ecologist to determine whether fauna are using the nest, and whether relocation of the fauna and the nest to an adjacent area is viable.

As a general principle, any native animals found with the construction area will be avoided. Fauna will only be handled by a qualified ecologist or wildlife carer with relevant skills and experience (e.g. snake handling), and only when absolutely necessary.

Any onsite protected fauna found within a habitat feature to be removed will be captured and relocated according to the following steps. Any onsite protected fauna injured during a construction activity will be captured and a registered wildlife handler or veterinarian contacted.

Should threatened fauna, or suspected threatened fauna, be encountered, the procedure outlined in Figure 6-6 will be followed.

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Figure 6-6 Threatened species finds procedure. *Contact information for DPIE is as follows: (02) 9995 5000 (main switchboard), 131 555 (environment line). Contact information for DEE is as follows: 1800 803 772 (general enquiries line).

Step 1

Remove any threat to the animal that could cause or exacerbate an injury.

Step 2

Use appropriate equipment to capture the animal. This may include:

- Frogs: disposable gloves, disinfectant on hands and equipment between animals, disposable plastic bags (one per animal, one use only).
- Mammals: gloves, cloth bags/cotton pillow slips, up-to-date Australian Bat Lyssavirus vaccinations.

Step 3

Contain the animal to minimise stress. Gently place the animal in a holding box specifically designed for holding animals. Cotton pillowslips may be used to cover mammals, or mammals may be placed inside them. Boxes will be placed in a quiet, safe, dark location (not in a vehicle unless temperature is constantly monitored). Do not give the animal food or water.

Step 5

Call WIRES on 1300 556 686, who will provide advice on what to do until a trained WIRES rescuer can come to take the animal away. If you cannot contact WIRES, contact Wagga Wagga Veterinary Hospital Hospital on 02 6926 0900.

Step 6

Release fauna into similar habitats, as near as possible to their capture location. Day-active fauna will be released during the day of capture. Night-active fauna will be released at or after dusk. Arboreal (tree-dwelling) fauna will be slowly released from their bag onto the trunk of a tree, with bats and gliders placed on a tree with rough or peeling bark and hollows.

Step 7

Details of fauna captured and relocated will be recorded in a threatened species finds register (Appendix B.2). Any injury or death of a threatened species will be reported to the HSEQ Manager.

6.4. WEED AND PEST MANAGEMENT PROTOCOL

Weeds and pests will be controlled on site throughout construction and operation. The Site Manager or HSEQ Manager will also initiate collaboration with adjoining landholders to control animal pests and weeds that may traverse property boundaries. These initial communications will inform collaborative pest and weed management measures during construction and operation.

6.4.1. Weed management procedure

Weeds in this BMP are defined as non-native flora species, and particularly refers to those listed in the plot data in Appendix A.1. Thirty species of weed were recorded in the project area. Significant invasive weeds that were recorded include *Lycium ferocissimum* (African Boxthorn), listed as having a prohibition on dealings in Wagga Wagga LGA and general biosecurity duty for all of NSW. *Hypericum perforatum* (St. John's Wort), listed as having a general biosecurity duty for all of NSW.

African Boxthorn Lycium ferocissimum

New Estella Road Public School Wagga Wagga

African Boxthorn is an erect perennial shrub growing up to 5 m high, with woody, thorny growth, white flowers and orange-red berries. The effective, long-term control of this species generally requires the integration of a number of techniques, including mechanical removal, cultivation, and herbicide application. Control is more effective and economical if done when plants are young. Removal of roots is more effective when the soil is moist. Foliar spray is the most commonly used control method, and basal bark or cut stump treatments are appropriate in environmentally sensitive areas.



Figure 6-7 Examples of African Boxthorn (images from NSW WeedWise)

St. John's Wort Hypericum perforatum

St. John's Wort is a woody shrub with bright yellow flowers. It can be toxic to grazing stock. Longterm control of the species can be achieved through mechanical removal and herbicide use. Removal of the entire root system is required to prevent new plants from growing.



Figure 6-8 Examples of St. John's Wort (images from NSW WeedWise)

Work for the Project has the potential to spread weeds through the movements of heavy machinery and light vehicles during construction, and the movements of light vehicles during operation.

Weeds will be controlled through:

• An adaptive management approach whereby management actions will be adjusted to optimise the groundcover growth addressing on-site observations.

• For more intensive infestations of weeds, the use of selective herbicides may be warranted to prevent seed set and promote weed control. The advice of an ecologist and agronomist will be sought to advise on the control of weed infestations. 10% non-native groundcover is the target requiring corrective action.

A detailed weed management procedure is provided below.

Weed inspection

During construction, the HSEQ Manager will do the following weed inspections:

- Survey weed distribution across the project site seasonally.
- Survey weed abundance in exclusion zones seasonally.
- Targeted weed inspections prior to clearing and grubbing in the affected area.
- Survey weed distribution and abundance where a potential weed infestation has been identified.

During operation, the HSEQ Manager will ensure the following occurs:

- Survey weed distribution across the project site seasonally, timed to identify weeds before they flower.
- Survey abundance in exclusion zones seasonally.
- Survey weed distribution and abundance where a potential weed infestation has been identified.

Infestations of invasive weeds will be mapped with GPS, including noting the species and degree of infestation, and capturing an image for monitoring purposes. Data collected from inspections will be used as a basis for implementing seasonal targeted weed control measures.

Weed treatment

During construction, weed control will be based on data collected from survey and inspections of the project site and of exclusion zones. Targeted weed control measures for any recorded weed outbreaks will be implemented within a year of discovery. The aims of construction weed treatment include:

- Apply weed treatments to all mapped infestation areas.
- Annual reduction in weed distribution by at least 50% in mapped infestation areas from previous year's inspections.

During operation, weed control will be based on data collected from the seasonal inspections of the project area. Weed control measures for any recorded weed outbreaks will be implemented within a year of discovery, with priority given to African Boxthorn, St John's Wort and any listed priority weeds. The aims of operational weed treatment include:

- Annual reduction in weed distribution by at least 50% in mapped infestation areas from previous year's inspections.
- No increase in weed abundance from baseline levels at end of operation period.
- No increase in distribution of weeds from baseline in the project site at the end of operation period.
- New invasive weeds in project area compared to baseline surveys are controlled during operation.

• African Boxthorn, St John's Wort, and listed priority weeds eradicated from project area by end of operation period.

A general guide to weed control and management is presented above. More detailed information, including herbicide types and application rates, can be sought from the Project Ecologist or from the NSW WeedWise website (<u>http://weeds.dpi.nsw.gov.au/</u>).

The introduction and spread of weeds via vehicles and plant will be controlled by the Vehicle Hygiene Procedure provided in Section 6.5.

Herbicide application record

Herbicide application will only be carried out by authorised personnel (i.e. ChemCert accreditation – AQF 3) in accordance with SafeWork requirements.

Herbicides will only be applied in accordance with the Safety Data Sheet (SDS) for that product.

A Herbicide Application Record (Appendix B.3) will be completed and public notifications made in accordance with relevant legislation, where herbicides are to be used in areas that could be accessed by members of the public.

Follow-up inspection

The HSEQ Manager will ensure that a follow-up inspection is undertaken of identified weed infestation sites to ensure treatment was successful.

Weed disposal

Where invasive weed areas are disturbed by construction activities, weeds and topsoil that may contain weed propagules will be removed and disposed of appropriately.

Where weeds cannot be effectively destroyed prior to topsoil stripping, weed contaminated topsoil will be isolated and either encapsulated by deep burying, or disposed of at an approved offsite licensed facility as directed by the HSEQ Manager.

Ongoing management and monitoring

Monitoring of weed infestations will occur as part of the routine environmental inspections throughout construction and operation to determine effectiveness of management controls. The presence of any weeds and the necessary management actions will be noted on the Environmental Inspection Checklist (to be included in the CEMP).

6.4.2. Animal pest management procedure

Two pest animal species were identified during the site surveys: European Rabbit and Red Fox. These sightings were not considered to warrant requiring specific control measures. Other pest species could still be present at the site. Monitoring of animal pests and signs of their activity will occur as part of routine inspections during construction, and operation. A suitably qualified person will traverse the site to identify if vertebrate pests are present, including the following species as a minimum:

- European Rabbit
- European Hare
- Red Fox

• Feral Cat

The following data would be recorded and used to determine the need for pest animal control measures:

- Number and location of any tracks, traces or sightings
- Whether the level of activity is negligible, minimal, moderate or high

If any are identified that are required to be controlled, the appropriate management actions listed at <u>https://www.dpi.nsw.gov.au/biosecurity/vertebrate-pests/pest-animals-in-nsw</u> will be implemented, and noted on the Environmental Inspection Checklist.

Pesticide application record

As with herbicide applications, pesticides will only be administered by authorised personnel with ChemCert accreditation – AQF 3 and in accordance label instructions. A Pesticide Application Record (Appendix B.4) will be completed and public notifications made in accordance with relevant legislation, where pesticides are to be used in areas that could be accessed by members of the public. Only pesticides registered for use near water may be used near any waterways.

6.5. VEHICLE HYGIENE PROCEDURE

6.5.1. Vehicle, plant and equipment movement

Vehicle hygiene procedures will be implemented for any vehicle that enters the development site during construction and operation which is likely to come into contact with the natural ground or weeds. The procedures include:

- Inspection upon arrivals in laydown area.
- Removal of dirt and/or plant matter from newly arrived vehicles at a designated washdown area by trained site personnel.
- Washing and inspection prior to vehicles being given the all clear to enter indirect disturbance areas.
- Inspection and washing after leaving indirect disturbance areas and prior to leaving the site.
- Inspections by deep burying or disposed of at an approved offsite licensed facility as directed by the HSEQ Manager.
- Washdowns will be recorded on a Vehicle Hygiene Register shown in Appendix B.5.
- Any water from the washdown area will be managed in accordance with the SWMP.

7. BIODIVERSITY MITIGATION AND MANAGEMENT MEASURES

A range of mitigation requirements and control measures are identified in the CoCs. Specific measures to address impacts to biodiversity are outlined in Table 7-1. The measures have been listed to cover broad activities, and as such there may be some repetition of mitigation measures.

Table 7-1 Biodiversity management and mitigation measures.

Measure / Requirement	Where addressed	Work stage	Responsibility	Reference
Prior to commencement of any works on site. The 15 ecosystem credits for 'Blakely's Red Gum – Yellow Gum – grassy tall woodland of the NSW South Western Slopes Bioregion' must be retired to offset the residual biodiversity impacts of the development. The requirement to retire credits may also be satisfied by payment to the Biodiversity Conservation Fund of an amount equivalent to the 15 Ecosystem credits for 'Blakely's Red Gum – Yellow Box – grassy tall woodland of the NSW South Western Slopes Bioregion' as calculated by the BAM Credit Calculator. Evidence of the retirement of credits or payment to the Biodiversity Conservation Fund must be provided to Council prior to commencement of work.	This report	Pre- commencement of early works	Hansen Yuncken	Schedule C CoC 2
Prior to the commencement of any works on site, a Biodiversity Management Plan must be prepared to the satisfaction of the consent authority. The Biodiversity Management Plan shall be incorporated or referenced within the required Construction Environmental Management Plan referred to in condition C5 of this consent. The Biodiversity Management Plan must:	Construction requirement covered by this report Section 6	Pre- commencement of early works	Hansen Yuncken	Schedule C CoC 3
 Identify the development site as per the approved Biodiversity Development Assessment Report (BDAR) and approved plans. 	Figure 1-1			

Meas	ure / Requirement	Where addressed	Work stage	Responsibility	Reference
2.	Identify areas of land that are to be retained as outlines in the approved BDAR.	Section 6.1 & Appendix C			
3.	Enure the implementation of all measures proposed in the approved BDAR to mitigate and manage impacts on biodiversity outlined in Section 8 and Table 8-1 of the approved BDAR, including performance measures for each commitment	Section 7			
4.	Ensure the implementation of all management and protection measures recommended by the approved	Section 6.2.2			
5.	Arboricultural Assessment Report. Ensure that construction impacts are restricted to the development site and do no encroach into areas of retained native vegetation and habitat. All materials stockpiles, vehicle parking, machinery storage and other temporary facilities must be located within the areas for which biodiversity impacts were assessed in the BDAR.	Section 6.2.1			
A fina prepa The C 2.	al Construction Environmental Management Plan (CEMP) shall be red and submitted to Council prior to the commencement of any works. EMP shall be updated to address, as a minimum, the following matters: Incorporation of the approved Biodiversity Management Plan referred to in condition C3 of this consent including all associated recommendations.	Construction requirement covered by this report Section 6	Pre-construction	Hansen Yuncken	Schedule C CoC 5.2
The develo	existing trees to be retained within the property of the proposed opment shall be protected from all construction works. re must be taken to protect existing trees to be retained from damage, ing street trees and trees located adjacent to the proposed opment. The developer shall identify all trees to be retainer prior to be construction works.	Section 6.2.2 & 6.1.1	Pre-construction, post-construction	Hansen Yuncken	Schedule C CoC 9

Measure / Requirement	Where addressed	Work stage	Responsibility	Reference
A Tree Protection Zone (TPZ) shall be constructed for all existing trees to be retained within the development in accordance with Australian Standards – AS 4970-2009 Protection of Trees on Development Sites.				
Construction of Tree Protection Zone's shall be completed and inspected by Council's Supervisor of Tree Planning and Management, prior to the commencement of any site works. Contact can be made by phoning 1300 292442 during normal business hours.				
Removal, relocation or disruption of the Tree Protection Zone fencing will be considered as a breach of this consent. TPZ fences shall remain in place until the end of construction.				
If damage of any sort should occur to any protected trees/vegetation within the development, contact shall be made with Council's Supervisor of Tree Planning and Management to determine what remedial action should be taken. Throughout the construction period regular inspections of protected trees shall be carried out to ensure trees retained are of good health and vigour.				
All fill material temporarily stockpiled on site shall be managed and controlled at all times in a manner to prevent the generation of dust and the movement of sediment.	CEMP	Construction	Hansen Yuncken	Schedule C CoC 16
Tree removal from the subject site is restricted to that identified within recommendations of the approved Arboricultural Assessment Report. All recommendations of the report shall be implemented including all management and protection works recommended for retained vegetation.	Section 6.1 & 6.2	Construction	Hansen Yuncken	Schedule C CoC 19
Further consent under Council's Tree Preservation Order is not required for removal of the subject trees.				

Measure / Requirement	Where addressed	Work stage	Responsibility	Reference
The approved works shall be executed so as to comply with the NSW Work Cover Code of Practice – amenity tree industry 1998 No.034.				
Any works associated with tree removal shall be carried out in Accordance with Australian Standards – AS 4373-2007, Pruning of Amenity Trees.				
All tree stumps shall be removed below ground level and the surface area reinstated to prevent potential injury. All waste material from the subject trees shall be removed from site in conjunction with clearing.				
Temporary access through Tree Protection Zones during construction requires the approval of Council's Supervisor of Tree Planning and Management who shall be notified of such need and a site inspection will be carried out to determine the level of access.	Section 6.1.1	Construction	Hansen Yuncken	Schedule C CoC 20
A root protection layer shall be installed over the root zone to help minimise the effects of soil compaction to the tree's root system. A 150 mm layer of coarse woodchip or other like material shall be placed over the trafficable surface. This should not be considered for long term use.				
Services that require passing through or within close proximity of protected tree's root zone shall be installed underground and under bored. Under boring shall start and finish two (2) meters outside of the tree's drip zone with a minimum depth of 900 mm. Utility authorities should make use of a common trench where possible to minimise impact to the tree's root system.				

8. COMPLIANCE MANAGEMENT

8.1. TRAINING

All employees, contractors and utility staff working on site will undergo site induction training relating to biodiversity issues. Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in biodiversity management, including vegetation clearing which will include information on the outcomes of pre-clearing surveys, constraints mapping, and digitally-captured clearance boundaries (Section 8.1). Targeted training would address the requirements of the environmental management measures (Section 6), legislative requirements (Section 2.1), and all conditions and commitments relating to biodiversity (Section 2.3, Section 2.4). Further details regarding staff induction and training are outlined in the CEMP.

8.2. MONITORING AND INSPECTION

Regular monitoring and inspections will be undertaken during construction and operation. The table below include monitoring and inspection requirements during construction (Table 8-1), with the trigger and response columns forming a Trigger Action Response Plan (TARP):

Requirement	Timing	Responsibility	Trigger for additional actions	Response proposed
Pre-clearing inspections including checking for roosting/breeding habitat, recording tree hollows (not anticipated), marking habitat trees, demarcating area to be cleared.	Before vegetation clearing	Ecologist	Pre-clearing surveys not carried out or not in all areas required	Supplementar y surveys undertaken
Progressive monitoring of the cumulative amount of vegetation cleared (Section 5.3.1), including inspecting exclusion zones to confirm that they have not been disturbed (Section 5.3.4). Prior to undertaking any vegetation clearing, this value will be compared to the total approved area to be cleared.	Before and after all vegetation clearing	HSEQ Manager	Clearing outside approved clearing limits	HSEQ Manager to manage incident as required by CEMP and relevant legislation/ approvals
Monitoring of high disturbance areas, groundcover, exclusion zones and boundary fence lines, including:	Monthly during construction	Hansen Yuncken	Damaged exclusion fencing or signage Storage or infrastructure	Exclusion fencing/ signage replaced

Table 8-1 Monitoring and inspection requirements during construction.

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Requirement	Timing	Responsibility	Trigger for additional actions	Response proposed		
			underneath tree driplines			
Details of Coarse Woody Debris (CWD) placement	Recorded as it occurs	Hansen Yuncken	CWD stacked, not distributed	CWD to be moved		
 A review of any fauna killed or injured on site. Threatened fauna mortalities will be reported to OEH and deaths of any birds from contact with fences or solar panels will be recorded. Fauna relocations due to vegetation clearing will be recorded. 	Monthly during construction	Hansen Yuncken	Presence of injured or deceased fauna	Report where necessary, record details of incident		
 Weed and pest survey and mapping across project site (section 6.4). 	Seasonally during construction	Hansen Yuncken	Presence of weeds on stockpiled topsoil Presence of priority weeds New weed species on site	Implement targeted weed and pest control measures (Section 6.4)		

8.3. INCIDENT MANAGEMENT

All incidents will be managed in accordance with the incident response procedures contained in the CEMP.

8.4. AUDITING

Audit requirements are detailed in the CEMP.

8.5. **REPORTING**

Reporting requirements and responsibilities are outlined in the CEMP.

9. REVIEW AND IMPROVEMENTS

9.1. CONTINUOUS IMPROVEMENT

Continuous improvement of this BMP will be achieved by the ongoing evaluation of performance against the BMP environmental policies, objectives and targets to identify opportunities for improvement.

- The continuous improvement process will be designed to:
 - Identify areas of opportunity for improvement of environmental management and performance.
 - o Determine the cause or causes of non-conformances and deficiencies.
 - Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies.
 - o Verify the effectiveness of the corrective and preventative actions.
 - Document any changes in procedures resulting from process improvement.
 - Make comparisons with objectives and targets.

Review procedures are contained in the CEMP.

9.2. BMP UPDATE AND AMENDMENT

This BMP will need to be revised whenever the construction program, scope of work, or work methods change, whenever the work methods are found to be ineffective, or if directed by the Proponent. This will occur as needed and in accordance with the process outlined in the CEMP.

A copy of the updated BMP and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure identified in the CEMP.

9.3. DOCUMENT CONTROL

Document control procedures are outlined in the CEMP.

BASELINE PLOT DATA FROM BIODIVERSITY ASSESSMENT REPORT

A.1 VEGETATION INTEGRITY PLOT RESULTS

Numbers indicate percentage cover of species in each 20 x 20 m plot. The foliage cover of species is based on visual estimates of foliage cover within a standard 20 metre x 20 metre plot. Incidentals are recorded using the random meander method (Cropper 1993). Where uncertainty exists due to the unavailability of reproductive material, the taxon is preceded by a question mark, or plants are identified to genus level only. Species of conservation significance are bolded. Introduced species are denoted by an asterisk. Priority or significant environmental weeds are indicated with a ' Δ ' symbol, '*' indicates species is exotic. Scientific nomenclature follows Harden (1990-2002) and the Sydney Royal Botanic Gardens PlantNet website, updated with recent changes accepted by the Angiosperm Phylogeny Group (2016) and the Australian Plant Census (2017). The location of each plot is shown in Appendix A.2 below.

	Evotic			Pl	ot 1	Pl	ot 2	Plo	ot 3	Plot 4		Plot 5		Plot 6		<u>s</u>
Family		Scientific Name	Common Name	PCT 277 Derived grassland		PCT Plant	277	PCT	277 od m	PCI 277 Planted m		PCT	277 ived	PCT	277 ived	nta
i anny						venille		at	ure	ati	ure	grass	sland	gras	sland	cide
				%	#	%	#	%	#	%	#	%	#	%	#	
TREES																
Malvaceae		Brachychiton populneus	Kurrajong			2	3									
Cupressaceae		Callitris glaucophylla	White Cypress Pine			3	3									
Casuarinaceae		Casuarina spp.				1	1									
Myrtaceae		Eucalyptus albens	White Box			10	4									
Myrtaceae		Eucalyptus blakelyi	Blakely's Red Gum			2	2									
Myrtaceae		Eucalyptus macrorhyncha	Red Stringybark			1	1									
Myrtaceae		Eucalyptus melliodora	Yellow Box			20	10			45	7			1	2	
Myrtaceae		Eucalyptus polyanthemos	Red Box					30	5							
Meliaceae		Melia azedarach	White Cedar													٧
SHRUBS																
Fabaceae (Mimosoideae)		Acacia baileyana	Cootamundra Wattle					10	11							
Fabaceae (Mimosoideae)		Acacia dealbata	Silver Wattle			10	4									
Fabaceae (Mimosoideae)		Acacia decora	Western Silver Wattle							20	20					
Fabaceae (Mimosoideae)		Acacia implexa	Hickory Wattle			8	3									٧
Fabaceae (Mimosoideae)		Acacia spp.	Wattle			1	1									
Sapindaceae		Dodonaea viscosa	Sticky Hop-bush			5	4									
Solanaceae	*Δ	Lycium ferocissimum	African Boxthorn					0.1	1							
Oleaceae	*	Olea europaea	Common Olive							0.1	2					٧
FORBS																
Amaranthaceae	*	Alternanthera pungens	Khaki Weed													٧
Poaceae	*	Bromus spp.	A Brome	5	500											
Asteraceae	*	Centaurea solstitialis	St Barnabys Thistle													٧
Chenopodiaceae	*	Chenopodium spp.	Goosefoot, Crumbweed					0.1	3							
Asteraceae	*	Chondrilla juncea	Skeleton Weed	0.1	20	0.1	10					0.5	30			

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Asteraceae	*	Cirsium vulgare	Spear Thistle													٧
Boraginaceae	*	Echium plantagineum	Patterson's Curse													٧
Chenopodiaceae		Einadia nutans	Climbing Saltbush							1	15					
Onagraceae		Epilobium billardierianum	Willow Herb	1	10	0.1	5					0.1	1			
Euphorbiaceae		Euphorbia drummondii	Caustic Weed											0.1	1	
Fumariaceae	*	Fumaria spp.	Fumitory									0.2	30			
Clusiaceae	*Δ	Hypericum perforatum	St. Johns Wort			1	50							0.1	1	
Asteraceae	*	Hypochaeris radicata	Catsear	1	200	0.3	50	0.1	20	0.1	5	0.2	100	0.1	20	
Asteraceae	*	Lactuca serriola	Prickly Lettuce			0.1	30									
Malvaceae	*	Malva parviflora	Small-flowered Mallow													٧
Lamiaceae	*	Marrubium vulgare	White Horehound													٧
Fabaceae (Faboideae)	*	Medicago spp.	A Medic									1	10			
Oxalidaceae		Oxalis perennans				0.1	10			0.1	1					
Iridaceae	*	Romulea rosea	Onion Grass	0.1	5	0.1	100					0.1	30			
Polygonaceae		Rumex brownii	Swamp Dock	0.1	5											
Asteraceae	*	Sonchus oleraceus	Common Sowthistle			0.1	5									
Asteraceae	*	Taraxacum officinale	Dandelion											0.1	2	
Fabaceae (Faboideae)	*	Trifolium spp.	A Clover	2	500											
Fabaceae (Faboideae)	*	Trifolium subterraneum	Subterranean Clover	2	500	1	500	1	100			1	100			
Asteraceae		Vittadinia gracilis	Woolly New Holland Daisy			0.1	1							0.5	50	
GRASS AND GRASS LIKE																
Poaceae		Austrostipa scabra	Speargrass			0.1	10	8	200	0.1	10			20	500	
Poaceae	*	Avena fatua	Wild Oats	0.1	30	10	1000			0.1	150	5	1000			
Poaceae		Bothriochloa macra	Red Grass	60	1000	20	500	4	80			30	400	2		
Poaceae	*	Bromus diandrus	Great Brome							1	100	25	1000			
Poaceae	*	Bromus hordeaceus	Soft Brome	5	1000											
Poaceae	*	Bromus molliformis	Soft Brome									30	1000			
Poaceae		Cynodon dactylon	Common Couch													٧

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Роасеае	*	Digitaria spp.	A Finger Grass	0.1	10											
Poaceae		Elymus scaber	Common Wheatgrass							0.1	10					
Poaceae	*	Eragrostis cilianensis	Stinkgrass	0.1	20	0.1	5	0.1	5							
Poaceae	*	Lolium spp.	A Ryegrass			25	1000			1	50					
Poaceae	*	Panicum capillare	Witchgrass	10	500	0.1	5	2	30			2	50			
Poaceae		Paspalidium spp.		0.1	10									1	25	
Poaceae		Poa sieberiana	Snowgrass					1	20							
Poaceae		Rytidosperma caespitosum	Ringed Wallaby Grass											20	500	
Poaceae		Rytidosperma duttonianum	Brown-back Wallaby Grass							3	50					
Poaceae		Rytidosperma richardsonii	Straw Wallaby-grass													
Poaceae		Rytidosperma spp.						10	200							
Poaceae	*	Vulpia spp.	Rat's-tail Fescue					5	1000							
			Eragrostis					0.1	3							





APPENDIX B SAMPLE REGISTERS

B.1 GROUND DISTURBANCE PERMIT FORM

Project: Wellington Solar Farm

Project No:

Requested By:

Habitat Clearing Start Date:

Expected Completion Date:

HABITAT CLEARING LOCATIONS - ATTACH DRAWINGS / SKETCHES IF NECESSARY

Location	Commer	nts
This section to be completed by Ecologist and other habitat features, with reference to constra	HSEQ Manager for clearing of trees aints mapping.	s, logs, rocky features, and
Has the limit of clearing been clearly delinea	ated?	Yes No
All trees / vegetation / habitat to be retained fenced off?	identified and exclusion zones	🗌 Yes 🗌 No
State how identified:		
Have habitat trees been identified and appro	opriately marked?	Yes No N/A
State how identified:		
Are specific targeted surveys required?		Yes No
State how survey was completed, including	results:	
Is there a risk of weed infestation or spread	?	Yes No
Are any animals present? (If Yes, relocation r	required)	🗌 Yes 🗌 No
Are any active nests/burrows present? (If Ye	es, relocation required)	Yes No
If soil disturbance is to occur, has an ERSE these controls been installed?	D Plan been created, and have	🗌 Yes 🗌 No

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Have relevant workers been given toolbox talks on limit of clearing, fauna handling procedures and any other SHE Controls?	🗌 Yes 🗌 No
Can habitat features be re-used for habitat enhancement?	🗌 Yes 🗌 No
Can the habitat feature be re-used immediately?	🗌 Yes 🗌 No
If not re-used immediately, where will it be stockpiled*?	
Comments:	
APPROVALS	
Inspection completed by Ecologist (if required):	Date:
Ecologist Signature Required	
Approval by HSEQ Manager:	Date:
HSEQ Manager Signature Required	
* Stockpiles must not be placed within the dripline (extent of foliage cover) of any native tree.	

SIGN-OFF (ONCE WORKS COMPLETED)

Have the conditions of the permit been met?	Date:
HSEQ Manager Signature Required	

Figure B-1 Sample ground disturbance permit form.

B.2 THREATENED SPECIES REGISTER

Table B-1 Sample Threatened Species Register.

Date	Species	Location and time captured	Location and time released	Behaviour and condition on release	Details of any injuries/ death	Contact details of vet/wildlife handler if transferred to their care

B.3 HERBICIDE APPLICATION RECORD

NSW

Industry & Investment

Location, Applicator, Date of Application

Property/Hol	díng; (re	sidential	addre	sa)			Date;			
Applicator's Full Name:					Owner (if not applicator):					
Address:				_	Address:					
				Phone:			Phone:			
Mobile:	Fa	x:		Email:	Mobile:	Fax:	Email:			
Sensitive Area	sitive Areas (including distances, buffers):				Comments (including risk control measures for se areas):					
	Ŵ.	Destei Arez	Е	2						
		S,	1							

Host/Pest

Paddock Number/Name:	Paddock Areat	Order of Paddocks Sprayed:				
Crop/Situation:		Type of Animals:				
Crop/Pastnre Variety		Age/Growth Stage:				
Growth Stage:		Mob/Paddock/Shed:				
Pest/Disease/Weed:		Animals - Number Treated:				
		Pest Density/Incidence: Heavy 🗔 Medium 🛄 Light 🛄				

Application Data

Full Label Product Name:				Rate/Dose:		W	Water Rate L/ha:	
Permit No.: Expiry Date:		-	Additives/Wetters:			_		
Total Lot kg:	otal Lor kg: WHP		ESPt		Date Suitable for Sale:			
Equipment Type:			Nozzle	Nozzle Type: Nozzle Angle: H				Pressuret
Date Last Calibrated: Water Qua		dity (pH or description):						

Weather

perature °C Relati	we Wind Spee	d Direction	
Plumian	y (%)	o Direction	Variability (c.g. gusting)
1			

"When using herbicides in mixtures with fungicides and insecticides, an ESI may apply to the non-herbicide component of the mixture.

Figure B-2 Sample herbicide application record sheet.

B.4 PESTICIDE APPLICATION RECORD

Pesticide Application Record Sheet

Industry & Investment

Location, Applicator, Date of Application

Property/Hold	ting: (re	sidential add	ess)			Date:
Applicator's F	ull Nam	e:		Owner (if no	t applicator):	
Address:				Address:		
· · · · ·			Phone:			Phone:
Mobile:	Fa	ix:	Email:	Mobile:	Fax:	Email:
Sensitive Area	s (inclu	N Treated Area E	s, buffers):	Comments (i areas):	ncluding rísk contr	rol measures for sensitive
		s				

Host/Pest

Paddock Number/Name: Paddock		Order of Paddocks Sprayed:				
Crop/Situation:		Type of Animals:				
Crop/Pasture Variety:		Age/Growth Stage:				
Growth Stage:		Mob/Paddock/Shed:				
Pest/Disease/Weed:		Animals Number Treated:				
		Pest Density/Incidence: Heavy 🕞 Medium 🗋 Light 🕤				

Application Data

Full Label Product Name:				Rate/Dose:		w	Water Rate L/ha:	
Permit No.: Expiry Date: Total L or kg: WHP:			Additives/ Wetters:		TS			
		HP:	IP: ESI*:		Date Suit		able for Sale:	
Equipment Type:			Nozzle	Nozzle Type: Nozzle A			Pressure:	
Date Last Calibrated: Water Qua		ality (pH or de	escription):					

Weather

Rainfall (24 hours before and after) Before: mm After: mm										
Time (show time in this column)	Temperature °C	Relative Humidity (%)	Wind Speed	Direction	Variability (e.g. gusting)					
Start										
Finish			-							
Comments:										

*When using herbicides in mixtures with fungicides and insecticides, an ESI may apply to the non-herbicide component of the mixture.

Figure B-3 Sample pesticide application record sheet.

B.5 VEHICLE HYGIENE REGISTER

Table B-2 Sample Vehicle hygiene register.

Date	Time in	Vehicle type	Destination	Driver name	Driver contact no.	Driver registration	Entrance wash (Y/N)	Exit wash (Y/N)	Time out	Inspection staff initials

APPENDIX C ARBORICULTURAL ASSESSMENT REPORT
Tree Protection Zone Plan – New Public School – Estella Road Charles Sturt University, Wagga Wagga NSW 2020.

Hansen Yuncken Pty Ltd have been awarded the construction of the new public school in Estella Road, Charles Sturt University Wagga Wagga.

The Tree Protection Zone Plan is provided to identify trees that are to be removed as part of the construction and trees that are to be preserved and protected.

Definition TPZ – Tree Protection Zone specified area above and below ground and at a given distance from the trunk set aside for the protection of the tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development.

From Australian Standard 4970-2009 Protection of Trees on development sites

This document needs to be read in conjunction with; Arboricultural Assessment Report -56 Estella Rd Charles Sturt University Wagga Wagga 2019 V2 – dated 19/11/2019.

Diagram 1 Provides locations of the trees overlayed onto the site plan. Please note that the site overlay may have changed slightly, however the trees identified to be removed and retained/protected are considered accurate.

Table 1 - Provides details on each tree;

- Removal or retention
- In case of retention the relevant Tree Protection Zone stated in meters.
- · Specific measures that apply to specific trees.

General Tree Protection Measures -

- All trees and retained vegetation should be fenced or delineated so that trees and the soil around the trees are protected from adverse development impacts, including storage of materials, waste, plant and vehicle parking.
 - Fencing or delineation can use star posts and tape/flags or any other method that clearly delineates and prevents entry
 - Temporary fence is recommended in close proximity to the construction work.
 - No entry signs should be erected to the TPZ fencing.
- Worker Induction. Site workers need to be inducted into the requirements of the tree protection zones and their importance in retaining the health of the trees.
- If works are contemplated inside the TPZ the Project Arborist should be consulted for potential impacts prior to the works commencing.

Page 1 of 7

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Diagram 1 – General Site Plan with tree numbers 1 to 36 and Block C inserted – Source adapted from Hansen Yuncken site plan.

Page 2 of 7 Wade Ryan - 4 Lloyd Road Wagga Wagga NSW 2650 wadervanl@bigpond.com Mobile 0408 300 989 www.waggatreeconsultancy.com au

Table 1 – Tree numbers – Action and TPZ distances.					
Tree No	Species & Origin	Recommended Action	Dimensions D/H/C (m)	TPZ (m radius from stem)	Comments
1	Eucalyptus melliodora Indigenous	Remove	small sapling	2	
2	Eucalyptus melliodora Indigenous	Project should be able to set exclusion zone well outside TPZ	0.6/17/12	6.6	Fence trees 2 and 3 as one lot – 7m from stems,
3	Eucalyptus melliodora Indigenous	Project should be able to set exclusion zone well outside TPZ	0.6/17/12	6.6	Fence trees 2 and 3 as one lot – 7m from stems,
4	Acacia baileyana Aust Native	Remove	Small shrub	2	
5	Eucalyptus polyanthemos Aust Native	Remove	(2x0.4)/15/12	6.8	1-
6	Acacia baileyana Aust Native	Remove	Small shrub	2	1
7	Acacia baileyana Aust Native	Remove	Small shrub	2	
8	Eucalyptus polyanthemos Aust Native	Remove	.26/8/5	3.12	
9	Eucalyptus polyanthemos Aust Native	Remove	(2x.37)/15/8	6	
10	Eucalyptus	Remove	.48/9/7	5.8	5

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		Table	1 - Tree numb	ers - Action and	TPZ distances.
Tree No	Species & Origin	Recommended Action	Dimensions D/H/C (m)	TPZ (m radius from stem)	Comments
12	polyanthemos Aust Native		- West		
11	Eucalyptus polyanthemos Aust Native	Remove	.4/11/12	4.8	
12	Eucalyptus polyanthemos Aust Native	Project should be able to set exclusion zone well outside TPZ	(3x.35)/9/12	7.32	Fence trees 12 & 13 as one lot.
13	Eucalyptus polyanthemos Aust Native	Project should be able to set exclusion zone well outside TPZ	.55/9/14	6.6	Fence trees 12 & 13 as one lot.
14	Acacia species Aust Native	Project should be able to set exclusion zone outside TPZ	Small shrub	2	Fence at edge of canopy
15	Acacia species Aust Native	Project should be able to set exclusion zone outside TPZ	Small shrub	2	Fence at edge of canopy
16	Eucalyptus melliodora Indigenous	Retain.	(2x.45)/18/12	7.7	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
17	Eucalyptus melliodora Indigenous	Retain.	(2x400)/18/12	6.9	Fence trees 16 to 36 as one lot minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
18	Eucalyptus	Retain	.47/12/12	5.6	Fence trees 16 to 36 as one lot - minimum of 7 m north

Page 4 of 7 Wade Ryan – 4 Lloyd Road Wagga Wagga NSW 2650 wadervanl @bigpond.com Mobile 0408 300 989 www.waggatreeconsultancy.com.au

Table 1 - Tree numbers - Action and TPZ distances.					
Tree No	Species & Origin	Recommended Action	Dimensions D/H/C (m)	TPZ (m radius from stem)	Comments
1.	Indigenous			and the second s	7 m to the south.
19	Eucalyptus melliodora Indigenous	Retain	.47/16/8	5.7	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
20	Eucalyptus melliodora Indigenous	Retain	(2 x .54)/16/8	9.1	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
21	Eucalyptus melliodora Indigenous	Retain	(2x0.4)/15/8	6.9	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
22	Eucalyptus melliodora Indigenous	Retain	(5x.15)/8/3	4	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
23	Eucalyptus melliodora Indigenous	Retain	.5/15/8	6	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
24	Eucalyptus melliodora Indigenous	Remove – stems will fail in time.	(2x.2)/10/2	2	
25	Eucalyptus melliodora Indigenous	Retain Prune – reduce canopy by 25% to ameliorate stem defect	(2x.28)/17/8	4.8	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
26	Eucalyptus melliodora Indigenous	Retain	(3x.33)/17/8	6.8	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.

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		Table	1 - Tree numb	ers - Action and	TPZ distances.
Tree No	Species & Origin	Recommended Action	Dimensions D/H/C (m)	TPZ (m radius from stem)	Comments
27	Eucalyptus melliodora Indigenous	Retain	.26/15/8	3.12	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
28	Eucalyptus melliodora Indigenous	Retain Prune – remove the south sub leader at 3m	(2x.5)/18/9	8.52	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
29	Eucalyptus melliodora Indigenous	Retain	(3x.25)/13/5	5.16	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
30	Eucalyptus melliodora Indigenous	Retain	.58/17/8	7	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
31	Eucalyptus melliodora Indigenous	Retain	.47/16/8	5.64	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
32	Eucalyptus melliodora Indigenous	Retain	(2x.27)14/9	4.6	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
33	Eucalyptus melliodora Indigenous	Retain and remove sub south leader at defect	.45/17/6	5.4	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
34	Eucalyptus melliodora Indigenous	Retain and Reduce canopy by 25-30% to ameliorate defects	(3x.3)/10/10	6.24	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
35	Eucalyptus	Retain – Tree now	.3/15/8	3.6	Fence trees 16 to 36 as one lot - minimum of 7 m north

Page 6 of 7 Wade Ryan – 4 Lloyd Road Wagga Wagga NSW 2650 <u>waderyanl@bigpond.com</u> Mobile 0408 300 989 <u>www.waggatreeconsultancy.com.au</u>

Table 1 - Tree numbers - Action and TPZ distances.					
Tree No	Species & Origin	Recommended Action	Dimensions D/H/C (m)	TPZ (m radius from stem)	Comments
	<i>melliodora</i> Indigenous	outside development boundary		1 Anna	of the east west line of trees- from point of stems and 7 m to the south.
36	Eucalyptus melliodora Indigenous	Retain – Tree now outside development boundary	.36/10/8	4.32	Fence trees 16 to 36 as one lot - minimum of 7 m north of the east west line of trees- from point of stems and 7 m to the south.
Block C	Mixed Native species	Retain North section not impacted by development	D - 50 to 200mm H - 3 to 10m C - 2 to 5m	3	Fence revegetation program as one lot at least 3m from perimeter stems – prevent entry to retained allotment.



NGH Pty Ltd | 20-112 - Final V1.0



A.8 Waste classification

Summary report

Address:Proposed public school, Lot 1 DP1253855, Estella Road, Estella NSWDate of works20 July 2018

Main areas of concern

The current land-use of the investigation area is vacant with historical agricultural use of cropping and grazing. No buildings are known to have been located on the site. No fill material is known to have been applied to the site. The current and historic agricultural land-use may have resulted in application of pesticides.

Nature of works carried out

A preliminary soil investigation including desktop study, visual inspection and soil sampling was undertaken of the site.

Nature and extent of residual contamination Nil

Risk factors

No health or ecological receptors are exposed to the identified or potential contamination.

Waste removed

No soil was removed as part of the preliminary contamination investigation.

Recommendations

Nil

Statement of suitability

The investigation area is suitable for the proposed change in land-use.

This is an accurate summary of the report titled: Preliminary contamination investigation – Proposed public school on Lot 1 DP1253855, Estella Road, Estella NSW (Report number R9930c)

Produced by: Envirowest Consulting Pty Ltd Dated: 6/8/2018

Name: Gregory Madafiglio CEnvP



A.9 SSDA Compliance Conditions

Refer over the page for a copy of the condition satisfaction table outlining the sections of this plan that address the relevant SSD condition.



Wagga Wagga Public School (SSD 9494): Submission of Construction Environmental Management Plan in accordance with Condition B12

Condition	Condition requirements	Document reference
	The CEMP must include, but not limited to, the following:	
	(a) Details of:	Section 3.1.1, Hours of Work, p7
	(ii) 24-Hour contact details of site manager;	Section 3.1.2, 24 Hour Contact Details, p7
	(iii) management of dust and odour to protect the amenity of	Section 4.7, Air Quality & Dust Control, p17
	the neighborhood	
	(iv) stormwater control and discharge	Section 4.8, Soil, Erosion & Water Quality, p17
	(v) measures to ensure that sediment and other materials are	Section 4.8.2, Soil, Erosion & Water Quality – Mitigation
	not tracked onto the roadway by vehicles leaving the site;	Strategies', p18
D40	(vi) groundwater management plan including measures to	Section 4.11.1 & Section 4.11.4, Site Contamination &
DIZ	prevent groundwater contamination;	Release of Contaminants to Soil and Groundwater, p20-22
	(vii) external lighting in compliance with AS 4282-2019 Control	Section 4.17, External Lighting, p28
	of the Obtrusive effects of outdoor lighting	Appendix A.11, External Lighting Compliance, p218
	(viii) community consultation and complaints handling	Section 4.18, Community Consultation and Complaints
		Handling, p29
	(b) Construction Traffic and Pedestrian Management Sub-Plan	Appendix A.5, Construction Traffic and Pedestrian
	(see condition B15)	Management Sub-Plan, p57
	(c) Construction Noise & Vibration Management Sub-Plan (see	Appendix A.6, Construction Noise & Vibration Management
	condition B16)	Sub-Plan, p100
	(d) an unexpected finds protocol for contamination and	Section 4.11.7, Unexpected Finds, p23
	associated communications procedure;	

	(e) an unexpected finds protocol for Aboriginal and non-	Section 4.11.7, Unexpected Finds, p23
	Aboriginal heritage and associated communications procedure	
	(a) detailed baseline data;	Not applicable for this management plan
	(b) details of:	Section 3.6.3, Legal Compliance and Other Requirements,
	(i) the relevant statutory requirements (including any relevant	p11
	approval, license or lease conditions);	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, p23
		Section 4.12.7, Waste Management Mitigation Strategies,
		p27
		Section 4.17, External Lighting, p28
		Section 5.3.3, NGER Reporting Process, p36
	(ii) any relevant limits or performance measures and criteria;	Section 5.3.3, NGER Reporting Process, p36
	and	
B11	(iii) the specific performance indicators that are proposed to be	Section 3.4, Targets, p10
	used to judge the performance of, or guide the implementation of,	
	the development or any management measures;	
	(c) a description of the measures to be implemented to comply	Section 3.6.3, Legal Compliance and Other Requirements,
	with the relevant statutory requirements, limits, or performance	p11
	measures and criteria;	Section 4.6.2, Traffic & Access Mitigation Strategies, p16
		Section 4.8.2, Soil, Erosion & Water Quality Mitigation
		Strategies, p17
		Section 4.11.7, Unexpected Finds, p23
		Section 4.12.7, Waste Management Mitigation Strategies,
		p27
		Section 4.17, External Lighting, p28
		Section 5.3.3, NGER Reporting Process, p36
	(d) a program to monitor and report on the:	Section 5.3, National Greenhouse & Energy Reporting, p35
	(i) impacts and environmental performance of the development;	

(ii) effectiveness of the management measures set out	Section 3.6.3, Legal Compliance and Other Requirements,
pursuant to paragraph (c) above;	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, p23
	Section 4.12.7, Waste Management Mitigation Strategies,
	p27
	Section 4.17, External Lighting, p28
	Section 5.3.3, NGER Reporting Process, p36
(e) a contingency plan to manage any unpredicted impacts and	Section 4.11.7, Unexpected Finds, p23
their consequences and to ensure that ongoing impacts reduce	
to levels below relevant impact assessment criteria as quickly as	
possible;	
(f) a program to investigate and implement ways to improve the	Section 5.3.3, NGER Reporting Process, p36
environmental performance of the development over time;	
(g) a protocol for managing and reporting any:	Section 5.2.1, Non-Conformances, p34
(i) incident and any non-compliance (specifically including any	Section 5.2.2, Reporting & Corrective Actions, p34
exceedance of the impact assessment criteria and performance	
criteria);	
(ii) complaint;	Section 4.18, Community Consultation & Complaints
	Handling, p29
(iii) failure to comply with statutory requirements; and	Section 5.2.1, Non-Conformances, p34
(h) a protocol for periodic review of the plan and any updates in	Section 5.2.2, Reporting & Corrective Actions, p34
response to incidents or matters of non-compliance	



A.10 External Lighting Compliance

Light is really the source of all being... all materials in nature are made of light which has been spent, and this crumpled mass called material casts a shadow, and the shadow belongs to light. Louis Kahn Mechanical Engineering Lighting Design Sustainable Design Electrical Engineering Copenhagen London Sydney Canberra Hong Kong New York

Level 8, 9 Castlereagh Street Sydney, NSW, 2000, Australia ABN 50 001 189 037 t : +61 / 2 9967 2200 e : info@steensenvarming.com

STEENSEN VARMING

Hansen Yuncken

Sydney Corporate Park (SCP) Building 1, Level 3 75-85 O'Riordan Street Alexandria NSW 2015

Att. Marco Beretta

Sydney June 23rd, 2020

Dear Marco Beretta,

Building Services Design Statement for the external lighting design for New Wagga Wagga 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 9494, condition B10. In particular:

AS/NZS 4282.1: 2019	Control of the obtrusive effects of outdoor lighting -Refer to notes below
AS/NZS 1158: 2005	External Lighting -Pathways designed to category P3 -Entry points designed to category P2 -Carparks designed to category P11b and P12

The following documents formed the design documents for the building services systems:

Document Number	Rev.	Drawing Title	Date
NHQC2-WW-EL-S-	F	Lighting Site Plan	29.05.2020
EL_1010			

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

mira

Ivan Mira **Associate** BE Electrical, CPEng, NER

Light is really the source of all being... all materials in nature are made of light which has been spent, and this crumpled mass called material casts a shadow, and the shadow belongs to light. Louis Kahn Mechanical Engineering Lighting Design Sustainable Design Electrical Engineering Copenhagen London Sydney Canberra Hong Kong New York

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STEENSEN VARMING

1.0 Appendix A

The exterior lighting focuses on functional illumination and consists of pole top and directional spotlight luminaires to provide lighting to the site carpark and key pathways, with light focused on the ground below.

- Lighting controls EFSG guidelines recommend the control of external lighting be divided into two functions, thus limiting the operation of lighting during curfew hours, and ensuring operation is as per the schools needs. The following outline the functions:
 - 1. Predawn function: all external lighting on between 5:00am 9:00am for the safe access of cleaners and staff
 - 2. Night function: only select lighting fixtures to operate as 'access' lighting from school closure 5:00am
- Minimise sky glow with downward directed lighting all external lighting for New Wagga Wagga Primary school utilises fixed downward directed pole top luminaires or directional spotlights for the purposes of pathway illumination, dedicated soley for the illumination of the ground surface. All pole top luminaires also have no upward lighting component.
- Minimise horizontal spread light The external lighting design for New Wagga Wagga 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 New Wagga Wagga 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.11 Envirowest Groundwater Confirmation



6/72 Corporation Avenue, Bathurst NSW • Tel (02) 6334 3312 •

• PO Box 8158, Orange NSW 2800 • Email admin@envirowest.net.au • Web www.envirowest.net.au •

14 April 2020

Hansen Yuncken Pty Ltd Sydney Corporate Park (SCP) Building 1, Level 3 75-**85 O'Riordan Street** Alexandria NSW 2015

Attn: Marco Beretta

Ref: L9930c1

Groundwater, Lot 1 DP1253855 Estella Road, Estella NSW

A new school is proposed for Lot 1 DP1253855 Estella Road, Estella NSW. A preliminary contamination assessment was undertaken for the site by Envirowest Consulting Pty Ltd (report number R9930c2). The assessment included a desktop review of groundwater in the locality and drilling of boreholes to 3m depth. Hansen Yuncken Pty Ltd require information regarding the likelihood of the presence of groundwater as part of the SSDA conditions.

The following is an extract from the preliminary contamination assessment:

The site is located within the Lachlan Fold Belt groundwater management area (NSW SEED Portal accessed 27 February 2020). The Lachlan Fold Belt groundwater management area has diverse characteristics due to the large area is covers (DECCW 2010). DECCW (2010) reports that the condition of the groundwater Lachlan Fold Belt groundwater management area including regional and local groundwater levels, groundwater quality and aquifer integrity are very good.

A search of the Water NSW groundwater database for shallow groundwater in the vicinity of the investigation area identified numerous monitoring bores. The monitoring bores are associated with industrial and residential areas located within 4km of the site and within the Lachlan Fold Belt groundwater management area as identified in NSW SEED Portal (accessed 6 March 2020). The monitoring bores were constructed to depths of between 5 and 20m. No details of water bearing zones or standing water levels are provided in the work summaries. Shallow unconfined groundwater is not expected to occur in the locality.

Groundwater in deeper bores located in the vicinity was identified from depths of 30m in fractured granite, shale and basalt. Standing water levels at the time of drilling were from 15m. Yields ranged from 0.2L/s to 58L/s.

No evidence of seasonal groundwater identified to the drilling depth of 3m. No bores are located within 500m of the site.

Groundwater is not expected to be used on-site following site development.

Please call me if you require additional information.

Regards,

Leah Desborough Senior Environmental Scientist

Checked by: Andrew Ruming Senior Environmental Geologist

Attachments Attachment 1: Report limitations and intellectual property

Attachment 1: Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

The investigation identifies the actual subsurface conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall subsurface conditions, the **nature and extent of the contamination, it's likely impact on the proposed development and appropriate** remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, and no sub-surface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock or time. The actual interface between materials may be far more gradual or abrupt than a report indicates. Actual conditions in areas not sampled may differ from predictions. It is thus important to understand the limitations of the investigation and recognise that we are not responsible for these limitations.

This report, including data contained and its findings and conclusions, remains the intellectual property of Envirowest Consulting Pty Ltd. A licence to use the report for the specific purpose identified is granted for the persons identified in that section after full payment for the services involved in preparation of the report. This report should not be used by persons or for purposes other than those stated and should not be reproduced without the permission of Envirowest Consulting Pty Ltd.



A.12 Site Layout Plan



Legend of Symbols				
	External Perimeter Site Boundary Fencing			
	Vehicle Gate			
, <u>F</u>	Pedestrian Gate			
HY SIGN	HY Statutory Project Site Signage Board			
→	Vehicle Access into Project Site			
←	Vehicle Egress out of Project Site			
$\stackrel{\leftarrow}{\rightarrow}$	Site Personnel Entry / Exit / Travel Routes			
·::: !	Emergency Services Vehicle main Access to / Egress from Project Site			
PP	On-Site Vehicle Parking			
	Site personnel travel routes			
DB	Temporary Electrical Distribution Board			
•	Fire Fighting Equipment			
•	Emergency Response push button (Nurse Call)			
•	Spill Kit			
	Delivery Laydown Zone & General Storage			
	Main Site Bins / resource recovery			
	Site Emergency Evacuation Muster Point			
HY	Site Offices Hansen Yuncken			
т	Site Toilets (m=male f=female)			
L	Site Lunchrooms			
 \	First Aid Room with Defrib			
•••	Internal Site Vehicle Main Path / Road			
10	Vehicle Speed Limit Signage			
	All whether Access Path			
	Crane / Hoisting / Concrete Boom Pump Set-up Location			
	Vehicle Shaker Grid			
—	Hoarding			
	Tree protection Zones (No Access)			
	Topsoil Stockpile			

NEW HIGH QUALITY CLASSROOMS

PROJECT	NORTH
NORTH	

0	5000	10000	15000	20000	2500	J		50000
							SCALE	1 : 500 @ A1
DRAWN CHECKED		VERIFIED		D	ATE			
LM PT		МО			01 OCTOBER 2019			
DRAWING NUMBER REVISION								

A

PROJECT CODE SCH. REF. DISC. TYPE SERIES# NHQC2 - WW - PM - DWG - A