

# Project Specific Environmental Management Plan

(**Construction Environmental Management Plan** for purpose of Development Consent reference)

# Penshurst Public School, Penshurst

PROJECT No. 6380

Grindley Construction Pty Ltd 55 Grandview Street PYMBLE NSW 2073

> Phone: 02 9988 3811 Fax: 02 9988 3575

## **Document Control**

This plan is a key element of the environmental management system of Grindley.

This plan will be reviewed and updated as required and as a minimum at significant stages of the project where applicable such as commencement on site, completion of earthworks, completion of structure, completion of fit out and or at least six (6) monthly to reflect the changes occurring to the project.

Further information on this plan should be addressed to:

Project Manager Rodney Peachey 02 9988 3811 mail@grindley.com.au

Date of	Details of Changes Made	Revision	PM Approved
Revision		Number	
21/3/19	Project commencement,	1	RP
	CC1 Submission		
12/6/19	Traffic Section Amended	2	RP
1/8/19	Environmental Plans	3	RP
	(CEMP Rev. 1 and PSEMP		
	Rev. 2) consolidated		
2/10/19	Sediment Control Plan	4	RP
	Updated		
10/2/20	Company System and	5	RP
	Enquiries and Complaints		
	Management Update		
17/2/20	Pumping reference	6	RP
	removed		
18/2/20	Stormwater removal	7	RP
	process updated		
5/3/20	Multiple updates requested	8	RP
	by DPIE		
8/9/20	Personnel update	9	RP



Location

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Date

21/7/2014

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## 1. INTRODUCTION

## 1.1 Environmental Policy

# <u>Grindley</u>

#### **Environmental Policy**

Grindley Construction was established in 1988 and has built a reputation based on our core value of Commitment. Commitment to being an environmentally and socially responsible organisation while meeting the needs of our clients without hindering future generations.

To achieve this we will:

- · Document, Implement and maintain an environmental management system
- Maintain and update our environmental management system to incorporate legislative regulative, and any other requirements to which we subscribe that relate to environment to ensure minimum compliance
- Senior management will demonstrate commitment to environmental sustainability
- Set measurable objectives
- Monitor performance
- Provide education and training to facilitate knowledge and experience
- Maintain and improve our environmental management system alongside our integrated management system
- Allocate appropriate resources to implement our objectives
- Strive to achieve greater environmental sustainability where our activities preserve natural resources for future generations

We acknowledge that the organisation operates in an environment where we have a responsibility to all, and are committed to continual improvement of and prevention of pollution.

Our policy documents how we will achieve our commitment to being environmentally and socially responsible. It governs how we manage the environmental impacts of our activities and it will be communicated to all those applicable in our operations. The policy will be reviewed regularly to maintain relevance and appropriateness to our organisation's objectives.

4 lents

Alan Carstens Owner

Matthew Macauley Chief Executive Officer

Upp\_

John Little Company Secretary

Environmental Policy Doc.: 812 Version: 2 Date: 18/8/15



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## 1.2 AS/NZS ISO 14001 Certification

Standard:



# Grindley Construction Pty Ltd

Best Practice Certification Pty Ltd has assessed the above company as complying with the following management system standard requirements at the address shown.

ISO 14001:2015 Environmental Management System Requirements

Scope of Certification:	Commercial, Residential and Indus	strial construction for private and goverment
Head Office Address	55 Grandview Street Pumble NSW	/ 2073 Australia
	28/07/2011	
	Every Dates	Cartificate Number
20/08/2019	29/09/2022*	42003586687F
20/00/2015	25/05/2022	12003500072
Additional Registered Entities Covered	Grindley Interiors Pty Limited	
By This Certification:		
	CERTIFICATION A	PPROVED:
	NO	
Distance Street		Ann
	COL MAN	
	Kobi Simmat	
	Managing Directo	BESTPRACTICE
	Best Practice Cer	tification Pty Ltd CERTIFICATION
	20	Δς-ΔΝΖ
	5	
as Suite 2, Level 2, Building B	(reg	
122-126 Old Pittwater Road	WIEBNATIONA 8	
Brookvale NSW 2100		
ps 1300 402 002		15014001
mass // design acarder certain and f. com. au	DITATION FO	ENVIRONMENT
* Subject to regular surveillance audits	ş i	MANAGEMENT SYSTEM



## **1.3** Project Management Plans

The Project Specific Environmental Management Plan is part of Grindley's integrated management system, the plan is to be read in conjunction with the Project's other documentation and Grindley's Management System.

The overall format and content of this plan has been structured to fully meet the requirements of ISO 14001 Environmental Management Systems.

## 1.4 Objectives

- Increase amount of waste being recycled, reduce waste costs
- Have an environmental officer on each site
- Comply with all legislation requirements and conditions of the development consent
- Reduce the amount of environmental impact our operations have on the environment
- Individual targets are reviewed and set each year based on our significant impacts and are detailed in impact mitigation plans

## 1.5 Scope of Works

The demolition, excavation, civil and construction works associated with the Penshurst Public School Upgrade to accommodate up to 1,012 primary school age students. An overview of the works is as follows:

- Site preparation works including demolition of existing buildings on Lots 8 to 11 DP 8173 and the removal of 30 trees
- Site remediation works
- Site consolidation
- Construction of a new four storey building, comprising:
  - indoor and outdoor learning areas
  - o administration areas, staff facilities and library
  - o multi-purpose hall /canteen/out of school hours building
  - rooftop covered outdoor learning area and student amenities block
- Construction of a new assembly/courtyard space, comprising a multi-purpose outdoor court.
- Construction of an at-grade car park accommodating 20 car parking spaces.
- Site landscaping, including planting of new trees, various shrubs, ground covers, evergreen climbers over rooftop shade structures, screen planting along the northern site boundary, new turf planting to the southern end of the site comprising a mass planted drainage swale.
- Ancillary infrastructure services, including installation of a new substation and installation of a new on-site detention tank, rainwater tank and associated new stormwater connections to Arcadia Street.

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## **1.6** Reference Documents

The following documents will be referenced for use in this Plan:

Contract Specifications and Drawings Project DA and consultant reports

## 1.7 General Applicable Regulatory Requirements

The following are legislative requirements that are applicable to Grindley Construction's business:

• Protection of the Environment Operations Act 1997

This Act covers the scope of issuing licences regarding environmentally hazardous activities, issuing offence notices, establishing environmental protection policies, instituting proceedings, investigating breaches and auditing activities.

• Waste Avoidance and Resource Recovery Act 2001

The objectives of the Waste Avoidance and Resource Recovery Act 2001 are to encourage the most efficient use of resources, to reduce environmental harm, and to provide for the continual reduction in waste generation in line with the principles of ecologically sustainable development (ESD). To meet the objectives of the Act, a resource management hierarchy has been established, comprising; avoiding unnecessary resource consumption; recovering resources (including reuse, reprocessing, recycling and energy recovery); and disposal (as a last resort)

• Environmental Planning and Assessment Act 1979

The objects of this Act is to encourage the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment, and to promote ecologically sustainable development

• Environment Protection and Biodiversity Conservation Act 1999

This is the federal Act that protects the environment, particularly matters of National Environmental Significance (Protected matters). It streamlines national environmental assessment and approvals process, protects Australian biodiversity and integrates management of important natural and cultural places.

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• Environmental Hazardous Chemicals Act 1985

The Act sets up the Hazardous Chemicals Advisory Committee. Its functions include advising the EPA in relation to the assessment and control of chemicals that are environmentally hazardous. The EPA may assess chemicals under the Act.

The EPA may declare substances to be chemical wastes for the purposes of the Act. Examples of substances that have been so declared include dioxin contaminated waste materials and PCB (polychlorinated biphenyl) wastes.

• Heritage Act 1977

This Act aims to protect land, buildings, movable objects and other locations and items that are deemed to have State Heritage Significance or Local Heritage Significance.

• Soil Conservation Act 1938

An Act to make provision for the conservation of soil resources and farm water resources and for the mitigation of erosion

• Contaminated Land Management Act 1997

This Act enables the EPA to respond to contamination that is causing a significant risk of harm to human health or the environment and sets out criteria for determining whether such a risk exists.

## **1.8** Project Specific Applicable Regulatory Requirements

 State Significant Development (SSD) 8365 dated 21<sup>st</sup> February, 2019

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## 2. PROJECT PLANNING

## 2.1 Systems and Procedures

The Project Manager is responsible for the implementation of this Project Specific Environmental Management Plan for the project.

The Project Manager and his nominees shall review weekly the effectiveness of the system and will consider project safety and environmental issues.

Preparation of project programs and monitoring of progress shall be carried out from time to time as required. The Project Manager shall address any changes required by the client or by virtue of latent conditions, safety considerations or environmental considerations and update the program accordingly.

When a non-conformance or incident is detected, it shall be addressed according to Procedure 787 Non-Conformance. When it is necessary to seek concession, the Project Manager shall act according to the requirements of this procedure. The corrective action and improvement to prevent the reoccurrence of non-conformance/incident is also covered in the Procedure 787 Non-Conformance.

## 2.2 Strategy

Construction of Penshurst Public School, Penshurst will be via a GC21 (Edition 2) Contract and the Project Specific Construction Management Plan (PSCMP).

The Project management team will be responsible for:

- Site establishment
- Temporary fencing of compound to ensure security
- Hoarding off to any existing facilities to ensure resident and staff safety.
- Environmental protection apparatus being correctly installed and or maintained ready for use in case of emergency
- Site inductions, environmental & safety meetings
- Production, review and approval of work method statements and Waste Management plans
- Monitoring adherence to Waste Management plans as per Head Contract
- Monitoring inspection and testing methods and records
- Implementing Project Quality, Environmental and Safety plans
- Monthly reporting of progress

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## 2.3 Project Designers and Consultants

Contact details for project designers and consultants are established and distributed by the superintendent on initiation of the project. Some of these are displayed on the wall of the site office, as well as filed in the appropriate folder.

PROJECT DISCIPLINES	CONSULTANT COMPANY & NAME
Council	Georges River Council
Client	Schools Infrastructure NSW, Pete Krause
Client Superintendent	Root Partnerships, David Wood
Project Architect	Perumal Pedavoli Architects, Katherine Longhurst
Head Contractor	Grindley Construction, Rodney Peachey
Arborist	Glenyss Laws
Quantity Surveyor	WT Partnership, Paul Fung
Landscape Architect	Lorna Harrison, Lorna Harrison
BCA Certifier	Group DLA, Nick Aitchison

## 2.4 Inspections

The importance that Grindley places on the environmental aspect of its business is shown by the constant inspection program it puts its sites through. Environmental inspections will occur at least once a week on every site.

Weekly and after intense or prolonged inclement weather site inspections are conducted by Site Management using Procore Inspection Environmental Inspection, monthly Project inspections are conducted by the WHSEQ Manager using Procore Inspection WHSEQ Monthly Project Inspection.

## 2.5 Internal Audit Schedule

Internal audits will be conducted on all project activities as well as company nominated activities to provide a further review process for the effective management of this project and the management systems generally. The following project elements will be audited at the times indicated which is outlined in the audit schedule (form 506):

- Project Safety Plan (six (6) monthly)
- Project Quality Plan (six (6 monthly)
- Project Environmental Plan (six (6) monthly)

Reports of all audits conducted on the project shall be distributed to the following:

- Grindley Construction Construction Manager
- Grindley Construction Project Manager

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- Grindley Construction Site Manager
- Grindley Construction Management Review Meeting

## 2.6 Neighbour Notification

Managing Neighbour interfaces with the construction process is an important part of the process of environment interaction. The following processes will be undertaken by Grindley to inform neighbours of the work as well as provide a contact point:

- Site Sign will be erected giving contact details of the site manager to be contacted for any concerns/queries regarding the construction works
- Letters will be issued to all immediate neighbours also with Grindley contact details as well as an indicative start and duration of construction activities (If required).

## 2.7 Construction Hours

Site Operation Hours:

Monday – Friday 07:00 – 18:00 Saturday 08:00 – 13:00

## 2.8 Enquiries and Complaints Management

All enquiries and complaints are to be managed by Schools Infrastructure NSW (SINSW).

Any enquiry or compliant received by Grindley will be forwarded onto SINSW as soon as practical as directed by SINSW.

SINSW have provided Grindley with SINSW Communications Teams business cards, and Grindley have been directed to issue this card as the point of contact to anyone who raises a complaint.

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## 3. MANAGEMENT RESPONSIBILITIES

## 3.1 Position Descriptions

#### **Construction Manager** – Evan Graves

**Responsibilities and Authorities** 

- Overall control of system compliance
- Review of system administrations

**Project Manager** – Rodney Peachey (Reports to Construction Director)

Responsibilities and Authorities

- Control of system compliance
- Supervision of head office process control
- Oversee site process control
- Internal monthly reporting
- Sub-contract administration and payment
- Review all incident/non-conformance records, accident & incident reports and audit reports
- Authorise subcontract tendering and subcontract procedures, and establish an administrative system to monitor the subcontracts and the payment of subcontractors in relation to their environmental responsibilities

#### **Contracts Administrator** – Mitchell Thorburn

(Reports to Project Manager)

**Responsibilities and Authorities** 

- Ensure that all dockets required by EPA guidelines for waste and spoil removal are present before invoices are processed
- Ensure that waste removal contractors provide monthly reports of waste removed from sites.

**Site Manager** – Steve McInerney (Reports to Project Manager)

**Responsibilities and Authorities** 

• Implement and ensure adherence to Project Plan and all associated sub-plans

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- Implement all environmental plans and procedures as required
- Co-ordination of all on site activities including trade interface
- Organisation of all deliveries and managing materials handling
- Establish and maintain site environmental measures
- Review all Subcontractor Management Plans and waste management plans submitted and obtain approval from Project Manager before allowing work to commence on site
- Implementation of all inspection and testing requirements
- Liaison and co-ordination with testing and inspection authorities
- Preparation of check sheets and supervision of remedial works
- Liaise with Project Manager to co-ordinate the works and resources required

## Site Environment Officer – Steve McInerney

(Reports to Site Manager)

Responsibilities and Authorities

- Ensure compliance with environmental plans and regulations
- Isolate and report any environmental spills/events to site manager and Environmental Manager
- Conduct weekly site inspections
- Conduct inspections after intense or prolonged inclement weather
- Ensure all environmental protection equipment is in place
- Advise the Site Manager / Foreman on areas of concern
- Quarantine unsafe work areas, materials, plant and equipment
- Identify and report potential environmental impacts and risks
- Assume the role of company Representative for the Environment on site

#### **Subcontractors**

Responsibilities

- Ensure compliance with environmental plans and regulations
- Ensure all required paperwork is presented on submission of progress claims



## 3.2 Project Organisational Chart



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## 4. SITE EMERGENCY RESPONSE PLANS

## 4.1 Emergency Response Plan

In the event of any emergency the Site Manager must be contacted to ensure the appropriate action is taken.

POTENTIAL EMERGENCY	WHAT TO DO?	RELEVANT AUTHORITIES & PERSONS
Injury caused by: • Fire • Explosion • Machinery accidents • Minor injuries	<ul> <li>For serious injuries call an ambulance. You should also have the contact details of the nearest doctor, Medical Centre and Hospital.</li> <li>Immediately inform the site First Aid Officer.</li> <li>Follow the procedures as detailed in the Site Safety plan.</li> <li>For major injuries contact the Site Manager or Project Manager</li> </ul>	<ul> <li>Emergency Services</li> <li>Nearest Doctor</li> <li>Medical Centre</li> <li>Site Manager</li> <li>Project Manager</li> </ul>
Fire • Fire at the diesel tank • Fire at any of the machineries • Fire caused by vandalism	<ul> <li>Evacuate all personnel to a safe area immediately.</li> <li>Call the Fire Brigade (Emergency Services).</li> <li>If the fire is likely to damage neighboring property inform the adjacent residents.</li> <li>Follow the procedures as detailed in the Site Safety plan.</li> <li>For major fire emergencies, contact the Site Manager or Project Manager</li> </ul>	<ul> <li>Emergency Services</li> <li>Site Manager</li> <li>Project Manager</li> <li>Adjacent residents</li> </ul>
Explosion (e.g. rupture in a gas line)	<ul> <li>Evacuate all personnel to a safe area immediately.</li> <li>Call the Emergency Services immediately.</li> <li>Contact the neighbouring residents.</li> <li>If service related, call the relevant service provider (e.g. AGL)</li> <li>Follow the procedures as detailed in the Site Safety Plan</li> <li>Contact the Site Manager or Project Manager</li> </ul>	<ul> <li>Emergency Services</li> <li>AGL</li> <li>Site Manager</li> <li>Project Manager</li> <li>Adjacent residents</li> </ul>
Spills • Major spill when filling the diesel tank • Major spill from the diesel tank stored on-site • Spill or release of other hazardous chemicals of material	<ul> <li>For major spills, immediately call the Fire Brigade.</li> <li>Identify the source of the spill.</li> <li>Refer to the Material Safety Data Sheet (MSDS) and quickly evaluate the hazards of the material.</li> <li>If the material is dangerous, evacuate the site immediately and notify the neighbours.</li> <li>If it is safe, stop the source of the spill immediately.</li> <li>Contain the spill and control its flow.</li> <li>Block storm water drains downstream of the spill.</li> <li>EPA and local council must be notified about any spills that are likely to threaten the environment.</li> </ul>	<ul> <li>Emergency Services (fire brigade)</li> <li>DEC</li> <li>Council Officer</li> <li>Site Manager</li> <li>Project Manager</li> <li>DNR</li> </ul>
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	<ul> <li>If the spill is likely to impact on the</li> </ul>	
	catchments, contact Department of Natural	
	Clean up small spills promptly to prevent	
	run-off into the storm water system.	
	Contact the Site Manager or Project	
	Manager	
Heavy rainstorm and		Council
flood – beyond the	Contain/minimise the flow.	Site Manager
capacity of the	Contact Council Immediately.	Project Manager
	• Investigate reasons for failure and prepare	
failure of the	rainfall figures	
sedimentation control	Contact the Project Manager	
measures.	Contact the Project Manager	
Discovery of items of	<ul> <li>Fence off the area as "no go" zone and</li> </ul>	<ul> <li>Site Manager</li> </ul>
conservation value (e.g.	contact the Site Manager or Project manager	<ul> <li>Project Manager</li> </ul>
flora & fauna, heritage)	immediately for further action.	
Discovery of	<ul> <li>Fence off the area as "no go" zone and</li> </ul>	Site Manager
contaminated material	contact the Site Manager or Project manager	<ul> <li>Project Manager</li> </ul>
fuel storage tanks)	immediately for further action.	
Rupture of Authority	Contain/minimise the flow	Relevant Authority
pipelines (water pipes,	Ensure all spilled materials are contained on	• DEC
sewerage pipes)	site or if running off site are directed through	Council Officer
	sediment control measures	<ul> <li>Site Manager</li> </ul>
	Block storm water drains downstream of the	<ul> <li>Project Manager</li> </ul>
	spill.	• DNR
	Contact relevant authority as soon as	
	EBA and local council must be notified	
	about any spills that are likely to threaten the	
	environment.	
	<ul> <li>If the spill is likely to impact on the</li> </ul>	
	catchments, contact Department of Natural	
	Resources (DNR) immediately.	
Waste contractor not	Immediate contact with contractor to	Site Manager
submitting waste dockets	establish reasons	Project Manager
and illegally disposing of	Hold all payments to contractor	• Environment Manager
waste in an unauthorized	Request waste dockets for approved facility	
laulity	denosited (section 148 POEO Act 1907)	
	aeposited (section 148 POEO Act 1997)	



## 4.2 Emergency Contacts

Name	Contact Details
Emergency services including Fire Brigade, Ambulance and Police	000
Nearest Medical Centre	Ashby Medical Centre Business Hours +61 2 9579 6777 After Hours +61 2 8724 6300
Nearest Hospital	St George Hospital +61 2 9113 1111
NSW EPA	Pollution Line Tel: 131 555
Local Council	Georges River Council
Site Manager (24 hour contact)	Steve McInerney +61 416 019 427
Project Manager	Rodney Peachey +61 458 099 494
Construction Manager	Evan Graves +61 2 9988 3811
Ausgrid	13 13 88
Jemena Gas Network (NSW)	13 19 09
Sydney Water	13 20 90
Waste Disposal	ТВА

## 4.3 Incident and Non-conformance procedure

In the case of an environmental incident flowchart 757 – Environmental Emergency Response must be followed and all aspects of the incident addressed and entered to the relevant logs for appropriate review.

## 4.4 Environmental Impact Issues

## 4.4.1 Air Quality and Dust Management

Air quality and dust management is the responsibility of the site manager. As per Impact Mitigation Plan 006 (IMP006) dust minimisation techniques are to be employed as needed during construction, including the use of water carts as necessary. Air quality is to be managed through the proper maintenance of all machinery on site as per Plant and Equipment Inspection Checklist (Form 161). Any incidents where poor air quality becomes an issue is to be assessed on a case by case basis and managed according to all relevant legislation.

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### 4.4.2 Contaminated water and soil

Refer 6.1 Unexpected Contamination Finds Protocol

### 4.4.3 Cultural Heritage

Refer 6.2 Unexpected Aboriginal and Non-Aboriginal Heritage Finds Protocol

#### 4.4.4 Flora and Fauna

Flora and Fauna on the site will be managed through the recommendations of the Flora and Fauna conditions detailed in the DA approval and any subsequent conditions will be complied with as detailed.

#### 4.4.5 Noise

Noise impacts from construction are an ongoing concern for all construction projects. Construction noise management will be in accordance with the Acoustic Assessment Report (Construction Noise and Vibration Management Sub-Plan for the purpose of Development Consent reference) Sections 9.0, 10.0 and 11.0 (refer Appendix B) and will be the responsibility of the Site Manager to enforce.

## 4.4.6 Traffic

Traffic management will be in accordance with the Construction Traffic Management Plan (Construction Traffic and Pedestrian Management Sub-Plan for purpose of Development Consent reference) (refer Appendix A) and will be the responsibility of the Site Manager to enforce.

The effectiveness of the TMP control measures will be monitored regularly, in particular the Environmental Inspection conducted weekly will formally prompt the inspection of the effectiveness of the control measures in addition to the informal observations made by Site Management in their day to day operations.

## 4.4.7 Waste Management

Waste Management will be in accordance with the Waste Management Plan (Construction Waste Management Sub-Plan for purpose of Development Consent reference) (refer Appendix C) and Impact Mitigation Plan 004 (IMP004). A waste management plan will be developed in conjunction with the selected waste contractor for the project and will be audited at random intervals throughout the course of the project.

All waste is to be classified in accordance with the Protection of the Environment Operations Act and all material to remain on site is to be validated in accordance with the Remediation Action Plan.

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### Waste Management Plan

	Recycled		Lar	ndfill	
	Estimated	Estimated		Estimated	
	Volume	Volume	Disposal	Volume	Disposal
Туре	(m³)	(m³)	Location	(m³)	Location
Green			Plateau		
Waste	80	80	Trees		
Bricks			Concrete		
	1500	1500	Recyclers		
Concrete			Concrete		
	1500	1500	Recyclers		
Timber	250			250	Genesis
Plasterboard	250			250	Genesis
Metals	200	200	One Steel		
Asbestos	30			30	Genesis
Roof Tiles			Concrete		
	100	100	Recyclers		
Carpet	100			100	Genesis
Total	4010	3380		630	

## 4.4.8 External Lighting

External lighting if any is to comply with AS 4282 Control of the obtrusive effects of outdoor lighting.

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# 5. SEDIMENT AND EROSION CONTROL

This section identifies sediment control systems to be implemented on the project. The sediment control systems are designed to minimise erosion onsite and retain sediment eroded by water and wind.

Sediment and erosion control will be in accordance with the Stormwater Management Report (Construction Soil and Water Management Sub-Plan for purpose of Development Consent reference) and Sediment and Erosion Control Plan and Details Series Number CW2 Revision C (refer Appendix D). These documents have been prepared in accordance with Landcom's guide on Managing Urban Stormwater (the "Blue Book")

The erosion and sediment control measures described will be installed during site preparation works along with the site fences and sheds. These devices will be in place throughout all construction phases, especially excavation.

Weather forecasts will be monitored and where significant inclement weather is identified, Site Management will review the current status of the sediment and erosion control measures and where applicable action any observations.

Review of such control measures will include but are not limited to:

- Bins/areas used for concrete and mortar slurries, paints, acid washing, lightweight waste materials and litter are clean, tidy and reflect a status that will not allow for the weather to dislodge such waste
- Drains, diversion banks, table drains, berm drains, drop-down structures, sediment fences and alike are clean, free from obstructions that would prevent the removal of stormwater and operating as intended
- Material stockpiles are protected and placed in a manner to prevent erosion of materials entering the stormwater system
- Vegetative growth is maintained to ensure water flow is not impeded
- Unsealed roads and other exposed surfaces control measures are adequate
- Sediment detention system is in good working condition
  - Water is still being diverted towards the system
  - Degradable products such as straw bales are in acceptable condition
  - o Sediment is at an acceptable level
- Controls measures are adequate to handle the forecasted inclement weather

Following periods of significant inclement weather Site Management will conduct an Environmental Inspection, as described in 2.4 Inspections.

In the event of stormwater needing to be removed from site, stormwater will be removed and disposed of via a dewatering subcontractor.

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## 5.1 Sediment and Erosion Control Devices

Unnecessary disturbance of the site shall not occur and all cuts are to be stabilised as soon as possible after the completion of site earthworks. Extra care will be taken to prevent sediment run off into all neighbouring lots and stormwater. Any collected silt will be disposed of in accordance with all other relevant codes and standards.

### 5.1.1 Silt Fences

Silt fences are to be installed to all site boundaries. Geotextile fabric will be fixed to the temporary construction fencing to the 'downhill' boundaries of the site. The fabric will be turned down under the existing ground line and secured at regular intervals not exceeding 3m in accordance with the following diagram.



#### 5.1.2 Vehicle Access

Vehicular access will be controlled to prevent sediment being tracked. This will be done by maintaining an all weather access/driveway composed of an approved course aggregate surface. Also if the need arises a shaker grid will be installed to the main access by Grindley Construction during the construction works. Any sediment that is tracked onto the surrounding roads will be cleaned off in a timely manner.

## 5.1.3 Stormwater Inlets

All stormwater inlets are to be covered with geotextile fabric in a roll or other format to ensure that no sediment enters into the stormwater system. This will be the responsibility of the Site Manager to enforce. The rolls will not only be placed directly at the inlets as shown below, they will also be placed at regular intervals in the gutters 'upstream' from the inlets creating multiple barriers.

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Project Specific Environmental Management Plan



## 5.1.4 Stockpiles

If appropriate topsoil is to be stockpiled on site then the following measures will be put in place. If stockpiling is required, stockpiles shall be stored at least 2 meters clear of drainage lines, natural watercourse and established trees.

Stockpiles will have temporary silt fences in place around the stockpiles to create an enclosure and if necessary they will be covered will shade cloth or tarpaulin to retain the materials on the stock pile. The location of stock piles will be determined on site.

## 5.1.5 Waste Enclosures

Dedicated building waste enclosures will be set up around the site to enclose building waste where required. No waste enclosures will be set up outside of the site boundary.

## 5.1.6 Dust Control

The shade cloth to the boundary fences will be maintained throughout all stage of construction to assist in dust control. Also if the need arises due to excessive dust being created, the site will be watered down by a water truck where possible, and/or sprinklers and hoses. Also all stockpiled soils will be covered during periods of high wind to reduce the dust created from on site storage.

## 5.1.7 Monitoring

In order to maintain the various erosion and sediment control devices, regular inspections, repairs and cleaning will be carried out on the silt fences to the boundaries, stockpiles, waste enclosures, and to the stockpile covers.

Inspections of the site erosion and sediment control devices will be carried out in accordance with section 2.4 of this Management Plan.

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# 6. UNEXPECTED FINDS PROTOCOL

## 6.1 Unexpected Contamination Finds Protocol

In the event of any unexpected contamination being encountered, all work in the immediate area is to cease and the following is to occur:

- Area to be secured to prevent disturbance
- Pending the type of contamination, an appropriately qualified environmental consultant is to be contacted to attend site and assess the extent of remediation if any that may be required
- If remediation is required, upon completion of, appropriate validation is to be confirmed, once received works can recommence

## 6.2 Unexpected Aboriginal and Non-Aboriginal Heritage Finds Protocol

In the event of any unexpected heritage related Aboriginal or Non-Aboriginal items being encountered, all work in the immediate area is to cease and the following is to occur:

- Area to be secured to prevent disturbance
- Pending the type of items being encountered the following is to occur:
  - Aboriginal Heritage
    - An appropriately qualified archaeologist and the registered Aboriginal representatives is to be contacted to attend site to determine the significance of the objects
    - Consultation with the archaeologist, Aboriginal representatives and the Environment Energy and Science (EES) to develop and implement management strategies
    - Written approval from EES is to be received, once received works can recommence
  - Non-Aboriginal Heritage
    - Contact EES Heritage division
    - Written approval from EES is to be received, once received works can recommence

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## APPENDIX A – Construction Traffic and Pedestrian Management Sub-Plan

Traffic Assessment Prepared by TTM Rev 13 Refer Section 7





# 7 Construction traffic management plan

The purpose of a Construction Traffic Management Plan (CTMP) is to ensure that the impacts of the construction activities on the public domain and road network, in particular with respect to temporary interruptions to vehicular and pedestrian traffic are limited and acceptable.

The demolition of existing buildings and construction of the new school will occur after all existing students and staff have been temporarily relocated to another site.

## 7.1 Limitations of this CTMP

The CTMP developed by TTM only considers the impact of works on traffic and pedestrians. As the project is in its preliminary stages, the CTMP is based on anticipated information, and advice supplied by Perumal Pedavoli Architects.

## 7.2 Duration of Works and Construction Schedule

The duration of construction activities will be subject to the contractor once it is appointed for the project. The daily/ weekly schedule of the construction work will be subject to Council's conditions of consent.

## 7.3 Construction Permits

#### 7.3.1 Works Zone

An application for a works zone fronting the subject site on Arcadia Street will be submitted to Council if required. This would be a separate application to the CTMP.

## 7.3.2 Other Permits

A Standing Plant permit, temporary road/footpath closure, hoarding and will be applied and submitted to the relevant authorities, when required.

This would be a separate application to the CTMP.

## 7.4 Construction Vehicles

Various types of trucks will visit the site. The maximum sized design vehicle will be a heavy rigid vehicle. A truck and dog may access the site during demolition and excavation. Both vehicles are legally allowed on the local road system. The length of most other vehicles will be less than the standard heavy rigid 12.5 metre vehicle. Typical lengths are around 8 metres.

All heavy goods such as girders or machinery plants are likely to be delivered outside of peak traffic hours.



## 7.5 Haulage Routes

During construction vehicle movements for the project will be required to:

- Comply with relevant environment approvals.
- Minimise the number of vehicle movements by balancing earthworks and recycling excavated materials.
- Enter and exit the site in a forward facing direction.
- Promote safe driving principles.
- Evaluate the need for temporary traffic control.
- Plan on-site vehicle movements.
- Avoid or minimise truck reversing and three point turns on site.

The proposed haulage route is shown in Figure 7-1.



Figure 7-1: Construction vehicle routes



It is proposed that construction vehicles will:

- Arrive at the site traveling from Penshurst Street and Percival Street onto Arcadia Street, then enter the site through the proposed site entry.
- Depart from the site travelling along Arcadia Street, and turn left onto Forest Road.

Figure 7-2 presents the construction site plan and the location of the proposed site entry.



Figure 7-2: Proposed construction plan

Construction workers will generate additional traffic to the site. Nevertheless, construction workers generally start earlier and finish earlier than the commuter peak periods, and would likely not coincide with the school peak periods.

## 7.6 Pedestrian Management

During the various construction stages, pedestrian movements around the site will be maintained as much as possible. Boundary fence will be used to limit pedestrian access to the site. Traffic controllers will be assigned to manage construction vehicles and pedestrians crossing the work areas during major deliveries.

## 7.7 Site Fencing

The construction site will be enclosed by fencing/hoarding to prevent access to the property and to protect the public / roadway from construction activities.



## 7.8 Employee Parking

Employees, tradespeople and small construction vehicles will park on site and around the surrounding streets of the subject site.

## 7.9 Driver Code of Conduct

Management of vehicular access to and from the site is essential to maintain the safety of the general public as well as the labour force. The following code is to be implemented as a measure to maintain safety within the site:

- Utilisation of only the designated transport routes.
- Drivers to maintain a sufficient distance from the temporary barriers that will be implemented around trees that form part of the endangered plant community.
- Construction vehicle movements are to abide by finalised schedules as agreed by the relevant authorities.

## APPENDIX B – Construction Noise and Vibration Management Sub-Plan

Acoustic Assessment Report Prepared by Day Design Report No. 6320-1.1R Rev C Refer Sections 9.0, 10.0 and 11.0





DAY DESIGN PTY LTD

CONSULTING ACOUSTICAL ENGINEERS

SUITE 17, 808 FOREST ROAD, PEAKHURST 2210 P. 02 9046 3800 ACOUSTICS@DAYDESIGN.COM.AU WWW.DAYDESIGN.COM.AU ABN: 73 107 291 494

# **Acoustic Assessment Report**

Penshurst Public School Arcadia Street, Penshurst

REPORT No 6320-1.1R Rev C

DATE ISSUED 3 April 2018

Prepared For: Perumal Pedavoli Pty Ltd PO Box 636 Glebe NSW 2037

Attention: Ms Carmit Harnik



#### **Revision History**

Report	Date	Prepared	Checked	Comment
Final	8/2/2018	William Wang	Stephen Gauld	
Rev A	28/03/2018	William Wang	Stephen Gauld	Updated Drawings, Layout
Rev B	29/03/2018	William Wang	Stephen Gauld	Construction Hours
Rev C	03/04/2018	William Wang	Stephen Gauld	

Document R\6320-1.1R REV C, 51 pages plus attachments

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#### 9.0 CONSTRUCTION NOISE AND VIBRATION CRITERIA

#### 9.1 Australian Standard AS2436

The Australian Standard AS2436:2010 *"Guide to noise and vibration control on construction, demolition and maintenance sites"* provides guidance on noise control in respect to construction, demolition and maintenance sites. The Standard also provides guidance for the preparation of noise and vibration management plans.

Section 1.5 'Regulatory Requirements' of the Standard states:

"Legislation associated with the control of noise and vibration on and from construction, demolition and maintenance sites in Australia is generally the responsibility of the relevant State or Territory government, local council or a designated statutory authority."

Consequently the Standard does not provide specific noise criterion rather sets out practical methods for determining the potential for noise and vibration impact on the community from construction, demolition and maintenance sites.

A qualitative method is described in Section 3.3 of the standard, which is designed to avoid the need for complex noise predictions by following a series of questions relating to, for example, whether the noise is likely to be loud, have annoying characteristics or affect sleep.

In the event that any of these outcomes are likely, a more detailed and quantitative approach should be adopted.

In relation to carrying out detailed noise impact assessments, Section 4 'General' of the standard states:

"Regulatory authorities may have relevant polices and/or guidelines for the control of noise and vibration on construction sites. These should also be referred to when developing noise and vibration management plans for such projects."

In NSW this is the NSW Environment Protection Authority's *Interim Construction Noise Guideline 2009* as outlined in Section 9.2 below.

The Standard further states, in Section 4.6.1, that if noisy processes cannot be avoided, then the amount of noise reaching the receiver should be minimised and goes on to provide advice and recommendations to reduce noise and vibration impacts as far as reasonably practicable.



#### 9.2 EPA Construction Noise Guideline

The NSW Environment Protection Authority published the *Interim Construction Noise Guideline* in July 2009. While some noise from construction sites is inevitable, the aim of the Guideline is to protect the majority of residences and other sensitive land uses from noise pollution most of the time.

The Guideline presents two ways of assessing construction noise impacts; the quantitative method and the qualitative method.

The quantitative method is generally suited to longer term construction projects and involves predicting noise levels from the construction phase and comparing them with noise management levels given in the guideline.

The qualitative method for assessing construction noise is a simplified way to identify the cause of potential noise impacts and may be used for short-term works, such as repair and maintenance projects of short duration.

In this instance, the quantitative method is the most appropriate and has been used in this assessment. Details of the quantitative method are given in Section 4 of the Guideline.

Normal construction hours are defined by the EPA as follows:

- 7.00 am to 6.00 pm Monday to Friday;
- 8.00 am to 1.00 pm Saturday; and
- No work on Sunday or Public Holiday.

Correspondance with Georges River Council indicates their standard conditions of consent for construction hours are 7 am to 5 pm Monday to Saturday. This is a slight variance of the standard EPA construction hours.

In certain cases, the community may prefer extended construction hours to achieve a shorter overall construction period. In this situation, we have been informed the preference for construction hours are 7 am to 6 pm Monday to Friday, and 7 am to 5 pm Saturdays. These proposed construction hours are still within the daytime period and are valid for the counstruction noise assessment.

Table 2 in Section 4 of the Guideline sets out noise management levels at affected residences and how they are to be applied during normal construction hours. The noise management level is derived from the rating background level (RBL) plus 10 dB in accordance with the Guideline. This level is considered to be the 'noise affected level' which represents the point above which there may be some community reaction to noise.

The 'highly noise affected' level of 75 dBA represents the point above which there may be strong community reaction to noise. This level is provided in the Guideline and is not based on the RBL. Restrictions to the hours of construction may apply to activities that generate noise at residences above the 'highly noise affected' noise management level.



Based on the RBL of 55 dBA (towards Forest Road) and 44 dBA (towards 13 Arcadia Street) in the daytime, the recommended noise management level during all aspects of the construction program are summarised in Table 19.

Receptor Location	Noise Management Level	How to Apply	
All Residential Receptors	65 dBA (55 + 10) or 54 dBA (44 + 10)	<ul> <li>The noise affected level represents the point above which there may be some community reaction to noise.</li> <li>Where the predicted or measured LAeq (15 min) noise level is greater than the noise affected level, the proponent should apply all feasible and reasonable* work practices to meet the noise affected level.</li> <li>The proponent should also inform all potentially impacted residents of the nature of works to be carried</li> </ul>	
	Highly noise affected 75 dBA	<ul> <li>out, the expected noise levels and duration, as well as contact details.</li> <li>The highly noise affected level represents the point above which there may be strong community reaction to noise.</li> <li>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:</li> </ul>	
		<ol> <li>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);</li> <li>if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.</li> </ol>	

Table 19Leq Noise Management Levels from Construction Activities

\* Section 6, 'work practices' of The Interim Construction Noise Guideline, states: "there are no prescribed noise controls for construction works. Instead, all feasible and reasonable work practices should be implemented to minimise noise impacts.

This approach gives construction site managers and construction workers the greatest flexibility to manage noise".

Definitions of the terms feasible and reasonable are given in Section 1.4 of the Guideline.

The Interim Construction Noise Guideline recommends the following noise levels for land uses other than residential, as shown in Table 20. The external noise levels should be assessed at the most affected occupied point on the premises. A conservative estimate of 10 dB is generally applied as the difference between the external and internal level for noise sensitive uses that require internal noise measurement.

#### Table 20Other Sensitive Land Uses

Land Use	Noise Management Level, L <sub>Aeq,(15 minute)</sub> Applies when properties are being used.	
Classrooms at schools and other educational institutions	45 dBA – Internal Noise Level	
Active Recreation Areas, (areas that generate their own noise and less sensitive to external noise intrusion)	65 dBA – External Noise Level	



#### 9.3 EPA Vibration Guideline

The NSW EPA published the *Assessing Vibration: a technical guideline* in February 2006. This guideline is based on the British Standard BS6472:1992 *"Evaluation of human exposure to vibration in buildings (1 Hz to 80 Hz)."* 

The guideline presents preferred and maximum vibration values for use in assessing human responses to vibration and provides recommendations for measurement and evaluation techniques. The guideline considers vibration from construction activities as Intermittent Vibration. Table 2.4 of the guideline sets out limits for Vibration Dose Values to assess intermittent vibration and is replicated in Table 21 for residential receptor locations.

#### Table 21 Vibration Dose Values (VDV) from Construction Activities

Decentor Location	Daytime		
	Preferred value (m/s <sup>1.75</sup> )	Maximum value (m/s <sup>1.75</sup> )	
All Residences	0.20	0.40	

The British Standard BS7385-2:1993 "Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from groundborne vibration" provides guide values for transient vibration relating to cosmetic damage, replicated in Table 22 for residential buildings.

#### Table 22 Transient Vibration Guide Values for Cosmetic Damage

Type of building	Peak component particle velocity in frequency range of predominant pulse		
	4 Hz to 15 Hz	15 Hz and above	
Residential	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above	

In our opinion, an overall peak particle velocity of **15 mm/s** at the boundaries is an acceptable criterion for intermittent vibration to prevent cosmetic damage to the adjacent residential buildings.



#### **10.0 CONSTRUCTION NOISE AND VIBRATION ASSESSMENT**

The main sources of noise on the site during the construction of the school buildings will be from heavy machinery such as excavators, dump trucks and hand held pneumatic and electric power tools, etc. Activities that may cause particular annoyance, due to tonality, spectral content or impulsiveness include generator motors, hand tools such as grinders, jackhammering and other activities involving impacts. These activities will require particular attention with regard to mitigation.

#### **10.1** Stage 1 – Site Preparation

Site establishment works are likely to be completed within 2 months. Works will involve the use of excavators and regular truck movements transporting waste materials from the site. The equipment likely to be used and their corresponding sound power levels are presented in Table 23.

Table 23	Typical Site Preparation Equipment - Sound I	Power Levels
	Otv	Sound Powe

Description	Qty	Sound Power Level, dBA <sup>^</sup>	
Excavators (up to 38 ton)	Up to 2	107 to 110	
Trucks (up to 40 ton)	Up to 2	107 to 110	
Bulldozer (21 ton)	1	108	
Generator	2	Up to 89	
Pneumatic and Electric Hand Tools	Up to 5 simultaneously	Up to 110	

^All sound power levels are based on AS2436:2010 of various plant noise measurements.

As a conservative approach, it is assumed that all items of plant will be operating simultaneously.



Levels are based on the closest potential distance and furthest potential distance at which each item of plant may operate from each respective residential location. The calculated noise levels at nearby residential receptors are presented in Table 24.

Receptor Location	Calculated Sound Pressure Levels (dBA)	Noise Management Level (dBA)	Compliance
R1 – 13 Arcadia Street (Ground Floor)	61 - 90	54	No
R2 – 12 Arcadia Street (Third Floor)	64 - 78	54	No
R3 – St Declan's Primary School (Second Floor)	65 - 90	55	No
R4 – 409 Forest Road (Third Floor)	59 - 70	65	No

#### Table 24Calculated Receptor Sound Pressure Levels from Site Preparation

#### 10.2 Stage 2 – Earthworks

The Stage 2 Works will be completed within 5 months. The equipment likely to be used and their corresponding sound power levels are presented in Table 25.

Table 25Typical Earthworks Equipment - Sound Power Levels

Description	Qty	Sound Power Level, dBA <sup>^</sup>
Excavators (up to 38 ton)	Up to 2	107 to 110
Trucks (up to 40 ton)	Up to 2	107 to 110
Compactor Rollers	Up to 2	110
Bulldozer (25 ton)	2	108
Front End Loader (25 ton)	1	110 to 115
Silenced Diesel Generator	Up to 2	Up to 89
Elevated Work Platforms	2	Up to 95
Pneumatic and Electric Hand Tools	Up to 5 simultaneous	Up to 110
Pile Driver	Up to 2	Up to 120
Screw Piling	Up to 2	Up to 105
Hydraulic Rock Breaker	Up to 2	Up to 118

^All sound power levels are based on AS2436:2010 and DEFRA database of various plant noise measurements.

As a conservative approach, it is assumed that all items of plant will be operating simultaneously. Levels are based on the closest potential distance and furthest potential distance at which each item of plant may operate from each respective residential location.



Given the intensity of work involved with pile driving and rock breaking, it is unlikely that these two activities will take place at the same time as any other activity. Therefore we have assessed the noise impact of these two activities individually.

The calculated noise levels at nearby residential receptors are presented in Table 26.

Receptor Location	Calculated Sound Pressure Levels (dBA)	Noise Management Level (dBA)	Compliance
R1 – 13 Arcadia Street (Ground Floor)	61 - 90	54	No
R2 – 12 Arcadia Street (Third Floor)	64 - 78	54	No
R3 – St Declan's Primary School (Second Floor)	65 - 90	55	No
R4 – 409 Forest Road (Third Floor)	59 - 70	65	No
Rock breaking or pile driving (If requi	red)		
R1 – 13 Arcadia Street (Ground Floor)	71 - 100	54	No
R2 – 12 Arcadia Street (Third Floor)	74 - 88	54	No
R3 – St Declan's Primary School (Second Floor)	75 - 100	55	No
R4 – 409 Forest Road (Third Floor)	70 - 80	65	No

## Table 26Calculated Receptor Sound Pressure Levels from Earthworks

#### **10.3 Vibration Impacts**

Past measurements of ground borne vibration show that vibration levels can vary significantly at different distances and receptor locations. Recommended safe working distances for various items of vibration generating plant are given in Section 6.3 of Transport for NSW Construction Noise Strategy 2012. This information is shown below in Table 27.

|--|

		Safe Working Distance			
Plant Item	Rating/Description	Cosmetic Damage (BS7385)	Human Response (OH&E Assessing Vibration – A Technical Guideline)		
Small Hydraulic Hammer	300 kg – 5 to 12T Excavator	2 m	7 m		
Medium Hydraulic Hammer	900 kg – 12 to 18T Excavator	7 m	23 m		
Vibratory Pile Driver	Sheet piles	2 m to 20 m	20 m		
Pile Boring	≤800 mm	2 m (nominal)	N/A		
Jackhammer	Hand held	1 m (nominal)	Avoid contact with structure		

We recommend that compliance monitoring of ground borne vibration is carried out at the nearest residence, when vibratory machinery such as pile drivers, jackhammers and the like are used on site. Refer to Section 11.10 for the mitigation measures to be engaged to reduce the impact of adverse vibration.



### **10.4** Stage 3 – Construction

The construction of the School is estimated to take 60 weeks and will involve the use of power tools and portable mechanical plant such as generators and cement mixers. The equipment likely to be used and their corresponding sound power levels are presented in Table 28.

#### Table 28 Typical Construction Equipment - Sound Power Levels

Description	Qty	Sound Power Level, dBA <sup>^</sup>
Silenced Diesel Generator	Up to 2	Up to 89
Telehandler (3 ton)	1	Up to 99
Elevated Work Platforms	2	Up to 95
Pneumatic and Electric Hand Tools	Up to 5 simultaneous	Up to 110

^All sound power levels are based on AS2436:2010 and DEFRA database of various plant noise measurements.

During the construction phase, work will be more dispersed across the site as the scale of work, compared to the previous two phases, is less intensive. Calculations consider distance attenuation only and the range of levels are based on the closest potential distance and furthest potential distance at which each item of plant may operate from each respective residential location.

The calculated noise levels at nearby residential receptors are presented in Table 29.

Table 29	Calculated Receptor Sound Pressure Levels from Construction
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Receptor Location	Calculated Sound Pressure Levels (dBA)	Noise Management Level (dBA)	Compliance
R1 – 13 Arcadia Street (Ground Floor)	60 - 89	54	No
R2 – 12 Arcadia Street (Third Floor)	63 - 77	54	No
R3 – St Declan's Primary School (Second Floor)	64 - 89	55	No
R4 – 409 Forest Road (Third Floor)	58 - 69	65	No

Note that once the school buildings begin to be erected, the buildings will act as a noise barrier to the adjoining receptor locations, reducing the level of construction noise as construction progresses.



#### **11.0 CONSTRUCTION NOISE AND VIBRATION MITIGATION RECOMMENDATIONS**

The predicted level of noise (Section 10.1, 10.2, and 10.4) and vibration (Section 10.3) emission from the construction of the School show that noise levels will likely exceed the Noise Management Levels established in Section 9.2 of this report. The highly affected noise level of 75 dBA will also likely be approached for the majority of the construction carried out close to the nearby affected locations.

The following work practices are recommended to be implemented where necessary and practicable, to reduce noise emission as far as reasonably practicable:

- Works to be staged to minimise noise impact,
- Methodology of demolition will be carried out so that noisy activities do not occur concurrently where possible,
- Impact noise will be limited
- Substitution of equipment will be considered to minimise noise (Section 11.3)
- Impulsive and tonal noise to be restricted to the hours of 9.00 am to 4.00 pm Mon-Fri, and continuous blocks will not exceed three hours each with a minimum respite from those activities and works of not less than one hour between each block (Section 11.4)
- Management plan to ensure construction vehicles arrive and depart during construction hours only
- Reversing alarms to be of "quacker" broadband alarm style

#### **11.1** Noise Measurement Equipment

All acoustic instrumentation employed throughout the monitoring programme will comply with the requirements of AS IEC 61672.1:2004 *Electroacoustics – Sound level Meters-Specifications*. All sound level meters must have a current calibration certificate from a NATA accredited laboratory in accordance with NATA guidelines. Instrument calibration shall be checked before and after each measurement survey, with the variation in calibrated levels not exceeding  $\pm 0.5$  dB.



#### 11.2 Attended Residential Noise Monitoring Procedure

Any attended noise measurements to be carried out as a result of a noise complaint should be conducted in accordance with the procedures outlined in Australian Standard AS1055 *Acoustics – Description and measurement of environmental noise* and in accordance with methods outlined in the NSW Industrial Noise Policy (INP). The following points should be followed when conducting noise monitoring:

- A field calibration should be conducted before and after measurements;
- The sound level meters must be set to A-weighting and Fast response;
- The sound level meters sample period should be set to 15 minutes;
- The following descriptors should be measured as a minimum: LA1, LAeq and LA90; and
- Measurements should be conducted a minimum of 3 metres from the nearest façade and/or solid fence/wall. If it is not possible to do this corrections for façade reflection should be applied to the measurement results.

#### 11.3 Noise Monitoring of Equipment

In addition to the residential noise monitoring procedures described above, the following equipment measurements can be undertaken if a noise complaint arises:

- Noise emission levels of all critical items of mobile plant and equipment will be checked by the site environmental officer for compliance with noise limits appropriate to those items prior to the equipment going into regular service;
- For equipment and mobile plant used for construction works, L<sub>Aeq</sub> measurements will be taken at an appropriate distance, normally 7 metres and converted to a Sound Power Level;
- An *Equipment Noise Certificate*, presenting relevant sound levels of the equipment tested, will be issued by the Construction Contractor's site environmental officer within the first week of the equipment commencing at the construction site.

The equipment sound power levels will be compared to the levels contained in Table 23, 25 and 28. If noise checks on any equipment result in a prediction of non-compliance, quieter equipment or alternate construction methods should be substituted. For example, screw piling instead of impact piling can result in a 15 dB noise reduction.



#### **11.4 Periods of Respite**

All activities associated with the construction shall take place within the proposed hours, as shown below:

- 7:00 am to 6:00 pm, Monday to Friday inclusive; and
- 7:00 am to 5:00 pm Saturdays;
- At no time on Sundays or public holidays.

Works that result in impulsive or tonal noise emissions shall only be undertaken:

- 8:00 am and 5:00 pm Monday to Friday inclusive;
- In continuous blocks, not exceeding 3 hours each, with a minimum respite from those activities and works of not less than one hour between each block.

#### 11.5 Reducing Noise from Plant and Equipment

- Use alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electriccontrolled units where feasible and reasonable. Where there is no electricity supply, use an electrical generator located away from residences.
- 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.
- 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.
- Pneumatic equipment is traditionally a problem select supersilenced compressors, silenced jackhammers and damped bits where possible.
- Place as much distance as possible between the plant or equipment and residences and other sensitive land uses.

#### **11.6** Work Practices

Workers and contractors shall be trained in work practices to minimise noise emission such as the following:

- Avoid dropping materials from a height.
- Avoid shouting and talking loudly outdoors.
- Avoid the use of radios outdoors that can be heard at the boundary of residences.
- Turn off equipment when not being used.
- Carry out work only within the approved hours of operation.
- Construction vehicles to arrive and depart during construction hours only.



#### 11.7 Heavy Vehicles and Staff Vehicles

- Truck drivers shall be informed of designated vehicle 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).
- Site vehicle entrances shall be located away from residences where practicable.
- The number of vehicle trips shall be configured to reduce the number of trips to and from the site movements shall be organised to amalgamate loads rather than using a number of vehicles with smaller loads.
- Parking and queuing of construction staff vehicles and other construction vehicles shall be avoided as far as is practicable on streets outside of the site.
- There shall be no access for construction vehicles to the site or park within residential areas prior to 7 am on any occasion, in order to avoid sleep disturbance.
- Vehicles shall be fitted with broadband reversing alarms or alternative, non-tonal proximity warning systems.
- For the duration of construction, use of compression braking shall not be permitted on the site or nearby the site, such as on access roads within close proximity to residential premises.



#### **11.8 Community Relations**

- A Community Liaison Officer shall to be appointed by the contractor prior to the commencement of any works;
- The officer will approach all potentially affected residents prior to the commencement of any works as an initial introduction and provide their contact details;
- The officer will explain the project, duration of works, potentially noisy periods as well as determine any particularly sensitive receivers or sensitive time periods and schedule works accordingly, as far as reasonably practical;
- A community information telephone number may be established to provide access and information about the project.
- Community notifications and newsletters shall be prepared and distributed, at least 7 days prior to commencement of any works, to the community in areas that are potentially affected by the project. The contents of the notifications shall include information on the nature of the works, location of works being carried out, possible impacts to amenity, traffic flow or services, and the contact details as listed above.
- Community drop-in sessions shall be organised to engage with the community and to provide a conduit for direct consultation between those affected, or with an interest in the project, and the project team. To encourage the widest attendance and accessibility to the community, drop-in sessions shall be arranged outside of business hours such as weeknights or on Saturday.
- Information cards with the above contact details shall be prepared and distributed to the project management team and other staff on site. These cards shall be given to members of the community or other interested parties should they approach staff on site for information.

Once works commence, communication with the community shall be maintained by the Community Liaison Officer. Communication shall be maintained via the aforementioned methods.

Consultation and cooperation between the contractor and the neighbours and the removal of uncertainty and rumour can help to reduce adverse reaction to noise.



#### 11.9 Managing a Noise Complaint

The Liaison Officer shall receive and manage noise complaints and implement a Construction Complaints Management System.

All complaints shall be treated promptly and with courtesy.

In the event that a noise complaint is received, noise monitoring will be carried out at the affected receptor location and appropriate measures be taken to reduce the noise emission as far as reasonably practicable.

Where it is not practicable to stop the noise, or reduce the noise, a full explanation of the event taking place, the reason for the noise and times when it will stop shall be given to the complainant.

The following guidelines are recommended in Section 6 of the *Interim Construction Noise Guideline* to manage a noise complaint:

- 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.
- Implement all feasible and reasonable measures to address the source of complaint, which may include standing equipment down.
- 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, time of verbal response and timeframe for written response where appropriate.



#### **11.10** Noise Monitoring

In the event of a noise complaint, monitoring shall be carried out at the complainant's residence to determine which activities are generating excessive noise. If practicable, noise mitigation measures, such as those outlined above, shall be implemented and further monitoring shall then be employed to determine the efficacy of noise mitigation.

#### 11.11 Vibration Monitoring

If high impact activities, such as rock hammering or piling are to be conducted at any time during each stage, vibration measurements may be carried out at a residence within each of the nearest receptor locations at the commencement of high impact activities to determine the maximum levels of vibration during these peak vibration generating events.

In the event of an exceedance of the Peak Particle Velocity (PPV) vibration criteria as defined in Table 22, unattended vibration monitor or monitors shall be installed at each residential location where an exceedance was measured.

Unattended vibration monitors shall have the capability to trigger an alert to make the site manager and/or plant operator aware immediately when the vibration limit is exceeded. The vibration monitor should be set to trigger the alert when the overall PPV exceeds the criteria within each frequency range, as stipulated in Table 22, at the nearest residential building.

In the event that levels of ground-borne vibration exceed the recommended acceptable levels for cosmetic damage vibration causing works should cease immediately and alternative methods shall be considered.





## **APPENDIX C – Construction Waste Management Sub-**Plan

Waste Management Plan Prepared by Root Partnerships Rev 3 Refer Section 4





# Waste Management Plan

# Penshurst Public School Upgrade

NSW Department of Education

Revision 3 2 February 2018



Advisory+ Project Management

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Date	Revision	Prepared	Approved
12/01/2018	1	AJ	-
19/01/2018	2	AJ	FL
02/02/2018	3	AJ	FL

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Level 2, 14 Martin Place Sydney NSW 2000 T +61 2 8272 9300 2 Davisons Place Melbourne VIC 3000 T +61 3 9653 0600 E info@rootpartnerships.com.au ABN 62 065 072 193

# 4 Construction and Demolition

#### 4.1 General

This section provides an overarching guideline for managing waste during the demolition and construction phases. The principal contractor will be required under the contract to prepare a Construction Management Plan including a section on waste management. This will describe how the contractor will manage waste produced by themselves and their subcontractors throughout the construction process. This includes waste produced during any demolition and site preparation activity, as well as during the construction process itself. All waste management procedures will comply with Georges River Council waste management requirements as outlined in Appendix 1 of the DCP.

The demolition and construction works for this development are required to consider the project Green Star objectives, particularly in regards to the use of recycled building materials and recycling construction waste (>60% required, >80% target).

Waste will be managed so as to maximise diversion from landfill. This may be done either through on-site segregation of recyclable components, or through off-site sorting by special waste contractors.

Furniture considered in good condition may be re-used or distributed to other schools to retain furniture that would be otherwise disposed of.

Waste generated during construction and demolition will be reused and recycled as a priority and only disposed to landfill when unavoidable.

During the onsite works adequate space and access will be provided for:

- Separated storage of building materials
- Separated storage of construction and demolition waste
- Separated sorting of construction and demolition waste
- Removal of construction and demolition for recycling, reuse or landfill

Refer to Appendix 1 for the Section 1 form required by the Georges River Council DCP, to be completed by the Principal Contractor upon contract award.

#### 4.2 Hazardous Materials

Asbestos containing materials (ACM's) that are present on site are detailed in the Asbestos Register in Appendix 3.

In addition, ACM may be present in areas that were inaccessible during the survey including but not limited to wall cavities, sub-floor voids and sub-surface concrete and soil layers of the site.

In its current state, all ACM and assumed ACM located at the sites would meet the definition of "non-friable" asbestos as defined in the *NSW Work Health and Safety Regulation 2011* and in the *Working with Asbestos Guide – 2008* produced by SafeWork NSW.

All ACM located on the site will be removed by a Class A or Class B licensed asbestos removal contractor under controlled asbestos conditions in accordance with all relevant regulations and requirements noted in section 3.1 of this report.

An Asbestos Removal Control Plan is to be developed by a licensed asbestos removalist to address the requirements as part of the contract of the Principal Contractor upon contract award.

## APPENDIX D – Construction Soil and Water Management Sub-Plan

Stormwater Management Report Prepared by Woolacotts Rev C Refer Section 6

Erosion and Sediment Control Plan Prepared by Woolacotts Series Number SW2 Rev C



#### GRINDLEY CONSTRUCTION PTY LTD 55 Grandview Street Pymble NSW 2073 Ph 02 9988 3811 Fax 02 9988 3575 C:\Users\mthorburn\Dropbox (Grindley)\Projects - Construction\6380 Penshurst PS\whseq\plans\6380 PPS - Project Specific Environmental

Management Plan - Rev9.doc



# Penshurst Public School Stormwater Management Report

28 March 2018 | 16-242

# **Document control**

Rev No	Date	Revision details	Approved	Verified	Prepared
А	13.11.17	Approved Issue	SETB	CMW	CMW
В	5.2.18	Drawings amended	SETB	CMW	CMW
С	28-3-2018	SSDA issue	SETB	CMW	CMW

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# 6. Stormwater Management

## **On-site stormwater detention (OSD)**

On-site stormwater detention (OSD) is required to restrict the peak flow from the developed site in a 1% (100year ARI) storm event back to the peak flow from existing site in a 20% (5 year ARI) storm event.

The peak flow from the existing site was calculated using the computer model RAFTS, with the existing impervious area being 74% of the site. The analysis determined that the peak flow from the site in the 5year ARI storm event is 433 L/s. Consequently, this flow was adopted as the permitted site discharge (PSD).

To reduce the flow from a 100year ARI storm back to the PSD, a detention volume of 240m<sup>3</sup> is required. It is not possible to provide this volume in an above ground basin with a depth of less than 300mm. Therefore it is proposed to provide the volume in a tank, located beneath a classroom block, with access into the tank available from outside the building. Locating the tank in this position minimises excavation, as the ground slope in the area can be used as part of the space.

The tank is located in a position where it is able to capture runoff from the majority of the impervious area of the site. However, it is not able to capture runoff from the playing fields. Consequently, the outflow from the tank has been reduced, to allow for the areas bypassing the detention tank. Calculation detailing the areas, flow and detention volume are presented in Appendix B.

## **Pipe network**

A piped drainage system will be provided for the site. The majority of the site will drain to the detention tank, and the pipe network draining to the tank will be sized for a 100year ARI storm event, the same recurrence interval as required by Council for the design of the detention system. This will ensure that all stormwater from the design storm reaches the tank, to allow the tank to restrict flows as designs. Pipes not draining to the detention tank will be sized for the 20year ARI storm event, in accordance with Council's policy.

Currently the site has a number of connections to the street drainage system. It is proposed that the existing connections to the kerb and gutter are removed and a new connection provided to the Council pit in Arcadia Street, located approximately 30m from the corner of Forest Road. The majority of the site will drain to this pit. The existing connection to the pit immediately adjacent to the corner will be maintained and will drain the south-east corner of the site, which is unable to drain to the main system. Details of the location of both pits and the overall proposed site drainage system are shown on Drawing SW1 in Appendix A.

## **Rainwater tank**

A rainwater tank will be located adjacent to the OSD tank, with an internal wall separating the rainwater stormwater portion from the detention portion. The pipe system for the main part of the site will drain to the rainwater tank. When water reaches the top of the wall it will overflow into the OSD part. A gross pollutant trap will be provided upstream of the tank, to remove rubbish and leaf litter.

Water stored in the tank will be used for non-potable uses on site, such as watering garden areas and flushing of toilets.

## **Erosion and sediment control**

During construction, erosion and sediment control measures will be provided in accordance with the "Blue Book" – Managing Urban Stormwater – Soils and Construction. Measures will include a silt fence on the low side of the site, a construction exit, silt traps on the Council pits in Arcadia Street and a silt basin in the south-east corner of the site. Refer to Drawing SW2 in Appendix A for further details.



10.05.19 | 10.05.19 | 10.05.19

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DON FOX PLANNING P/L T: 02 9473 4914

ARCHITECT

3199 - CIV- CD- 01\_008 02



BCA GROUP DLA T: 02 8355 3160

LANDSCAPE LORNA HARRISON P/L T: 02 9555 1147

STATUTORY PLANNER DON FOX PLANNING P/L T: 02 9473 4914

A R C H I T E C T

Education

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Job Number Approved Verified Prepared

16-242

SETB AP JK 10.05.19 10.05.19 10.05.19

**NSW** GOVERNMENT

EV	BY	DATE	DESCRIPTION
۱.	SETB	31.08.18	ISSUE FOR TENDER
}	SETB	26.03.19	SEDIMENT BASIN VOLUME ADDED
	SETB	05.04.19	DRAFT IFC
)	AP	18.04.19	GATEWAY 4 REVIEW
1	A.P	10.05.19	ISSUE FOR CONSTRUCTION
2	A.P	05.12.19	BACKGROUND UPDATED. REISSUED FOR CONSTRUCTION

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	CONTRACT NUMBER					
PENSHURST PUBLIC SCHOOL	5111500-10-1257	DRAWN	CHECKED	VERIFIED	Date	JALE 1:250 @ A1
18 Arcadia Street, Penshurst	PROJECT NORTH				10 N	/AY 2019
		Drawing Number				Revision
	$\left( \begin{array}{c} N_{O_{R_{T_{i}}}} \right)$	PROJECT CODE	DISCIPLINE	PHASE SERIES	S NUMBER	
TEAN & DETAILS		3199 -	- CIV- C	CD- 01_	_008	02