

*Construction  
Development  
Retirement Capital*

## **Independent Audit Close Out Report:**

GLEDSWOOD HILLS PUBLIC SCHOOL REV 0

CONSTRUCTION PHASE

ISSUED: 24<sup>TH</sup> JUNE 2019



**HINDMARSH**  
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# 1. EXECUTIVE SUMMARY

## Non-compliances

- NC-01 Cond. A18, B32 – Not all the required information e.g. Project Plans as per condition A18, and Compliance Reports, as per condition B32, has been made publicly available on the Department of Planning website or Hindmarsh, or other website. Hindmarsh to ensure that information required as per conditions A18 and B32 be made publicly available on its project website.
- NC-02 Cond. B17, C15 – The Construction Noise and Vibration Management Plan (CNVMP) did not clearly address the measures implemented to manage high noise-generating works near sensitive receivers as per condition B17 nor the requirements for achieving the desired noise levels as per Condition C15. The CNVMP needs to be updated to address the following Condition B17 requirements:
  - describe procedures for achieving the noise management levels in EPA’s Interim Construction Noise Guideline (DECC, 2009); and
  - describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers (wherever applicable). Noise and vibration requirements outlined in the EIS to be addressed in the CNVMP and include the construction hours in the CNVMP.

## Observations

- O-01 Cond. A1, C26 – During the site inspection two issues were identified, as follows:

The pit near the exit gate along unnamed road did not have appropriate erosion and sediment controls. Note: The issue was rectified immediately, and evidence of corrective action was observed at the end of the audit. Hindmarsh to ensure that erosion and sediment controls are always maintained. There was evidence of water ponding in the rumble grid at the site car park entrance. The water was noted to be from the unauthorised pumping of water from the handwashing and sink water.

  - Note: The Site Manager noted that he stopped the water pumping and raised NCR in their system in relation to this issue. Copy of Toolbox Talk conducted with employees as a reminder that unauthorized discharge of water is not allowed was sent to auditors.
  - Hindmarsh to conduct training on dewatering permit approval process to ensure its implementation and only authorised/trained personnel will be pumping/discharging construction water.
- O-02 Cond. B10 – Although an induction program is in place including some environmental information, it did not include important conditions of the Development Consent relevant to activities they carry out in respect of the project. Hindmarsh to update the induction presentation to include the compliance with SSD 8378 requirements
- O-03 Cond. B19 – The sighted Erosion and Sedimentation Control Plan was not updated to describe all the current erosion and sediment controls implemented at the site (i.e. sediment basin 2 no longer exist). Hindmarsh needs to update the Erosion and Sedimentation Control Plan to reflect the current site control requirements.
- O-04 Cond. C26 – It was noted that the sediment basin needs maintenance i.e. desiltation or increase bunding height. Maintenance of the sediment basin be conducted (i.e. desiltation or bunding height increase) in accordance with the updated ERSED Control Plan.
- O-05 Cond. C24 – In order to avoid mud/dust tracking re-establishment of the access/egress at employee parking is recommended. Re-establishment of the access / egress at the employee parking area is recommended. Hindmarsh is required to action the identified non-compliances and observations in order to fully comply with the Development Consent Conditions and to continually improve the environmental performance of the Project. Feedback from this audit should be taken as an opportunity to make improvements in the Environmental Management System established by Hindmarsh for the Gledswood Hills Public School Project.

## 2. INTRODUCTION

### 2.1 REVISION STATUS

Where revision is required the Revision Status table below shall be updated.

Date Issued	Revision	Details	Section	Page
24 June 2019	0	Independent Audit	All	All

### 2.2 PROJECT NAME & APPLICATION DETAILS

Company Name:	Hindmarsh Construction Australia Pty Ltd
ABN	15 126 578 176
Project:	Gledswood Hills Public School
Project Application No	SSD 8378
Client:	Department of Education
Contract:	GC 21 (Edition 2) Contract number SINSW-16-101

### 2.3 PROJECT ADDRESS

Location:	The Hermitage Way, Gledswood Hills, NSW 2557
Work Description:	Gledswood Hills Public School new build for up to 600 students. The Site is located within the Hermitage Way, Gledswood Hills, NSW 2557 on 28,000m <sup>2</sup> . The surrounding area is under redevelopment for residential land uses.

### 2.3 KEY PERSONNEL

NSW Construction Manager	Glen Allen
Construction Manager	David Last
SQE Manager	Ian Tyler
Project Manager	Anthony Moran
Site Manager	George Cinelli

### 2.4 DETAILED PROJECT DESCRIPTION

The NSW Department of Education has engaged Hindmarsh Constructions Australia (HCA) to construct a new Primary Education School known as Gledswood Hills Public School.

The proposed development comprises the following:



Design & Construction of Gledswood Hills Public School to accommodate up to 1000 students, including but not limited to:

- Teaching spaces
  - Hall
  - Library
  - Administration & Staff Spaces
  - Civil & Landscaping
  - Engineering Services
- Promotion of the use of sustainable transport, including servicing with public bus transport services and connectivity to the regional cycling and walking pathway network;
  - Landscaping works including the planting of new trees, various shrubs, clumping plants, sensory garden plants and bio retention macrophytic reeds, and incorporating many landscape design elements; and
  - Connection of new public-school buildings into the existing stormwater network, and creation of new rainwater harvesting, bio-retention and raingarden infrastructure to manage stormwater across the new

### 3. REPORT FINDINGS

The following table summarises the compliance findings by rating category:

Findings Rating	Findings
Non-Compliant	2
Observation	5

#### 3.1 REPORT FINDINGS AND COMPLETED ACTIONS

There were one (2) Non-Compliance and three (5) Observations identified during this compliance review. Details of the compliance review findings are as follows:

Finding No.	Condition No.	Audit Finding	Close Out
Non-compliance NC-01	A18, B32	Not all the required information e.g. Project Plans as per condition A18, and Compliance Reports, as per condition B32, has been made publicly available on the Department of Planning website or Hindmarsh, or other website.	Hindmarsh to ensure that information required as per conditions A18 and B32 be made publicly available on its project website. Relevant information provided and now publicly available
Non-compliance NC-02	B17, C15	The Construction Noise and Vibration Management Plan (CNVMP) did not clearly address the measures implemented to manage high noise-generating works near sensitive receivers as per condition B17 nor the requirements for achieving the desired noise levels as per Condition C15.	The CNVMP has been updated to include our Day Design noise and vibration plan during construction activities which address Condition B17 requirements: a) describe procedures for achieving the noise management levels in EPA's

Finding No.	Condition No.	Audit Finding	Close Out
			Interim Construction Noise Guideline (DECC, 2009); and b) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers (wherever applicable).
Observation O-01	A1, C26	<p>During the site inspection two issues were identified, as follows:</p> <ul style="list-style-type: none"> <li>– the pit near the exit gate along unnamed road did not have appropriate erosion and sediment controls.</li> </ul> <p><b>Note:</b> The issue was rectified immediately, and evidence of corrective action was observed at the end of the audit.</p> <ul style="list-style-type: none"> <li>– there was evidence of water ponding in the rumble grid at the site car park entrance. The water was noted to be from the unauthorised pumping of water from the handwashing and sink water.</li> </ul> <p><b>Note:</b> The Site Manager noted that he stopped the water pumping and raised Copy of Toolbox Talk conducted with employees as a reminder that unauthorized discharge of water is not allowed was sent to auditors.</p>	<p>Hindmarsh to ensure that erosion and sediment controls are always maintained.</p> <p>Hindmarsh to conduct training on dewatering permit approval process to ensure its implementation and only authorised/trained personnel will be pumping/discharging construction water.</p> <p>Refer to Photos 10-16 below and TBT 2/5/19</p>
Observation O-02	B10	Although an induction program is in place including some environmental information, it did not include important conditions of the Development Consent relevant to activities they carry out in respect of the project.	Hindmarsh updated the induction presentation to include the compliance with SSD 8378. Refer below
Observation O-03	B19	The sighted Erosion and Sedimentation Control Plan was not updated to describe all the current erosion and sediment controls implemented at the site	Erosion and Sedimentation Control Plan to reflect the current site control requirements in the CEMP
Observation O-04	C26	It was noted that the sediment basin needs maintenance i.e. desiltation or increase bunding height.	Maintenance of the sediment basin be conducted (i.e. desiltation or bunding height increase) in accordance with the updated ERSED Control Plan in photo 22
Observation O-05	C24	To avoid mud/dust tracking re-establishment of the access/egress at employee parking is recommended.	Re-establishment of the access / egress at the employee parking area is completed. Refer below photos.



# Appendix A. Evidence



Photo 1 – Concrete Washout Bay – concrete was noted to be removed.



Photo 2 – Container for Hazardous Materials



Photo 3 – Labelled empty containers



Photo 4 – Rumble grid at site entrance





Photo 5 – Sedimentation Basin



Photo 6 – Signage at site entrance



Photo 7 – Site fencing around the perimeter of site



Photo 8 – Skip bins in various site locations



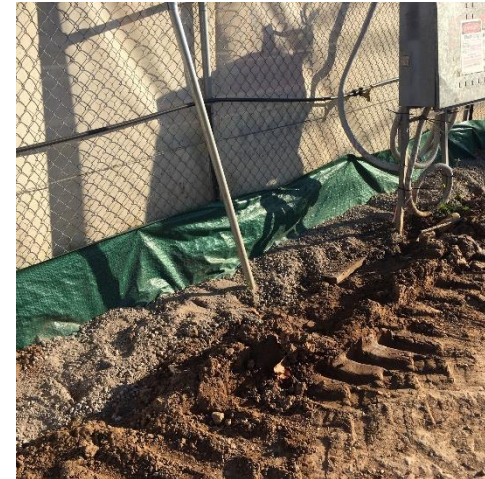
**Photo 9 – Tree protection**



**Photo 10 – Silt fence around drain**



**Photo 11 – Northern Boundary Fence**



**Photo 12 – Eastern Boundary Fence**





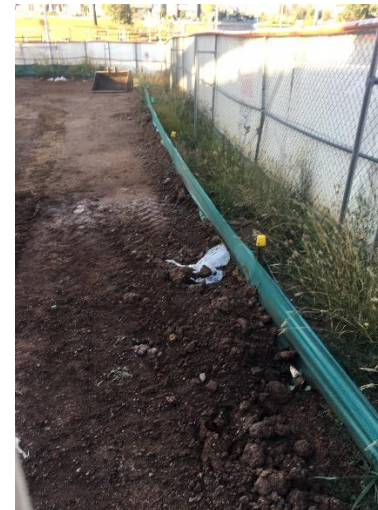
**Photo 13 – Stormwater pit protection**



**Photo 14 – Stormwater Pit Protection**



**Photo 15 – Silt Fence to stockpile**



**Photo 16 – South East Boundary Fence**



Photo 17 – South Boundary Fence



Photo 18 – Covered waste removal



Photo 19 – Tree Protection Zone



Photo 20 – Re-established Driveway



**Photo 21 – Sediment basin modification**

# SITE SPECIFIC INDUCTION

***GLEDSTWOOD  
PUBLIC SCHOOL***



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# SITE SPECIFIC INDUCTION INSTRUCTIONS

1. Please complete the induction information sheet given to you by your presenter, including providing Photo ID, Construction General Induction Card and any High risk Work Licences / Certificates of competency required
2. Tick the box next to the topics covered on the induction information sheet once these topics have been covered
3. Answer the multiple choice questions on the back of the induction information sheet. **Information that relates to a question will be highlighted for your information**
4. Hand in your completed induction information sheet for marking. You must get a score of 90% or higher to complete the induction
5. After the induction you will all be issued an access card with your photo, you will need this card to access the site both in and out. (replacement cards are \$20)



## Site Amenities

1. Canteen, Lunch, Change and toilet facilities are provided.
2. All facilities are shared, clean your mess when your finished.
3. Toilets and Lunch amenities will be sign posted, female toilets will be provided.
4. Canteen has been established on site for convenience, additional shops etc are located at the Oran Park town centre which is located at Oran Park Drive and Peter Brock Drive within 5 minutes from site.





# PROJECT DESCRIPTION



# PROJECT DESCRIPTION

- Design and construction of Oran park public school expansion to accommodate up to 1,000 students, including but not limited to:
  - Expansion of existing covered outdoor learning area (COLA)
  - Refurbishment of existing administration area
  - Engineering Services
  - Expansion of existing carpark
- Design & Construction of Oran Park High School (new build) to accommodate up to 2,000 students, including but not limited to:
  - Teaching spaces, hall and Library



# SITE MANAGEMENT TEAM

## CONTACT NUMBERS

<b>Position</b>	<b>Name</b>	<b>Phone Number</b>
Project Manager	Anthony Moran	0410 646 124
Site Manager	George Cinelli	0419 014 794
Site Supervisor	Stuart Williams	0436 636 554
Project Engineer	Robert Najjar	0436 634 781
Site First Aider	Stuart Williams	0436 636 554



# CODE OF BEHAVIOUR



# Code of Conduct Requirements

All workers must comply with the project “Code of Conduct” requirements

- We are located directly next door to a **Oran Park public school and adjacent to neighboring property’s**. There will be zero tolerance in respect to protecting the amenity of this business.
- When the school is occupied the Contractor representatives and workers **must report their presence** to the person in charge of the school or facility on arrival each day and record, in the Site Visit Log this will be communicated to HCA’s site manager before hand.
- Workers should **avoid talking with, touching or interacting with any children or residents** or other users of the school or facility except where the work requires it or in an emergency or safety situation
- Employees **must only use approved toilets and other facilities** provided by Hindmarsh.
- Workers **must gain permission by HCA’s Site Manager before** entering the school or facility before commencing work and may only enter approved areas.
- All workers must wear clothing **that is tidy and in good condition and in accordance with site expectations**
- If working on **live school facilities you must have working with children check (WWCC) clearances and provide details prior to commencing works.**
- All workers must **report any concerns** about children immediately to Hindmarsh Management.



# CRIMINAL DECLARATION





# Child Protection (Working with Children)

**Working with the department of education does not allow persons that have been convicted and are not awaiting trial for a disqualifying offence.**

**Disqualifying offence as defined in Schedule 2 of The Child Protection (Working With Children) Act 2012 a samples are listed below :**

- murder
- manslaughter of a child
- the common law offence of rape or attempted rape
- Indecent assault
- Common Assault
- Any related sexual assault offence or attempt to commit Sexual assault offence
- Any sexual offences involving a child
- Possessing, controlling, producing, supplying or using a child pornography (through mail or internet)
- Sexual intercourse with young person outside Australia
- Any offence related to child prostitution
- sexual abuse of a child

**All workers MUST sign a declaration at end of this induction, which includes a comprehensive list of offences**



# PROJECT INFORMATION



# Hindmarsh Management Plans and Policies

## SITE SPECIFIC SAFETY MANAGEMENT PLAN

A Site Specific Safety Management Plan has been prepared and implemented for this project. **The plan and any supporting information will be available either electronically or in a printed version at the site for all workers at all times. Compliance to be maintained with SSD 8378 requirements.**

## POLICIES

- The following policies are posted in the site sheds for your information:
  - Work Health and Safety Policy
  - Quality Assurance Policy
  - Environment & Sustainability Policy

These policies outline Hindmarsh commitment to:

- Promoting SQE awareness and a safe work culture.
- Complying with relevant legal requirements, standards and codes of practice;
- Adopting an open, consultative, and participative approach to managing Safety & the Environment;
- Improving SQE performance by regular review of the key elements of the Business Management System;
- Respecting the principles of good corporate citizenship and ethical behaviour in achieving sustainable developments that benefit the broader community;



## First aid and emergencies

- The first aid facilities are located at the **Site Office**
- **Site Emergency boards** are located at the **Main Site compound** and throughout site at designated locations
- The temporary emergency evacuation point is opposite site sheds on Holden drive, once site compound is completed **assembly point is in the oval** as per **Site notice board** at site compound.
- Nearest medical Facility is **Oran park Podium, Shop 8E 351 Oran park Drive, Oran Park** (within 5 minutes from site)
- **Fire extinguishers** are located at main compound and designated locations throughout site, locations are indicated on site notice boards at site Compound for reference and emergency mobile stations throughout site

# In an emergency

All workers:

- **Must notify HCA representative immediately** of an emergency or potential emergency situation
- Contact **Chief Emergency Warden: Grant France on 0428 268 195** or any other HCA Representative
- **May immediately call 000** if you believe it necessary.
- **May activate audible alarm device / system** if you believe it necessary.
- Emergency Evacuation will be a warning evacuation alarm/siren which will be a long audible blast i.e. **Air Rade Siren**



(Question 1)



# If evacuation alarm / siren sounds

## **FOLLOW THE DIRECTIONS OF EMERGENCY WARDENS AND EMERGENCY SERVICE PERSONNEL**

- Leave the site by the safest and shortest possible route.
- Proceed to the Assembly Area designated for the site.
- Do NOT cluster around doorways or stairs.
- Do NOT hinder Wardens and emergency services in carrying out their duties.
- Do NOT use hoists or lifts during evacuation
- Wait for further directions from the Chief Warden or emergency services.
- Do NOT re-enter the site for any reason until authorised to do so by the relevant emergency services.
- NEVER enter or re-enter a site when the alarm is sounding







## Hours of work

- Monday – Friday **7am to 6pm**
- Saturday **8am to 1pm**
- Sundays, RDOs and Public Holidays by prior arrangement (to be approved by the Site Manager / Project Manager)



## Site access and deliveries

- Pedestrian entry to site is located **off Holden Drive**
- Site parking is limited on site, additional parking is available via Holden drive and adjacent streets
- Public transport and car pooling is encouraged
- **Strictly no parking or site Access along South Circuit as this is the main entrance to the public school, parking limited with Bus zones being operational**
- Site deliveries are to be made via Holden Drive (Site Entrance)

# Site access and deliverables

- Deliveries are to be made to designated delivery zones and drivers are to be supervised by an inducted worker via Holden Drive
- All deliveries must be booked in Via the Site Manager and HCA Supervisors
- For clarification all delivery's and interaction will be via Holden Drive, do not use South Circuit for delivery's or parking as this is where the Oran Park school conducts day to day operations for the school.



# Consultation arrangements

**AGREED ARRANGEMENTS** - The agreed consultation arrangements for this project shall be managed by **Grant France on 0428 268 195** and include:

- 7am Daily Prestart meetings will be held *Prestart Meetings*
- Toolbox Talks may be held by each trade. If there are WHS issues for Hindmarsh to address, please communicate these through the above means or directly with Hindmarsh Management.
- Hindmarsh Toolbox Talks may be held at any time in support of worker / project needs or where specific information is required to be communicated.

# WHS dispute resolution

The Hindmarsh Consultation & Issue Resolution Flow Chart for rectifying WHS issues is posted in all site huts and is available on request and addresses minimum requirements including:

- Informing each relevant party of the issue and its nature and scope
- As soon as all parties are informed, must meet or communicate to resolve issue
- Must have regard to all relevant matters including:
  - Degree and immediacy of risk
  - Number and location of workers and other people affected
  - Measure to be implemented to resolve the issue
  - Who will be responsible
  - Permit and party to be represented
  - Require resolution to be recorded in written agreement

Copy of the documented resolution to be given to all parties if requested.



# SITE RULES



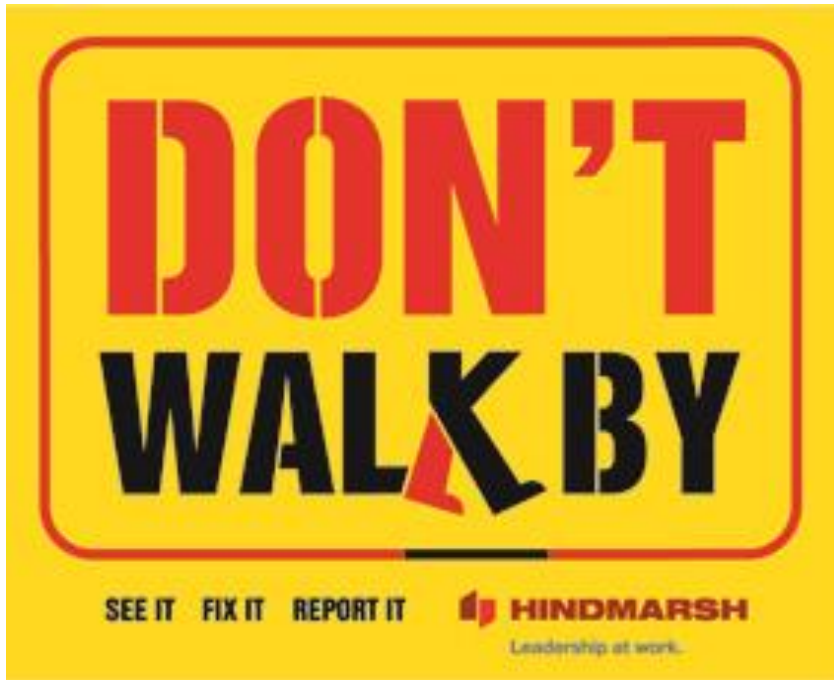


## Incident reporting

- All injuries / incidents shall be reported to Hindmarsh. Incidents are to be documented in the OnSite Incident Module.
- All injuries / incidents shall be reported as soon as is practicable after the injury / incident occurring.
- Statutory reporting such as notification to the Regulator of incidents is the Sub-contractor's responsibility and any notification must be provided to Hindmarsh

(Question 2)

## Hazard reporting



- Report **all suspected or identified hazards**, report to a Hindmarsh Management representative who shall be responsible for recording this in the OnSite Hazard Module.
- If you can fix a hazard without putting yourself in danger, do so immediately.
- Hazard information may be communicated via site induction, job safety analysis review, and / or safety meetings (e.g. Pre Start and Toolbox) held on site.

**(Question 3)**

# Fitness for work

- No alcohol or drugs permitted on site. No employee affected by drugs or alcohol allowed on site.
- The following requirements only apply to Commonwealth Government projects covered by the revised Building Code 2016:
  - Hindmarsh has a Fitness for Work – Drug and Alcohol Management Policy (available on request)
  - It deals with alcohol and other drugs and their effects on worker's fitness for work whilst performing duties or attending the workplace. The policy includes testing, employee assistance, counselling and rehabilitation activities.



# Duty of care

Workers have a duty of care that states they shall:

- Take reasonable care of their own health and safety
- Take reasonable care that their conduct does not adversely affect others
- Comply, so far as reasonably able, with instructions
- Cooperate with reasonable notified policies and procedures

## Site Rules

Hindmarsh procedures and site safety signage shall be followed in accordance with this duty

## SITE SAFETY RULES

TOP 10 RULES AIMED AT PROTECTING YOUR SAFETY



Keep work areas tidy, including walkways and emergency access



Do not alter or disable safety equipment (Scaffold, signage etc.)



No alcohol or drugs, or persons affected by alcohol or drugs permitted on site.



Provide fall protection when working at heights



Keep out of any exclusion zones



Tools and equipment must be in good working condition



Complete daily pre-use inspections before using mobile plant



Report hazards, injuries and incidents to Hindmarsh as soon as possible



Work with a valid permit when required (hot works, excavation, harness, critical lift, services isolation and confined space)



Follow site safety signage and Hindmarsh directions

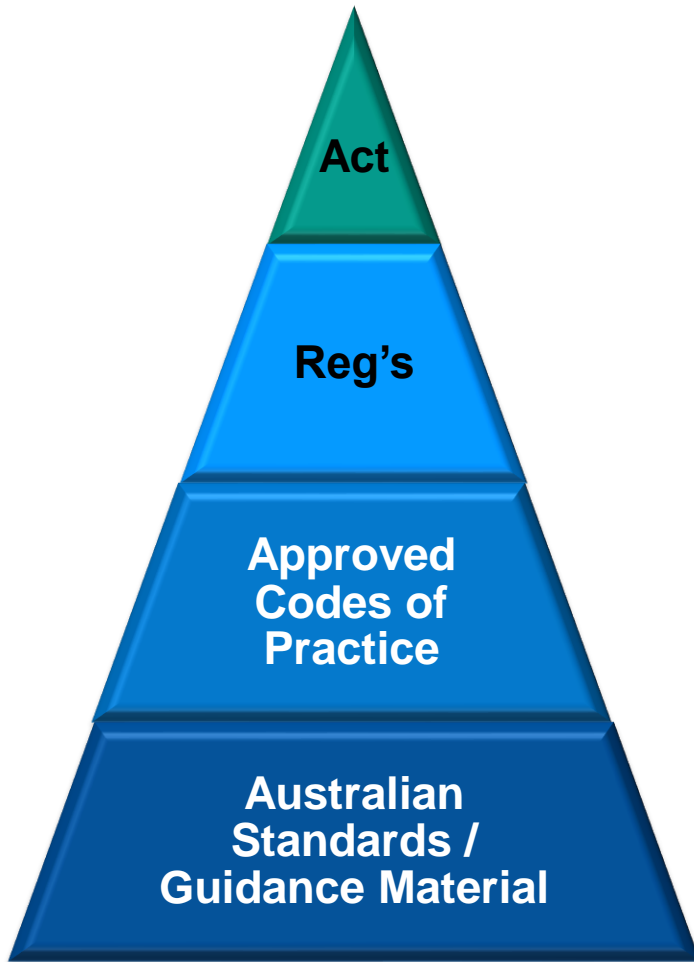




## Legislation & codes of practice

The WHS Act, Regulation, Approved Codes of Practice and Australian Standards provide the basis for the Hindmarsh Site Rules

A list and copies of relevant legislation and codes of practice applicable to this project are available upon request from Hindmarsh Site Management



# Safe Work Method Statements (SWMS)

## SWMS FOR HIGH RISK CONSTRUCTION WORK

Safe Work Method Statements (SWMS) shall be developed and approved for high risk construction work.

- Subcontractor SWMS shall be reviewed and accepted by Hindmarsh via the SWMS Review form prior to works commencing on site.
- SWMS shall be available to all workers to whom the statement relates until the end of the project
- All workers shall be:
  - Trained in their SWMS by their company.
  - Signed into the on-site copy of the SWMS prior to commencing work to acknowledge they have been trained.

(Question 4)



# Working at heights

## Scaffolding

- Only scaffolders with the appropriate High Risk Work License are to erect, modify & dismantle scaffolding > 4m or scaffolding where the risk of fall is > 4m (e.g.; near an opening or edge).
- When assembling, dismantling and re-assembling fixed or mobile scaffolds where there is a risk of fall of < 4m the Scaffold Installation Logbook shall be completed.
- However, if a Licensed Scaffolder is conducting the works the handover certificate and scaff tag for the scaffold is acceptable. Work platforms with no assembly requirements (e.g. Snappy Scaffold) are exempt from this process.
- Do not enter or use scaffolds displaying an incomplete scaffold sign.



# Working at heights

## Working platforms

- Working platforms such as platform ladders / trestles, scaffolds or EWPS are preferable and shall be used where possible.
- All working platforms to be industrial / commercial rated. Domestic / residential rated equipment not permitted on site. Ladders to meet the requirements of AS / NZS 1892.5.
- Standard A frame / extension / scaffold ladders are primarily a means of access not a working platform.
- A risk assessment must be carried out prior to using a standard A frame / extension / scaffold ladder as a working platform.

(Question 5)



## Working at heights

- A **Harness Permit** and SWMS shall only be permitted for the use of Fall Restraint/Fall arrest equipment if the following controls are not reasonably practicable:
  1. The task can be performed on the ground such as pre fabrication or use of extension poles;
  2. The use of scaffold can be utilised to complete the designated task;
  3. An EWP can be used and safely positioned to complete the task; and
  4. Another work positioning system (E.g. Man box, Swinging Stage) can be used and safely positioned to complete the task.



# Electrical

## TESTING AND TAGGING

All tools and leads are to be tested and tagged in accordance with regulatory requirements. Details of inspection shall be recorded in an Electrical Inspection Register. Registers are to be maintained on site & made available to Hindmarsh for inspection when requested. **Three (3) Monthly Minimum testing** on all electrical equipment

### LEADS:

- The maximum length of an electrical lead is 30m, leads must not be joined together.
- Double adapters are not permitted.
- All power boards will be equipped with RCDs and MCBs.
- Lead stands and hooks are to be provided by individual contractors, all leads must be raised off the floor to the highest safe level.

### DAMAGED ELECTRICAL EQUIPMENT:

- Any faulty and / or damaged tools and leads shall be **removed immediately from use and locked / tagged out or taken from site until repaired.**
- Report any damaged electrical cables (installed services, temporary wiring, temporary boards etc) found on site to Hindmarsh personnel immediately

**(Question 6)**



# Plant

All mobile plant shall have a HCA Mobile Plant Pre-use Checklist completed prior to operation on the site. Mobile cranes and concrete boom pumps shall be located in a designated zone the corresponds with a completed HCA Mobile Crane / Boom Pump Set-up checklist.

## MAINTENANCE OF PLANT:

- All items shall be kept in good working order with any faults / defects reported immediately and plant locked out of use.
- Plant maintenance to be performed as per manufacturers specifications.
- Daily logbooks to be completed by operator.
- Plant not in use shall be locked and keys removed.

(Question 7)

## TRAINING AND COMPETENCY

- All operators shall have a High Risk Work License where applicable. Evidence of this shall be provided to HCA at this induction.
- Where a High Risk Work License is not applicable the operator shall be trained and competent in the use of the plant. Evidence of this shall be provided to HCA at this induction.
- Refer to HCA Technical Guidance Note - High Risk Work Licensing and TGN - Verification of Mobile Plant Operator Competency for further clarification.

# Plant Competency

A high risk work license is required to operate some plant i.e. cranes, forklifts hoists and erect scaffolding or undertake dogging or rigging work.

High risk work licences are valid for five years.

- Evidence of this shall be provided to HCA at this induction.
- Where a High Risk Work License is not applicable the operator shall be trained and competent in the use of the plant. Evidence of this shall be provided to HCA at this induction.
- Refer to HCA Technical Guidance Note - High Risk Work Licensing and TGN - Verification of Mobile Plant Operator Competency for further clarification.

# Hoist and Telehandler

- It is the responsibility of the Subcontractors to provide their own trained (competent) personnel to operate the Material hoist and Telehandler.
- Do not expect Hindmarsh to operate for you!!!

# Site plant

## Site Hoist and Telehandler:

It is the responsibility of the Subcontractors to provide their own trained personnel to operate the Material hoist and Telehandler.

Do not expect Hindmarsh to operate for you!!!



# Excavation

## DIAL BEFORE YOU DIG (DBYD)

All excavations including ground penetration works (e.g. driving a star picket) require an in date DBYD assessment for the excavation zone.

DBYD Confirmation Sheet and drawings are to be printed out and available prior to works commencing. Confirmation sheets are only valid until expiry date shown.

### PERMIT:

- An excavation permit is required for all excavations with the exception of ground penetration works (eg; driving a star picket) and exploratory non-destructive excavations (eg; Hydrovac).
- Drawings, plans and engineering reports relevant to the excavation shall be referenced on the permit and maintained on site for reference.

(Question 8)

### INSPECTIONS:

- All excavations >1.5m shall be inspected.
- Type A Inspection required for all bulk excavations and any detailed excavations that use battering, benching or shoring collapse controls.
- Type B Inspection required for any excavations that are self supporting and rely solely on Geotechnical Engineering instructions.



# Hazardous Substances

## HAZARDOUS CHEMICAL / SUBSTANCES RISK ASSESSMENT

A Hazardous Chemical / Substances Risk Assessment is to be completed for hazardous / dangerous substances and provided to Hindmarsh prior to commencing use on site.

## SAFETY DATA SHEETS (SDS)

- SDS are to be provided for any hazardous / dangerous substance to be used on site.
- Users are to be adequately trained in the safe use of the material.
- Users are to follow the SDS guidelines including PPE recommendations.

## HAZARDOUS SUBSTANCE REGISTER

- All hazardous / dangerous substances are to be entered onto the Chemical Substance Register.

# Personal Protective Equipment (PPE) requirements

## **MANDATORY PPE**

Mandatory personal protective and safety equipment on all Hindmarsh projects as below:



## **TASK SPECIFIC PPE**

Task specific PPE required as per SWMS, standard operating procedure or risk assessment

(Question 9)





## Smoking on site

Smoking is not permitted in **enclosed work areas** such as:

- site sheds,
- amenities
- or any completed areas / units.



# Housekeeping

- You are required to get your rubbish to the front opening designated food bin accordingly
- You are to keep your work area clean during and after **completion of each day / trade**.
- If the area is not clean **before you go home** Hindmarsh may clean your mess at a rate of **\$120 per hour** back charged to your company, or instigate other site cleaning provisions (eg; representatives from each company to attend weekly cleaning activities, all tools down full site clean etc).



# Environmental

- Silt traps, fences and other sediment erosion controls are not to be altered.
- Site contaminated water is not to be pumped directly into sewer or stormwater systems.

(Question 10)



# Disciplinary Procedures

## BREACHES OF SAFETY

Wilful misconduct such as: vandalism / sabotage, fighting or other threatening behaviour, unsanitary behaviour or any act putting yourself or other workers at imminent risk of fatality or serious injury (e.g.; removal of scaffold ties / machine guards, tampering with temporary power boards / fall protection equipment etc) may result in immediate dismissal from site.

- Other breaches of safety by individuals will be handled in the following manner:
  1. 1<sup>st</sup> breach a verbal warning will be issued, witnessed by another person.
  2. 2<sup>nd</sup> breach a written warning will be issued and sent to the workers employer.
  3. 3<sup>rd</sup> breach will result in dismissal from site.
  4. PPE Breaches – If anyone is asked to wear their PPE appropriately multiple times in 1 day, we will kindly ask you to leave the site for the rest of the day to return the following morning to sit this same induction again..





## Trauma and counselling services

- AccessEAP is a trauma and counselling service provided by Hindmarsh and is available for all workers on Hindmarsh construction sites.
- No information is provided to Hindmarsh about you personally or what service you are being provided by AccessEAP.
- **EAP on 1800 818 728**
- Counselling services, such as drug and alcohol, stress management etc, can be arranged through Hindmarsh, either through AccessEAP or through other providers such as Mates In Construction / Ozhelp.

**THANK YOU**



# QUIZ ANSWERS

**BELOW ARE THE ANSWERS TO THE QUIZ – DO NOT KEEP WITH BOOKLET / SHOW ON SCREEN UNTIL ALL INDUCTEES HAVE FINISHED QUIZ**

- 1. D** – All the above
- 2. B** – As soon as is practicable
- 3. D** – All suspected or identified hazards
- 4. A** – Signing the on-site copy prior to commencing work
- 5. D** – All the above
- 6. C** – Removed immediately from use and locked / tagged out or taken from site until repaired
- 7. A** – A HCA Mobile Plant Pre-Use Checklist
- 8. A** – All excavations except for ground penetration works and exploratory non-destructive excavations
- 9. B** – Hard hat, eye protection, hi viz and foot protection
- 10. C** – Not to be altered



Project: GAPS  
 Principal: HINDMARSH  
 Presenter: G. CINELLI  
 Signature: [Signature] Date: 2/5/19.  
 Persons Attended Refer to Attendance Register on Page 2 of this form **(add as many sign on pages as required)**

Item	Notes
<b>1. Issues</b>	
* RUBBISH ON ROAD. ⇒ CLEAN UP THROW IN BIN	
* NO parking on site. !	
* PUMPING OF WATER NOT OUTSIDE SITE	
* TRUCKS BE CAREFUL AROUND SITE.	
Site Specific Inductions required	

<b>2. Comments &amp; Points Raised by Site Personnel</b>	
* * Nothing was raised by the me or site * We also talked about the may day march	

<b>3. Corrective Action</b>			
Item	Identified Corrective Action to be Taken from Meeting	Person Responsible	Date Completed

## Toolbox Meeting - Attendance Register

Project: GLPS  
 Principal: HINDMARSH  
 Job No: 2320  
 Date: 2/5/19

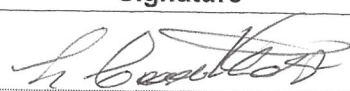











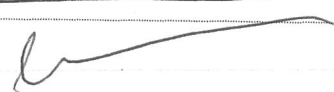
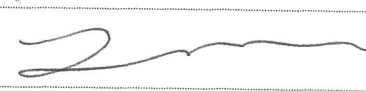


Name	Company	Signature
Jaygel Wiki	SDP	
Makivere Panani	Nitro	
Bassam Zein odin	Rock Form	
Tony Scangie	R.F.C	
Lupe Azzi	Rock form	
NESHRA Zalla		
M. ORLANDO	ROCK FORM	
Uhaedk	ROCK FORM	
M Hadon	ROCK FORM	
Fadi Hamaty	Rock Form	
Andre Curin.	R.F	
Rena Curin.	R.F	
Sayed Murrain	R.F	
A. AWAD	R.F	
Dante	R.F	
Mary Ghandour	R.F	
M. Azeem	P.P	
Juan Romero	R.F	
inter diha	R.F	

CC:  Project Safety Plan File  Other:



## Toolbox Meeting - Attendance Register

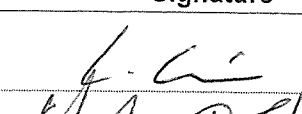
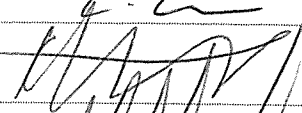
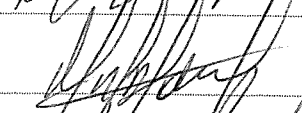
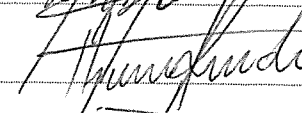






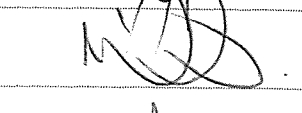
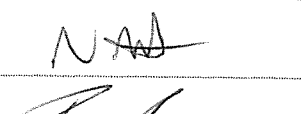
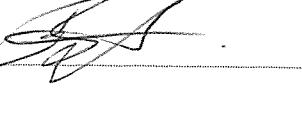

Project: GHS  
 Principal: HINDMARSH  
 Job No: 2320  
 Date: 2/5/19

Name	Company	Signature
Lindsay Bramble	CPH	
Albert - w	R.F	
Sione Glat	R.F	
Tai Harora	R.F	
REDA	R-F	
Sili M.	RF	
Riad Amraes	RF	
Samer P S	R F	
Mattias. G	R.F	
Jacob S	R.F	
Nash	R.F	
Jasen F	JDP	
Vince Pirello	JDP	
Julian T-ego	JDP	
Anthony Amraes	W.F	
Fernando D	R F	

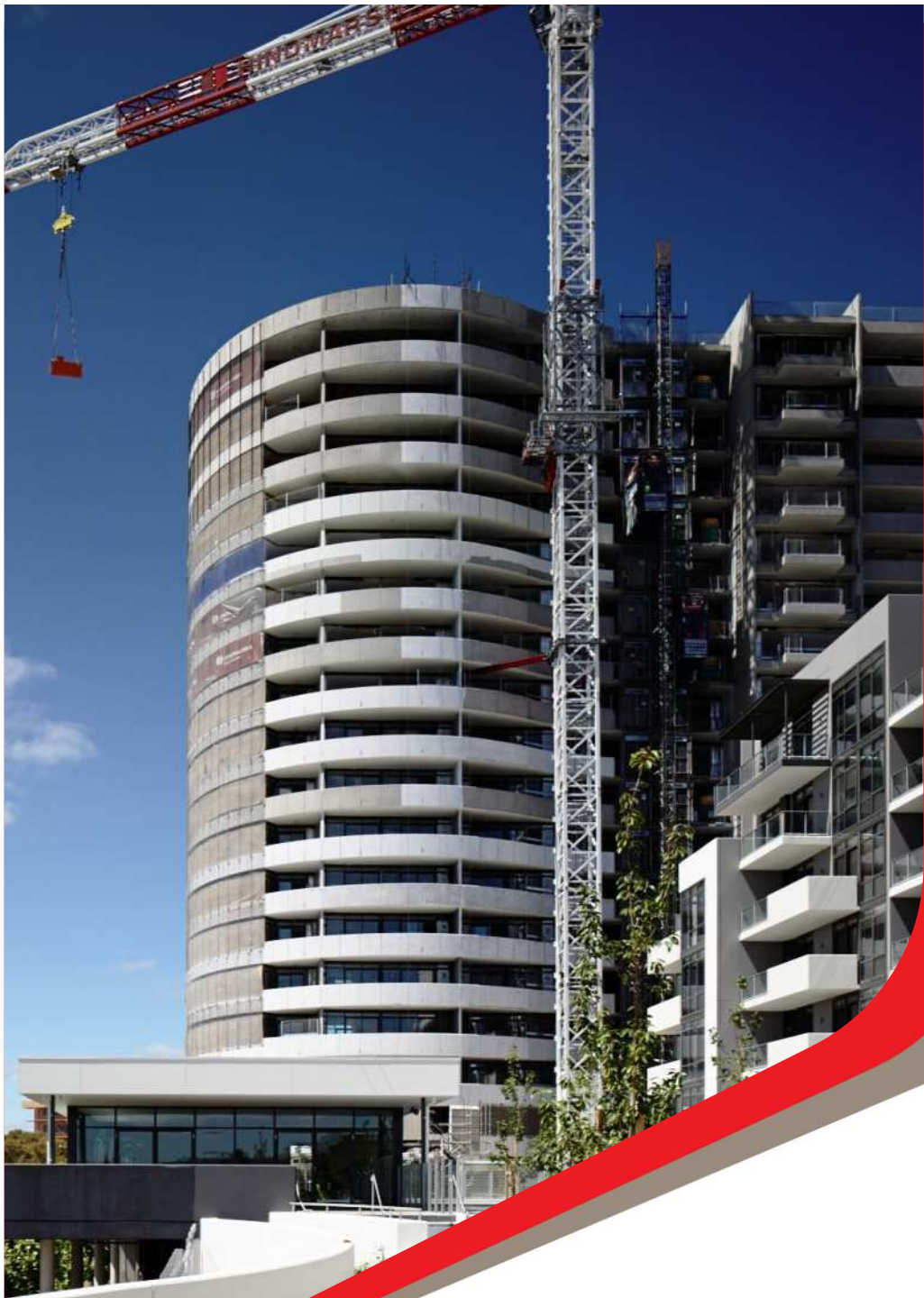
CC:  Project Safety Plan File  Other:

## Toolbox Meeting - Attendance Register

Project: GHP5  
 Principal: HINDMARSH  
 Job No: 2320  
 Date: 2/5/19.

Name	Company	Signature
Leith Carnie	WF	
Mitchell McLaughlin	WF	
Carlos Godoy	Rock Form	
Tomas Robledo	Rock Form	
Jeremy Vega	Rockform	
Antonio Bellido	Rockform	
Mark Coler	Rockform	
Sahin mania	R.F.	
Dany Hanna	Rockform	
Louis K	R.F.	
WIKILLES TAVIARENA	R.F.	
Matt Wilki	JDP access	
Nick Ferris	JDP Access	
Janie Bryden	R.F.	

CC:  Project Safety Plan File  Other:



# Environmental Management & Sustainability Plan (EMP)

GLEDSWOOD HILLS PUBLIC SCHOOL REV 0

*Construction  
Development  
Retirement  
Capital*



**HINDMARSH**  
Leadership at work

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# 1. Document Control – Revision History

## 1.1 REVISION STATUS

Approved revisions to this document may be independently issued.

Date Issued	Revision	Details	Section	Page
4 <sup>th</sup> October 18	0	EMP	All	All

## 1.2 PROJECT SPECIFICS

<b>Company Name:</b>	Hindmarsh Construction Australia Pty Ltd
<b>ABN:</b>	15 126 578 176
<b>Project:</b>	Gledswood Hills Public School
<b>Project No:</b>	2023
<b>Location:</b>	Gledswood Hills Public School, The Hermitage Way, Gledswood Hills, NSW 2557
<b>Client:</b>	Department of Education
<b>Contract:</b>	GC 21 (Edition 2) Contract number SINSW-16-101
<b>Work Description</b>	Gledswood Hills Public School new build for up to 1.000 students

## 1.3 APPROVAL FOR IMPLEMENTATION

This revision of the Environmental Management and Sustainability Plan (EMP) has been reviewed by the Project Manager, it complies with environmental aspects of Compass and contractual obligations and is authorised for use. Draft versions of this document, although approved, are issued for comment \ feedback and should not be considered as finalised until a revision number \ letter is assigned.

## 1.4 EMP INDUCTION

Every Project Hindmarsh employee receives induction training into the purpose and use of this EMP. Each acknowledges that they fully understand this EMP's requirements and their roles \ responsibilities associated with it. This acknowledgement is recorded via the Acknowledgement Register.

Key elements of this EMP may be extracted for inclusion in the project specific site induction training which is given to all employees, subcontractors and site workers prior to commencing works on site.

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## 2. Purpose and Scope of EMP

Hindmarsh operates a fully integrated Business Management System, known as Compass which incorporates our Safety, Quality and Environment business systems.

This EMP describes the environmental strategy, methods, controls, and requirements to be implemented during the execution of the project. The purpose of this EMP is to:

- Ensure company environmental objectives and targets are achieved
- Identify the environmental issues (impacts and aspects) for this project;
- Establish, communicate and implement controls to reduce any adverse impacts on the environment which may arise from project's activities, products and services;
- Identify controls which will be implemented to mitigate high risk environmental impacts, which may eventuate during construction.
- Ensure Hindmarsh, its suppliers and subcontractors comply with all relevant environmental legislation, any applicable licenses, approvals, permits and regulatory requirements;
- Ensure works are managed to reduce adverse impacts on the environment;
- Action any outcomes from environmental incidents or accidents, project audits or other identified non-conformances and to continually improve the Environmental Management System elements within Compass; and
- Establish project-specific objectives and targets (where appropriate), and identify strategies and evidence in support of their achievements.

This EMP is intended to stand alone as the master document for the management of all site environmental activities. It should, however, be read in conjunction with other management plans, referenced appendices and documents, including;

- Project Management Plan (PMP)
- Emergency Management Plan (EMMP)
- Safety Management Plan (SMP)
- Temporary Traffic Management Plan (TTMP)
- Quality Management Plan (QMP)

### 2.1 SUSTAINABILITY

Responsible Environmental Management extends far beyond that of simple mitigation measures. Sustainability embraces environmental, social and economic accountability. Hindmarsh seeks, with its project partners, to reduce those negative impacts and maximise benefits related to all three areas across the entire project life cycle. Fundamentally, our environmental strategy and EMP requires every project to consider:

- A reduced resource consumption
- reuse of resources
- use and support of recyclable resources
- protection of the natural environment
- elimination of toxic substance \ material use
- focus on quality

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## 2.2 ENVIRONMENTAL MANAGEMENT SYSTEM

Hindmarsh operates an Environmental Management System as per the requirements of AS14001:2004 and the NSW Government Environmental Management System Guidelines Edition 2. The system has been independently certified as meeting the requirements of both. Please refer to the *Compass Manual* for further information regarding the Hindmarsh Management System.

## 2.3 REFERENCED PROCEDURES AND DOCUMENTS

Documents, procedures, and forms supporting this EMP have been referenced accordingly throughout this plan. Please refer to the *Environmental Management and Sustainability Process Map* for instruction and guidance information relating to these documents. Compass documents detailed within this plan are identifiable by title and are formatted in *italics and underlined*.

### 2.3.1 Client \ Project Specific Documents

<Where client or additional project documents are not available delete this section>.

The following project specific environmental \ sustainability related documents have been referred to in the preparation of this EMP:

Reference Document	Doc Reference

---

## 3. Project Information

### 3.1 DESCRIPTION (SCOPE)

Please refer the Hindmarsh Project Management Plan document, specific to this project, for detailed project description information.

Design & Construction of Gledswood Hills High School (new build) to accommodate up to 1,000 students, including but not limited to:

- Teaching spaces
- Hall
- Library

## 4. Environmental and Sustainability Strategy, Policy, Objectives and Targets

### 4.1 STRATEGY

This EMP is implemented in support of the Hindmarsh *Environmental and Sustainability Strategic Framework*, this strategy is to be communicated and made available to all workers at all times.

### 4.2 POLICY

The Hindmarsh Environmental and Sustainability Policy and the PPE Policy are to be communicated and made available to all workers at all times. At time of site induction workers are briefed on the Policy and its intent. A PPE Requirements document is also available.

### 4.3 COMPANY OBJECTIVES AND TARGETS

Current company environmental and sustainability objectives and targets are detailed within the *Environmental and Sustainability Strategic Framework*.

Hindmarsh objectives and targets established at company and project level are managed and maintained in accordance with *Company & Project Objectives & Targets – Maintenance, Management & Monitor* procedure.

### 4.4 PROJECT OBJECTIVES AND TARGETS

PROJECT OBJECTIVES AND TARGETS ARE SET – COMPLETE THE FOLLOWING

The following are project specific objectives and targets:

PROJECT OBJECTIVES AND TARGETS ARE NOT SET – COMPLETE THE FOLLOWING

Objective	Measure	Target	Means of Assessment
To minimise construction related adverse environmental impacts from project related activities.	Compliance with ISO 14001-2004 (Environmental Management Systems)	<p>Excellent Full compliance no corrective actions</p> <p>Good Minor corrective actions or comments received only.</p> <p>Satisfactory Less than three corrective actions</p> <p>Unsatisfactory Systems non-compliance or major non-compliance received.</p>	External audit process Cockram Environmental Systems Internal Audit
Pollution prevention	No. of Environmental Breaches	<p>Excellent No notices from regulatory authorities, no requests for corrective or remedial action from regulatory authorities, no complaint received from community.</p>	Monthly review of Environmental Incident Reports
		<p>Good No notices from regulatory authorities, no requests for corrective or remedial action from regulatory authorities.</p>	
		<p>Satisfactory No notices from regulatory authority</p>	
		<p>Unsatisfactory Notice and/or fine from regulatory authority</p>	
To minimize environmental impacts due to project related activities, on customers/third parties.	No. of customer complaints	<p>Excellent No of Customer Complaints –0</p> <p>Good No of Customer Complaints –0</p> <p>Satisfactory No of Customer Complaints –1</p> <p>Unsatisfactory No of Customer Complaints --2</p>	No of complaints per week
To maximize the recycled contents of materials and waste on all projects	% Recycled Waste being recycled	Greater than 90% by weight	Check waste disposal dockets from Waste Contractors monthly for % recycled.

## 5. Resource Management

General information detailing overall resource management is detailed within the current Project Management Plan (PMP) for this project, Section: Resource Management. The following sections provide details regarding environmental and sustainability specific considerations related to resource management.

### 5.1 RESPONSIBILITY AND AUTHORITY

It is the responsibility of Hindmarsh project staff to ensure that the Environmental Management Plan (EMP) is complied with, and objectives and targets are met. To facilitate

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effective environmental management, specific responsibilities for implementing and supporting this EMP have been assigned.

Please refer to the PMP Appendix C - [Roles and Responsibility Matrix](#), for the project specific allocations.

## 5.2 ENVIRONMENTAL TRAINING REQUIREMENTS

Hindmarsh\* ensures specific environmental and sustainability training requirements are identified in consultation with each project team member. This is completed as per the [Training and Development Procedure – Project](#), any training needs identified are captured via the [Training ID \ Requirements Register](#).

The following additional forms shall be used as appropriate:

- [Training Approval Form](#)
- [Training Evaluation Form](#)

Hindmarsh employees provide evidence of training completion to the Human Resource Department (only required for nominated courses \ competencies), such evidence may also be filed electronically or via hardcopy on site for reference purposes. Environmental training requirements are continually revisited throughout the life of the project, particularly where there has been a change in project resources, where a skill gap has been identified, or as required by the Project Manager (PM).

Refer to the [Learning and Development Overview](#) document for further information regarding the relationship between company and project training processes.

### 5.2.1 Unforeseen Training Requirements

Where unforeseen training requirements have been identified by either: Risk Assessment, Training Review or other means, arrangements will be made to ensure the employee involved is appropriately trained. Any such training need identified is captured via the [Training ID \ Requirements Register](#).

## 6. Compliance

### 6.1 LEGISLATIVE \ REGULATORY

The Legal Register is a list of relevant legislative and regulatory requirements applicable to general Hindmarsh construction operations. The project team has reviewed this document and has identified relevant legislative and regulatory requirements applicable to project specific operations. The project specific Legal Register is available upon request and has been completed as per the [Legal Requirements](#) procedure.

Legislative and or regulatory information may also be included in relevant [Environmental Impact Guides \(EIGs\)](#) and in the site-specific induction training provided to all employees and site workers prior to their commencement of works on site.

### 6.2 MONITORING \ CHANGES TO: ACTS, REGULATIONS, CODE OF PRACTICE AND AUSTRALIAN STANDARDS (SUBSCRIPTION)

Hindmarsh is notified of SQE legislative and regulatory change via a subscription service called LAWLEX - <http://www.lawlex.com.au> Where relative legislative change is to occur the National SQE Manager informs State SQE Manager who are then required to review



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changes and forward recommendations (this may be Document Change Request, email, hardcopy or other) to the SQE Systems Manager for Hindmarsh Management System (Compass) coordination.

For more detailed information please refer to Legal Requirements procedure.

## **6.3 ACCESS TO AND COMMUNICATION OF LEGAL REQUIREMENTS / AUSTRALIAN STANDARDS**

Hindmarsh employees, suppliers and subcontractors have access to legislation and regulatory documents via the internet. Where a project receives a request for an applicable legislative \ regulatory document which is not available via the internet, then the request is to be forwarded to one of the following who will arrange for a copy of the required document to be made available to the requestor.

- National SQE Manager
- State SQE Manager

### **6.3.1 Australian Standards**

Hindmarsh subscribes to “Building and Construction” related Australian Standards. Refer to the Australian Standards Online Select Access document for further information regarding access instructions and credentials required for login.

# **7. Risk Management**

## **7.1 INTRODUCTION**

Project risk management is completed as directed within the Risk Assessment procedure in Compass, and as detailed within PMP. The Risk Assessment – Quick Reference Card provides a summary of the risk assessment process, including consequence and likelihood tables.

## **7.2 ENVIRONMENTAL ASPECTS AND IMPACTS**

The project specific Environmental Risk and Opportunity Profile takes into account identified hazards (aspects) and impacts which are relevant to the project. The Project team has reviewed all available information (i.e. risk assessments, consultant reports, advice, papers, scope of works etc) to ensure the Environmental Risk and Opportunity Profile accommodates all known issues.

Hindmarsh ensures environmental aspects and impacts are continually reviewed, risks assessed and that monitoring requirements remain relevant and current.

Key environmental aspects and risks are communicated to Hindmarsh employees and subcontractors based on level risk, controls implemented and or as deemed appropriate by project requirements.

Please refer to the project specific Environmental Risk and Opportunity Profile.

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## 7.3 ENVIRONMENTAL IMPACT GUIDES – EIG’S

Hindmarsh has developed a number of standard Environmental Impact Guides (EIGs), these are documented procedures targeting high risk and \ or common environmental aspects and impacts which arise from general construction activities. EIGs provide the project team with general guidance regarding the management of each respective environmental impact, describes the processes involved, the permits or licenses required, the control measures to be implemented, the monitoring and reporting requirements and any emergency response measures to be implemented.

These documents are available upon request and are communicated to workers as required. A number of these EIGs are available via Compass these include:

- EIG001-Soil Erosion, Sediment, Surface Run Off
- EIG002-Disturbance Flora Fauna
- EIG003-Disturbance Aqua Flora Fauna
- EIG004- Noise Emissions
- EIG005- Atmospheric Emissions
- EIG006- Vibration
- EIG007- Storage, Maintenance, Refuel
- EIG008- Storage, Handling or Hazardous \ Dangerous Substances \ Materials
- EIG009- Social Impact
- EIG010-Presence of Infectious Plant, Disease or Weeds
- EIG011- Solid and \ or Liquid Waste, Recycling
- EIG012- Heritage \ Culture Management \ Disturbance
- EIG013- Land Contamination
- EIG014- Visual Amenity
- EIG016-Acid Sulphate Soils
- EIG017-Ballast
- EIG018- PCB Management
- EIG019- Energy and or Water Consumption

Note: EIGs relevant to this project are detailed within the Environmental Risk and Opportunity Profile

The Project team is to complete the Environmental Risk and Opportunity Profile, where EIGs are nominated these documents must be reviewed for relevance, and amended to meet project needs and requirements.

### 7.3.1 Monitoring and Review of Environmental Impact Guides

EIG effectiveness and currency is monitored throughout the life of the project. The project team accomplishes this by identifying an active EIG (or several) and attaching it to the Weekly \ Daily Environmental and Sustainability Check Sheet. During completion of the check sheet the EIG content is also checked for efficiency and currency. The EIG is marked accordingly and amendments made and or controls altered as required. The EIG sheet under review accompanies the completed check sheet and filed (electronic or hardcopy) as evidence of review.

## 7.4 DESIGN AND REVIEW CHANGES

The Design Involvement Management Risk procedure ensures that where Hindmarsh is involved in the design, or has input into design, a process exists for ensuring effective participation and management. In support of this procedure a Design Change Authority Form is completed, upon which any environmental aspects or impacts will be considered.

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This system ensures all related documents, forms and or risk and opportunity profiles are also updated accordingly.

Design changes may be tracked via the Design Change Register, Aconex or similar system.

Safety in design documentation may also be reviewed to ensure environmental considerations are addressed appropriately. Please refer to the Safety in Design procedure and Safety in Design Risk and Opportunity Profile where available.

## 8. Hazard Reporting

Hindmarsh employees, subcontractors, those working on site, as well as those visiting have a duty to report any hazard observed on site. If a hazard is suspected or identified, report the matter with urgency to a Hindmarsh Management representative who shall be responsible for recording this in the OnSite CAR Module.

Hazard information may be communicated via site induction, safe work method statement review, and \ or safety meetings (e.g. Pre- Start and Toolbox) held on site.

Where a Corrective Action has been submitted reporting a hazard, Hindmarsh shall investigate and take necessary corrective action to address the issue raised to remove the hazard and \ or prevent a reoccurrence.

## 9. Emergency \ Incident Management

Please refer to the Projects Emergency Management Plan (EMMP) for information regarding emergency preparedness and response. The project-specific Emergency Management Plan (EMMP) ensures Hindmarsh controls, and assesses Emergency preparedness elements as required for the project.

Please ensure the EMMP details when Environmental Emergency Drills will be conducted, this schedule must be completed and included within the EMMP. Emergency Drill reports must be completed.

Project Team members are to ensure they are familiar with this procedure and respective forms to ensure processes are well understood in the event of an incident occurring.

### 9.1 INCIDENT MANAGEMENT

Refer to the Injury, Illness and Incident Management and Reporting flow chart for detailed guidance regarding the management and reporting of injuries, illness and incidents.

Procedures and processes referenced within the above-mentioned document address the following:

- Detailed definitions (SQE Definitions)
- Actions to be taken in the event of an injury, illness or incident (Injury, Illness and Incident Response)
- Additional reporting responsibilities and obligations associated with higher level injuries \ incidents (Incident Actions \ External Notifications)
- Incident Reporting responsibilities and expectations (Incident Reporting Flowchart)
- Site and or National investigation requirements

- 
- Corrective and Preventive Action
  - Analysis of data \ findings (including Objectives \ Targets status)

A *Crisis Management and Recovery Plan* supports the injury, illness and incident management process.

### 9.1.1 Significant SQE Incident Alerts

Hindmarsh communicates lessons learnt information, from both internal and external events, via Significant SQE Incident Alerts. Refer to the [Safety Management and Sustainability Process Map](#) for a list of those available.

## 10. Communication \ Consultation

### 10.1 INTRODUCTION

With many interested parties involved in the project it is critical that communication and consultation occurs efficiently and effectively between all.

With regards to environmental issues consultation and communication generally occurs when the following matters arise:

- An employer or employees identifies a hazards
- assessing any aspect \ impact (risk)
- deciding on measures to control risks
- implementing controls
- reviewing the effectiveness of controls
- reviewing and developing policies
- investigating incidents \ complaints
- changing work practices and procedures
- introducing new substances to the workplace
- changes to current health and safety Acts, Regulations, Australian Standards, Codes of Practice and other relevant environmental requirements

### 10.2 MEETINGS \ REPRESENTATIVE \ OTHER AGREED ARRANGEMENTS

In discussion with site workers (Hindmarsh employees and Subcontractors), the following arrangements have been made with regards to communication and consultation regarding environmental matters:

Determine (preferably by obtaining agreement from workers onsite to which of the above-mentioned forums is most acceptable) communication and consultation arrangements.

Arrangements may include one or more of the following:

- The formulation of an Environmental Meeting (Hindmarsh Internal \ Contractor)
- Inclusion of environmental issues in other meetings \ forums
- Other agreed arrangements, eg (detail what the specifics are)
  - Environmental Meeting
  - Daily Prestart Meetings
  - Toolbox Meetings
  - Site Induction

- 
- Weekly Subcontractor \ Supervisor meetings
  - Hazard Identification \ Reporting and Communication
  - JSA \ SWMS Submission and Review

Once determined or agreed arrangements are to be summarized here and communicated to all workers on site. Supporting posters \ flow charts may be posted to assist with communication.

### **10.3 KEY STAKEHOLDER, COMMUNITY AND AUTHORITIES COMMUNICATIONS \ CONSULTATION**

Hindmarsh seeks to ensure stakeholders; the local Community and authorities are satisfied by the manner in which construction activities and tasks are managed. To facilitate this Hindmarsh will:

Detail here how stakeholder, community and authority communication \ consultation is to occur.

AS AN EXAMPLE:

Hindmarsh has created two Information Packages to assist with the consultation process:

- Consultation Package 1 includes the following:
  - Details of the 24 Hours contact number for questions, concerns and complaints.
  - Information sheet regarding complaints escalation process
  - Information sheets providing details of the construction planned and duration of predicted construction noise and vibration.
  - Letterbox drops detailing the proposed work, the location of work, the days and dates of the work and the hours involved and the contact number of the Project Manager.
  - Advice to Council and local Police to support current complaints managements
  - Construction Animations – detailing traffic movement, specific construction activities and other points of interest for Key Stakeholders and the community.
- Consultation Package 2 – High Noise \ Night Works – includes the following:
  - Consultation Package 1 plus;
  - Direct contact with potentially affected land users (residents, childcare centre, businesses and client) to provide information in a letterform outlining the proposed work, the location of the work, the day(s) and date(s) of the work and the hours involved. This contact shall be made at least two days before proposed commencement of the work.

Both packages include reference to relevant vibration events in addition to the information relating to noise impacts. The 24 hours contact number will be addressed to a project resource which has the ability to take action in support of complaint received. The contact details of the current Site Manager (SM) and Project Manager (PM) are also published within Consultation Packages and may be contacted any time.

#### **10.3.1 Authorities**

Hindmarsh acknowledges at times it will be necessary to communicate, and or consult, with public authorities regarding emergency planning and other relevant environmental issues.

### **10.4 COMMUNICATION SUMMARY**

Communication with internal and external stakeholders regarding environmental issues will be in accordance with the following table:

## Notifications

Revise red text to support project requirements:

Subject	Action	Recipient	Frequency
Environmental incident	Project Manager	CLIENT	As per client requirements
Pollution \ Environmental non compliance	Project Manager	CLIENT	As per client requirements
Public complaints	Project Manager	State Construction Manager \ Client	48 hours and as per client requirements
Complaint response	Project Manager	State Manager Construction \ CLIENT	48 hours and as per client requirements
Extended working hours	Project Manager	CLIENT	and as per client requirements
Discovery of threatened fauna	Project Manager	State Manager Construction	48 hours
Discovery of archaeological material incl heritage items	Project Manager	NSW Construction Manager \ CLIENT	48 hours and as per client requirements
Discovery of skeletal material	Project Manager	NSW Construction Manager \ CLIENT	24 hours and as per client requirements
Consultation Package 1	Project Manager	Key Stakeholders	As Required \ as per programme
Consultation Package 2	Project Manager	Key Stakeholders	As Required \ as per programme
High Noise \ Night Works (note these events are not planned to occur)	Project Manager	ALL	2 Days prior to works commencing

## General

Subject	Action	Recipient	Frequency
EMP	Project Manager	Internal	Quarterly
Environmental CAR	Team	Project Manager	As stipulated within ARN
Audit	National SQE Manager	Project Manager	Notify 5 days prior
Environmental performance	National SQE Manager	State Manager Construction	As scheduled via Internal Audit

## Meetings

Type	Chair	Attendees	Frequency
Key Stakeholder Meeting	Project Manager	TBA	Weekly to Fortnightly
Toolbox Meetings	Site Manager	As Required	Weekly
Daily Prestart Meetings	Subcontractor Reps	As Required	As Required



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# 11. Induction and Visitor Management

Site Induction is undertaken by all workers (this includes Hindmarsh employees, all subcontractors and any employees working for subcontractors), prior to work commencing on site. Induction consists of the worker completing a Site-Specific Induction and by being made aware of the Site Safety Rules. The worker acknowledges acceptance and understanding of the induction process by signing the Site-Specific Induction form. During induction copies of all appropriate licensing, certification and qualification will be collected by Hindmarsh and retained with the worker's induction record. A nominated Hindmarsh employee\* will be responsible for maintaining these records.

It will be a condition of entry, of the project, that each individual worker has a valid White Card/Blue card as issued by a recognised safety training authority.

## 11.1 VISITOR INDUCTION

A visitor's induction is undertaken by all visitors, prior to site access. Visitor induction consists of the visitor reading and understanding the project's Safety Guidelines for Visitors Pamphlet, Site Safety Rules, and Emergency Management Plan (EMP) - Visitor Information. Visitors to site are to acknowledge understanding of the Visitor Induction by the signing of the Acknowledgement Register.

Those who visit site for a one off short duration visit to carryout non-intrusive work such as – external auditors, delivery drivers may visit site without undertaking the Visitor Induction however these visitors must be accompanied at all times (if on site) and or must follow Hindmarsh representative's instructions.

Hindmarsh\* is responsible for maintaining the induction register \s.

# 12. Checking

(MONITORING, MEASUREMENT, NONCONFORMITY, CORRECTIVE ACTION, PREVENTIVE ACTION, INTERNAL AUDIT, INSPECTION (EVALUATION OF COMPLIANCE))

## 12.1 MONITORING AND MEASUREMENT

Monitoring requirements for the project will be identified within the project specific Environment Risk and Opportunity Profile). Where monitoring has been identified data collected may be analysed and may result in corrective and or preventive action. All Hindmarsh owned measuring equipment must be registered on the Equipment Calibration Register and all associated calibration records maintained. Hindmarsh may outsource environmental monitoring to external consultants as required. Calibration records for non Hindmarsh owned equipment will be requested.

The following should be noted regarding possible noise \ vibration \ dust monitoring regimes:

- Monitoring may be undertaken in response to complaints where this is considered an appropriate response
- Monitoring that is to occur will be undertaken by personnel suitable qualified and experienced in undertaking acoustic measurements
- Monitoring may occur for plant and equipment which is perceived as 'excessively noisy' to determine the need for rectification or replacement

- 
- If night works are required: Night works construction noise levels, if approved by EPA, may be monitored at the start of the activity, and at a location equivalent to the most affected noise sensitive land user to confirm operation in accordance with EPA requirements.

## 12.2 NONCONFORMITY, CORRECTIVE AND PREVENTIVE ACTION

Any environmental nonconformity observed will be rectified via the Corrective Action process. Where nonconformity creates a hazard, this will result in either:

- a record being made within an “Uncontrolled Hazard Booklet”,
- a Corrective Action Required form being raised and issued, or
- the completion of an Incident Report.

Where a hazard has not been created by the nonconformity a Corrective Action Required form will be issued if immediate action is not taken to rectify.

Where a Corrective Action Required form is issued and it is not addressed in a timely manner or there is a subsequent re-occurrence of the non-conformance the Corrective Action and Escalation Process will commence.

Please refer to the Corrective Action procedure and Uncontrolled Hazard \ Hazard Reporting - Management flowchart for further information.

During project delivery Hindmarsh anticipates and encourages continual improvement in all areas of business. Continual improvement opportunities may arise from inspections, testing, auditing, incidents and or observations. Hindmarsh promotes and support the issue of corrective actions, as required, to support continual improvement requirements. Please refer to the Preventive Action procedures for further information.

## 12.3 AUDITING

Hindmarsh actively monitors performance and seeks potential improvement opportunities by completing internal audits. Please refer to Audits Management procedure for detailed information regarding the internal audit function and requirements, including:

- Audit Notification
- Internal Auditor Notes (audit opening \ closing meeting)
- Internal Auditor Notes (audit)
- Internal Audit Report

## 12.4 INSPECTION (EVALUATION OF COMPLIANCE)

The Weekly Environmental and Sustainability Check Sheet, is completed by the project team to evaluate compliance. The weekly or daily check sheet is customised to reflect specific project requirements. Where applicable, the environmental controls listed within Environmental Risk and Opportunity Profile may also be included within the check sheet.

It is preferred that only persons who have completed environmental awareness training or environmental management training complete the check sheet, however at times it is accepted it may be completed by a resource who has not completed such training but whom has environmental experience.

Hindmarsh management also inspect the site to ensure that the environmental impacts resulting from construction work are being adequately mitigated and environment controls have been implemented, are being met and maintained. Refer Senior Manager's Visit (SMV) and Management, Project Inspections documents.

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# 13. Reporting

Detail all contractual and required project reporting requirements here. This should cover all areas including internal and external reporting requirements.

## 13.1 WEEKLY REPORTING REQUIREMENTS

- Weekly SQE Report
- Weekly Environment & Sustainability Check Sheet or Daily Environmental & Sustainability Check Sheet
  - Results of the Environmental & Sustainability Weekly or Daily Check Sheet are to be reported to the Project Manager
  - The report is to be co-signed by the Project Manager
- [Detail other weekly project reporting requirements]

## 13.2 MONTHLY REPORTING REQUIREMENTS

- Monthly Internal Project Report
- OnSite Database (Intranet)
  - <Update the list below as per project requirements. Also refer to same section within Safety and Quality Plans to avoid reporting conflicts>
  - Earthworks
  - Piling
  - Structure
  - Facade
  - Glazing
  - Mechanical
  - Post Tensioning
  - Concrete (insitu and or precast)
  - <List other trade Identified>
- [Detail other weekly project reporting requirements]

## 13.3 CLIENT & EXTERNAL REPORTING REQUIREMENTS

- Monthly Client Report
- [Detail other monthly project reporting requirements]

## 13.4 REGULATORY REPORTING REQUIREMENTS – [INSERT REGULATORY BODY NAME HERE, I.E. EPA SA)

[insert state \ national regulatory safety reporting requirements, it is critical that this information is detailed in order that all project team members are aware of reporting responsibilities].

An Environmental Incident includes: Update this with jurisdictional EPA definition of an environmental incident, eg: any spills, leaks, land contamination, damage to heritage items, unauthorised clearing, pollution of waterways, or anything that could harm people or the environment. EPA Reportable Incidents include a leak, spill or escape of substance that threatens harm to people or the environment.>

EPA State Name: [insert local EPA State name – eg EPA South Australia]

Telephone: [insert local EPA telephone number \s]

Fax: [insert local EPA fax number \s]

Email: [insert local EPA email]

In the event of a reportable environmental incident the Project Manager (PM) must refer to the Injury, Illness and Incident Management and Reporting flow chart for detailed guidance regarding the management and reporting of environmental incidents.

## 14. Document and Record Management

Environmental project records are controlled in accordance with the Project Management Plan Section :

Document and Record Management. The minimum records maintained include the following:

Category	Record	Responsible	Retention Timeframe
General Requirement	Environmental Management Plan (all versions), Including: <ul style="list-style-type: none"> <li>Performance Targets and Measurements</li> <li>Contact and Service Provider Information</li> </ul>	Project Manager	Permanent
	<u>Site Diary – Site Manager \ Foreman</u>	Site Manager	Permanent
	<u>Site Diary – SQE</u> (where required)	Project Manager HR Manager	Permanent Permanent
	Inspection Records	Project Manager	Permanent
	Training Records – Including Qualifications held by individuals	Project Manager	Permanent
	All formal correspondence with stakeholders	Project Manager	Permanent
	Meeting Minutes	Environmental Coordinator	Permanent
	Complaint records		
	Audit reports (including internal review reports)		
	Weekly Environmental & Sustainability Checksheets		
Induction Records			
Legislative \ Regulatory	Identified Legislative Regulatory Register	Project Manager	Permanent
Approvals, Permits and Licenses	Any Approvals, Permits and Licenses	Project Manager	Permanent
External Review Reports	Not Applicable		
Construction Waste management	Waste tracking dockets	Site Manager	Permanent
	Waste disposal receipts	Site Manager	Permanent
Land Contamination	Not Applicable		
Hazardous Substance	Copies of MSDS's	Site Manager	Permanent
Corrective Action Request	Copies of issued corrective action \ Action Required Notifications	Project Manager	Permanent
	Log of corrective actions	Project Manager	Permanent
		Project Manager	Permanent
Incident reporting	Environmental incident reports	Project Manager	Permanent
	Incident Investigation Reports	Project Manager	Permanent

Performance Analysis \ Evaluation Reports	Where available	Project Manager	Permanent
Insert additional project requirements	additional project records required		

Additional information regarding document and record control is available, refer: [Control of Documents and Control of Records](#).

Each subcontractor is selected on the basis of their ability to meet all specified requirements including Quality, Environment and Health and Safety. The following are examples of environmental documents which may be required from subcontractors:

- Tool box talks and attendance registers
- Environmental Risk Assessment
- Project Risk Assessments
- Job Safety Analysis (JSA)
- Material Safety Data Sheets (MSDS)
- SQE information such as logbook, tests records etc of all plant and equipment on site
- Competency Certificates and training records

Applicable subcontractors may also be required to submit a site specific Quality, Environmental and \ or Health and Safety Plan as determined by the contract requirements and / or risks.

## 14.1 CUSTOMISED COMPASS TEMPLATES

During the life of the project a number of Compass templates will be customised, and in some cases continually revised to address project specific requirements: for example Risk Profile templates. In order to ensure these documents \ records are appropriately controlled this project will utilise, either or both, Aconex and or the Site Server Electronic Filing System. Where such documents are controlled via the Site Server Electronic Filing System, the Compass to Project Controlled Document Register shall be completed and maintained accordingly.

# 15. Subcontractor Management

All subcontractors are to ensure they make appropriate environmental inclusions in their SWMS \ JSEAs and abide by all statutory requirement mentioned in this EMP.

Hindmarsh\* is to ensure SWMS are reviewed as per SWMS Review, and to ensure legislative \ regulatory requirements are meet as per Legal Register. Risk Profiles completed are also to be used during the review of SWMS to ensure all known risks have been addressed and adequately controlled.

Monthly subcontractor spot audit may be undertaken to ensure each Subcontractor complies with all requirements (Contract, Statutory etc)

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# 16. Project Environmental \ Sustainability Information & Particulars

NOTE <the project team is to review ALL sections below to determine project relevance. All sections are to be completed, where a section is not applicable to the project detail the following: "This element \ requirement has been reviewed and is deemed not applicable to this project at the time this management plan was last revised"

## 16.1 EXISTING ENVIRONMENTAL CONDITIONS OF SITE

This section of the plan identifies Key Site Features including:

- Ecological context – To encourage and recognise the reuse of land that has previously been developed.
- Outline previous use of site including outline of ecological value.
  - Description for surrounding area
  - Existing site plan
  - Images of significant environmental features- through initial site visits
  - List of specific sensitivities
  - Remediation Plans which may have been completed.

## 16.2 DILAPIDATION REPORT

If a Dilapidation report has been undertaken - include details here.

If this section is not applicable write "This element \ requirement has been reviewed and is deemed not applicable to this project at the time this management plan was last revised" and delete text above

## 16.3 HERITAGE \ CULTURAL CONSIDERATIONS

Detail any Heritage \ cultural considerations which exist within the immediate vicinity of the project.

If this section is not applicable write "This element \ requirement has been reviewed and is deemed not applicable to this project at the time this management plan was last revised" and delete text above

## 16.4 GEOTECHNICAL REPORT

If a Geotechnical report has been undertaken - include in the plan as [Appendix XXX](#) or refer to Aconex

If this section is not applicable write "This element \ requirement has been reviewed and is deemed not applicable to this project at the time this management plan was last revised" and delete text above



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## 16.5 CONTAMINATION \ REMEDIATION REPORT

If a Contamination report has been undertaken - include in the plan as [Appendix XXX](#) or refer to Aconex

If this section is not applicable write “This element \ requirement has been reviewed and is deemed not applicable to this project at the time this management plan was last revised” and delete text above

## 16.6 ADDITIONAL REPORTS

Other additional reports include:

- Noise and Vibration
- Electromagnetic Induction Interference Tests
- Arborist Report
- Air Quality Report

## 16.7 PROJECT SPECIFIC SUSTAINABILITY INITIATIVES

Detail here any additional project specific sustainability initiatives which have not already been addressed within this EMP. Consider:

- Urban ecology (eg landscaping to consider indigenous vegetation)
- Innovation (eg encourage innovative technology, design and processes in all development, which positively influence the sustainability of infrastructure)
- Construction and Building Management
- Carbon Neutrality for the Project
- Relocation of vegetation \ tree originally marked for removal

If this section is not applicable write “This element \ requirement has been reviewed and is deemed not applicable to this project at the time this management plan was last revised” and delete text above

## 16.8 ENVIRONMENTAL MANAGEMENT SUB-PLANS

This section of the plan is to identify whether there are any sub-plans applicable to this document. This will include (the emergency management plan must be referenced here):

- Emergency Management Plan
- Waste Management Plan,
- Heritage Management Plan and
- Green Star Management Plan.

If this section is not applicable write “This element \ requirement has been reviewed and is deemed not applicable to this project at the time this management plan was last revised” and delete text above.

## 16.9 SITE SETUP – ACCOMMODATION AND AMENITIES MANAGEMENT

Detail within this section specific details regarding accommodation \ amenities management. Completing a site layout is encouraged and should be referenced within this section. Also consider:

- Type of site sheds to be used
- Energy efficiency of amenities
- Indoor environmental quality (eg shade site sheds to lower air conditioner use)
- Water efficiency

- 
- Transport (eg provide bike racks for employee \ subcontractor use)

## **16.10 STORM WATER \ RAINWATER**

Storm water is to include rainwater, surface water, ground water, subsoil water and artesian water.

### **16.10.1 Storm Water Quality**

Comment on the existing storm water quality within the site. Outline the measures to manage/ capture the storm water. To establish quality of storm water catchment it may be required to undertake a water quality assessment report.

### **16.10.2 Storm Water Quantity**

Identify catchment prior to construction commencing- what is the expected containment to this site. Levels of storm water may be obtained by an independent report. Identify how you will manage the catchment. Identify potential uses for the storm water within the project

### **16.10.3 Rain Water Harvesting**

Investigate possible rainwater harvesting opportunities to facilitate use of collected water for cleaning, toilet flushing and possible dust suppression usage. A rainwater harvesting proposal involves collecting rainwater from nominated areas and storing it in a suitable rainwater tank. Access to such a tank must be restricted to ensure accidental use cannot occur.

## **16.11 LAND USE AND ECOLOGY**

This section of the plan is to identify previous use of site and the types of activities allowed in the development zone (agriculture, residential, industrial etc)

This is to include existing eco systems within 100m of site or that may be affected by the construction activities proposed. Detail that project site is not:

- On prime agricultural land;
- On land containing old-growth forest
- Within 100 metres of a wetland listed as being of 'high ecological value'.

## **16.12 WASTE MANAGEMENT**

Detail here the waste management strategy for the project. Consider:

- Use of certified waste management contractors (include details regarding expectations \ frequency of recycle reports from contractor)
- Separate waste bins (include how recycling will be monitored)

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# APPENDIX A – ENVIRONMENTAL RISK AND OPPORTUNITY PROFILE

Other environmental related Risk Profiles created for this project include:

- <detail any other Project Risk Assessment completed for this project here also>

Due to the size and type of the above mentioned documents please request a copy of this document from a Hindmarsh representative

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# APPENDIX B – ENVIRONMENTAL AND SUSTAINABILITY POLICY



## Environment and Sustainability Policy

Hindmarsh operates with full appreciation and awareness that environmental protection and sustainability are principle to our ongoing success. Operations in terms of both construction and completion are compassionate to the environment, the local community and aim to support the ongoing sustainability of the environment.

Hindmarsh seeks to meet its own environmental needs and the needs and expectations of clients, stakeholders, employees and the community by:

- Setting and continually reviewing measureable environmental objectives and targets. Backed by ongoing monitoring, reporting and analysis supporting continual improvement. Complimented by ongoing feedback at all levels.
- Prevent pollution and unnecessary resource consumption by setting targets and maintaining systems and processes which facilitate the more efficient use of energy and material resources and improved waste management, waste avoidance, re-use and recycling.
- Seek to minimise construction related aspects and impacts including noise, vibration, groundwater, air quality, land contamination, amenity and heritage.
- Promote a shared sense of ownership and responsibility for optimal environmental performance from board through to employees and contractors whilst developing a culture of environmental respect and appreciation.
- Encourage and support environmental awareness through ongoing training and development of competencies particular to specific environmental impacts related to individual activities.
- Comply with all legal requirements including environmental Legislation, Regulations, Codes of Practice, Applicable Australian and other standards specific to Hindmarsh.
- Implement and maintain the Hindmarsh Management System and its Environmental elements to ensure all potential aspects and impacts are identified, evaluated and suitably eliminated or controlled.
- Foster and support continuous improvement at all levels including the identification of key environmental initiatives.

Compliance with this policy will be monitored, audited and continually reviewed so as to remain effective and aligned with all of our operations.

Rowan Hindmarsh  
Chief Executive Officer

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**WARNING – Uncontrolled when printed! Refer to COMPASS for the latest version.**

Authorised by: CEO  
Maintained by: SQE  
Last Revision Date: 23 January 2018

Next Review Date: January 2020  
Current Version: 2.0  
Page 1 of 1



# APPENDIX D

<b>Project Name:</b>	Gledswood Hills Public School		
<b>Revision:</b>	0	<b>Date of Last Revision:</b>	5/10/18
<b>Reviewed by:</b>	Ed Hartley		

## 1. PROCESS SUMMARY

To limit the level of noise generated by the construction works so that it does not cause an environmental nuisance to nearby residents and the general public. The following contains advice on managing and monitoring noise levels associated with site works.

## 2. OBJECTIVES

To provide monitoring information and advice to ensure that noise levels experienced on site and surrounding the site can be adequately managed. Specifically:

- To minimize \ avoid adverse noise impacts associated with the day to day operations of plant, machinery and task through construction methods and management measures.
- Comply with relevant EPA requirements
- Comply with local or site-specific requirements.

### Target:

- To monitor noise prior to start at pre-selected locations so that background noise levels can be established and compared against throughout the project life.
- Monitor noise levels generated from plant and equipment and construction activities.
- Maintain noise levels below the accepted rise from the original readings (at surrounding locations).
- Noise complaints that are received from neighboring facilities are dealt with in an appropriate and timely manner.
- To minimise the occurrence of noise complaints associated with the site works from adjacent occupied areas, facilities and neighbors.

## 3. DEFINITIONS

Not Applicable

## 4. RESPONSIBILITIES

### Owner

### Responsibility

Environmental Role	The <u>Environmental Role</u> (or delegated resource) is responsible for the continual monitoring of noise levels on the site.
--------------------	--

## 5. PROCESS DESCRIPTION

### 5.1 Permits and Licenses

Where construction activities require permits, these must be obtained prior to works commencing – e.g. working outside of hours as stated by local Environmental Protection Authority.

### 5.2 Impacts

Excessive noise levels can result in a serious nuisance, hearing damage (noise induced hearing loss and tinnitus etc) and loss of usability of site areas and surrounding facilities.

### 5.3 Noise Generating Activities

	Cross Box for Measures Relevant to Project
Movement and reversing alarms of construction equipment, plant trucks, site vehicles;	<input checked="" type="checkbox"/>
Materials equipment loading and unloading;	<input checked="" type="checkbox"/>
Use of equipment such as concrete cutter, circular saws, nail guns, jack hammer, hand tools, generators, compressors;	<input checked="" type="checkbox"/>
Mobile plant such as Concrete pumps, Agitators, Vibrators, crane operations;	<input checked="" type="checkbox"/>

### 5.4 Control Measures

	Cross Box for Measures Relevant to Project
Complete Noise Study. Including establishment of 'normal' noise levels at the site prior to construction commencing.	<input type="checkbox"/>
Working hours to be in accordance with contractual and legislative limitations.	<input checked="" type="checkbox"/>
Execute noise generating tasks within the project central area rather than along perimeters, i.e. do not drop rubbish into bins and or loads into trucks from excessive heights or without due care.	<input checked="" type="checkbox"/>



Coordinate site works to maximise the use of existing site features as sound barriers where possible.	<input checked="" type="checkbox"/>
Install temporary or project life hoardings along sensitive areas such as solid panels in preference to mesh panels.	<input type="checkbox"/>
Install temporary, mobile sound barriers or enclosures around noisy tasks, activities and or plant such as brick saws. Possible use of 6mm plywood on timber framing with no gaps at joints or corners. The inside of enclosure lined with sound absorption material (e.g. perforated foil faced fiberglass). These enclosures may be moved as required to achieve maximum benefit for the nearest affected premises, building and or user.	<input type="checkbox"/>
Induction training will address noise awareness, noise sensitive areas and the need to make as little noise as possible, such as avoiding shouting and whistling.	<input checked="" type="checkbox"/>
All site personnel must adhere to site safety rules in relation to hearing PPE when operating or in the vicinity of noise generating plant or equipment when other hierarchy of controls has been eliminated.	<input checked="" type="checkbox"/>
Care shall be taken not to drop materials ensuring no peak noise events occur, including materials from a height into a truck or skip.	<input checked="" type="checkbox"/>
Traffic controllers will prevent queuing, idling or reversing near noise sensitive receivers.	<input checked="" type="checkbox"/>
No music radios or music generating devices are permitted on site	<input checked="" type="checkbox"/>
<b>Plant and Equipment Controls</b>	<input type="checkbox"/>
Vehicle warning devices such as horns are only to be used in case of emergency or where there is imminent threat of danger.	<input checked="" type="checkbox"/>
All plant and equipment to be regularly serviced in accordance with manufacturers' specification.	<input checked="" type="checkbox"/>
Eliminate noisy work practices, shut down plant and do not leave it idling unnecessarily, substitute for something that does not generate as much noise.	<input checked="" type="checkbox"/>
Generators and or other noisy plant are to be situated to minimise noise disturbance to local residents and the general public.	<input checked="" type="checkbox"/>
Noisy equipment to be removed from site.	<input checked="" type="checkbox"/>
Trucks and plant to follow approved, designated transport routes.	<input checked="" type="checkbox"/>
Ensure silencers and enclosures are intact, rotating elements of plant and equipment is balanced, loose bolts are tightened, and frictional noise is reduced through lubrication and cutting noise reduced by maintained sharp equipment.	<input checked="" type="checkbox"/>
Use only necessary power to complete the task at hand. The correct tool, plant and or equipment for the activity.	<input checked="" type="checkbox"/>
Ensure equipment is fitted with adequately maintained silencers \ mufflers which meet the design specifications.	<input checked="" type="checkbox"/>
Plant known to emit noise strongly in one direction shall be orientated so that the noise is directed away from noise sensitive areas where practicable.	<input checked="" type="checkbox"/>
Trucks to be loaded within legal limits for travel on public roads.	<input checked="" type="checkbox"/>
Where possible plant and equipment to be selected with lowest noise rating or to have silencing and noise suppression equipment fitted.	<input checked="" type="checkbox"/>
<b>Other</b>	<input type="checkbox"/>
Use of BBS-TEK Backalarm or similar system	<input type="checkbox"/>
Acoustically enclose generators and compressors where possible	<input type="checkbox"/>
Off site access is to be located as far away as possible from noise sensitive receivers	<input checked="" type="checkbox"/>

### 5.5 Monitoring

#### General

Observation of noise levels from equipment, vehicles and operation during working hours

#### Monitoring Devices

To be determined as soon as possible prior to site works commencing.

#### Noise Monitoring Location Plan:

To be completed as soon as possible prior to site works commencing.

### 5.6 Emergency Response

- Cease noisy work and consider alternative methods.
- Repair or service noisy equipment.

The above tasks may be included within the *Emergency Management Plan*, this document may be attached to the *Emergency Management Plan*.

### 5.7 Incident Reporting

Refer to the *Injury, Illness and Incident Management and Reporting* flow chart for detailed guidance regarding the management and reporting of injuries, illness and incidents.

Procedures and processes referenced within the above-mentioned document address the following:

- Detailed definitions
- Reporting responsibilities and obligations (both internal and external)
- Incident Reporting responsibilities and expectations
- Site and or National Investigation requirements
- Corrective and Preventive Action
- Analysis of data \ findings (including Objectives \ Targets status)

**5.8 Training**

- All Hindmarsh Site Staff to be inducted into the *Environmental Management Plan*.
- Relevant Personnel to complete Manger / Supervisor Training in Noise Management this may include a basic grasp of noise terminology, methods of noise measurement, knowledge of current Acts and Regulations OHS&E.
- All site contractors to be inducted into the site-specific induction.

**6. RECORDS \ REPORTING (as required)**

- *Weekly SQE Inspection,*
- *Weekly Environmental & Sustainability checklist,*

In the event of a complaint record the following via the Action Required Notification:

- A complaint or the recording of successive excessive noise levels above the determined surrounding levels may result in the following corrective actions being implemented
- Address complaint and respond with and implement proposed mitigation measures
- Retraining, removal, re induction, review
- Monitor updated control measures for effectiveness

**7. REFERENCES**

<b>Internal References</b>	<b>Compass Ref No.</b>
Environmental Management Plan	C-PRE-M005
Environmental Risk and Opportunity Profile	C-PRE-F016
Equipment Calibration Register	C-PRE-F007
Weekly Environmental & Sustainability Checksheet	C-CON-F019
Environmental Noise Monitoring Report	C-CON-F030
Emergency Management Plan	C-PRE-M004

<b>External References</b>		
<b>Document Title</b>	<b>Section</b>	<b>Date \ Revision</b>
Refer to ENV Risk Profile for external resource references		

<b>Project Name:</b>	Gledswood Hills Public School		
<b>Revision:</b>	0	<b>Date of Last Revision:</b>	05/10/18
<b>Reviewed by:</b>	Ed Hartley		

**1. PROCESS SUMMARY**

The limit of level of vibration generated by the construction of the works so that it does not cause an environmental nuisance to site workers and adjoining property owners.

**2. OBJECTIVES**

No structural, stakeholder effects on adjoining or nearby buildings \ occupiers or structures caused by site works or laden trucks on public roads.

**3. DEFINITIONS**

Not Applicable

**4. RESPONSIBILITIES**

Owner	Responsibility
Environmental Role	The Environmental Role (or delegated resource) is responsible for the continual monitoring of vibration on site

**5. PROCESS DESCRIPTION**

**5.1 Permits and Licenses**

Not Applicable

**5.2 Control Measures**

	Cross Box for Measures Relevant to Project
Review the contract and/or construction activities to determine the need for vibration monitoring.	<input type="checkbox"/>
For all immediate structures and features complete dilapidation surveys of buildings, roads, footpaths.	<input type="checkbox"/>
Schedule the use of vibration causing equipment, such as jackhammers, at the least sensitive time of day.	<input checked="" type="checkbox"/>
Programme operations so that vibration causing activities do not occur simultaneously.	<input checked="" type="checkbox"/>
Adhere to normal hours of operation	<input checked="" type="checkbox"/>
Prior warning to be provided where sensitive locations are expected to be affected by vibration levels in excess of nominated levels (AS2670.2). Including how long the vibration is expected to last.	<input type="checkbox"/>
Plan transportation routes in consultation with the council.	<input type="checkbox"/>
Seek as much distance as possible between plant or equipment and sensitive areas \ receivers.	<input checked="" type="checkbox"/>
<b>Plant and Equipment Controls</b>	
Ensure all equipment and plant is well maintained.	<input checked="" type="checkbox"/>
Isolate equipment causing vibration on resilient mounts, where possible and within manufacturers specifications.	<input checked="" type="checkbox"/>
Use plant that can achieve similar outcome with less vibration, or modification of existing equipment (in keeping with manufacturers specifications) to reduce vibration power levels	<input checked="" type="checkbox"/>
Ensure trucks remain on designated routes.	<input checked="" type="checkbox"/>
Balance variable speed plant and operate at speeds that do not produce resonances (excessive felt vibration in the ground or in the equipment, compared to other speeds)	<input checked="" type="checkbox"/>
Operate vibrating plant at a maximum practical distance to sensitive locations	<input checked="" type="checkbox"/>

**5.3 Monitoring**

- Vibration monitoring as required.
- Observation of vibration levels during construction works.
- Observation of vehicle and truck movement \ activity.

**5.4 Emergency Response**

- Cease any work causing atmospheric pollution.
- Review implementation and adequacy of control methods.
- Modify as necessary.

The above tasks are to be included within the *Emergency Management Plan*. This document may be attached to the *Emergency Management Plan*.

**5.5 Incident Reporting**

Refer to the *Injury, Illness and Incident Management and Reporting* flow chart for detailed guidance regarding the management and reporting of injuries, illness and incidents.

Procedures and processes referenced within the above-mentioned document address the following:

- Detailed definitions
- Reporting responsibilities and obligations (both internal and external)
- Incident Reporting responsibilities and expectations
- Site and or National Investigation requirements
- Corrective and Preventive Action
- Analysis of data \ findings (including Objectives \ Targets status)

**6. RECORDS**

Keep written record showing:

- *Weekly Environmental & Sustainability Checksheet*

In the event of a complaint record the following via the Action Required Notification:

- A complaint or the recording of successive excessive noise levels above the determined surrounding levels may result in the following corrective actions being implemented
- Address complaint and respond with and implement proposed mitigation measures
- Retraining, removal, re induction, review
- Monitor updated control measures for effectiveness

**7. REFERENCES**

Internal References	Compass Ref No.
Environmental Management Plan	C-PRE-M005
Environmental Risk and Opportunity Profile	C-PRE-F016

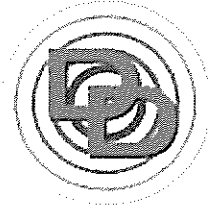
External References		
Document Title	Section	Date \ Revision
Refer to ENV Risk Profile for external resource references		



APPENDIX E

**GLEDSWOOD HILLS  
PUBLIC SCHOOL**

**WASTE MANAGEMENT PLAN**



**DAY DESIGN PTY LTD**  
CONSULTING ACOUSTICAL ENGINEERS

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SUITE 17, 808 FOREST ROAD, PEAKHURST 2210  
P. 02 9046 3800 ACOUSTICS@DAYDESIGN.COM.AU WWW.DAYDESIGN.COM.AU  
ABN 73 107 291 464

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# Acoustic Assessment Report

Gledswood Hills Public School  
The Hermitage Way, Gledswood Hills

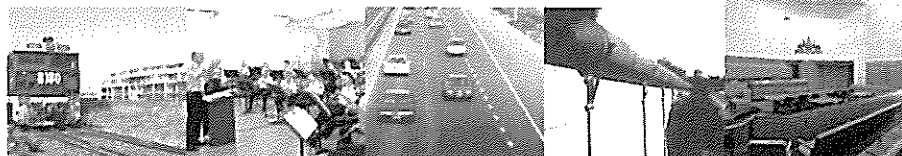
REPORT No  
**6130-1.1R Rev A**

DATE ISSUED  
**23 October 2017**

**Prepared For:**

Perumal Pedavoli Pty Ltd  
PO Box 636  
Glebe NSW 2037

Attention: Mr Andrew McGrath





## Revision History

Report	Date	Prepared	Checked	Comment
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Draft 2	30/06/2017	William Wang	Stephen Gauld	
Final	17/08/2017	William Wang	Stephen Gauld	
Rev A	23/10/2017	William Wang	Stephen Gauld	Additional Parking

Document R\6130-1.1r rev a, 40 pages plus attachments

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## **1.0 CONSULTING BRIEF**

Day Design Pty Ltd was engaged by Perumal Pedavoli Pty Ltd to carry out an acoustic assessment for the proposed Gledswood Hills Public School to be located at The Hermitage Way, Gledswood Hills, NSW The scope of work is as follows:

- Review the architectural drawings.
- Inspect the proposed development site in Gledswood Hills.
- Measure the background noise levels at critical locations and times
- Establish acceptable noise level criteria
- Quantify noise emissions from the School activities
- Calculate the level of noise emission, taking into account building envelope transmission loss, screen walls, ground absorption and distance attenuation
- Prepare a site plan identifying the development and nearby noise sensitive locations
- Provide recommendations for noise control (if necessary)
- Prepare an Environmental Noise Assessment Report.



## **2.0 PROJECT DESCRIPTION**

The new Gledswood Hills Public School is proposed to be located on land to the south of the proposed Town Centre. The new school will have capacity for 1,000 students.

Existing residences and undeveloped land zoned for residential purposes are located to the west and south across The Hermitage Way and Gledswood Hills Drive respectively. A reserve is proposed to the south of the School after a new local road and before Gledswood Hills Drive. To the north will be the Gledswood Hills Town Centre.

Long term ambient noise measurements have been taken in the rear yard of a nearby existing residential property as shown in Figure 1 below. Ambient noise levels are presented in Section 3 of this report.

Acceptable noise limits are derived from the EPA's Industrial Noise Policy for intrusive noise impacts from mechanical plant and indoor noise, at each residence, and The Association of Australian Acoustical Consultants (AAAC) *Technical Guideline for Child Care Centre Noise Assessment* noise criteria for children in outdoor areas.

Noise levels from children in the outdoor areas, public address system and use of the hall have been calculated at the nearest residential premises and are presented in Section 5.0.



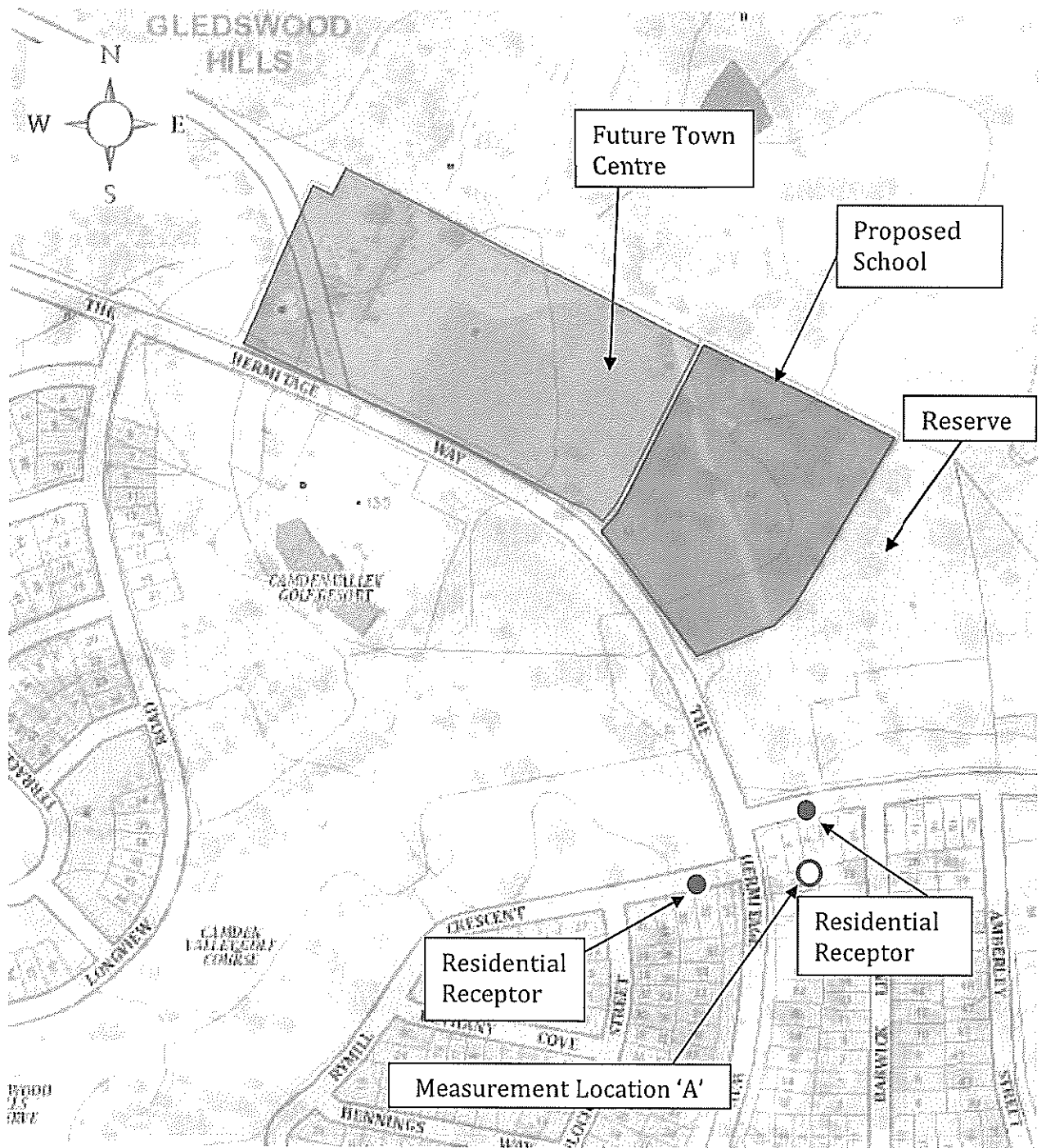
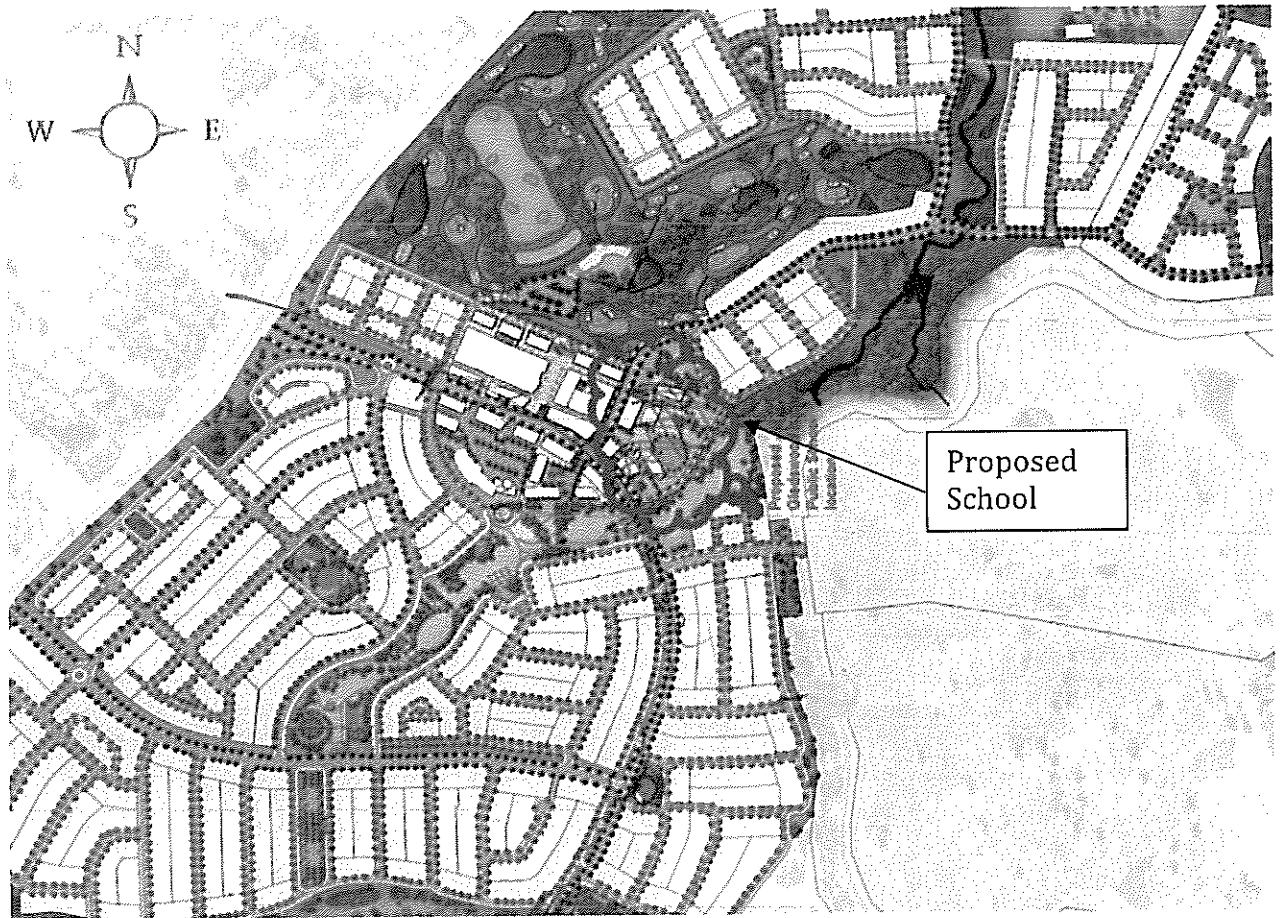


Figure 1 : Location Plan – Gledswood Hills Public School







**Figure 2 : Location Plan – Gledswood Hills Master Plan**



### 3.0 OPERATION NOISE EMISSION CRITERIA

#### 3.1 Background Noise Level

In order to assess the severity of a possible environmental noise problem in a residential area it is necessary to measure the ambient background noise level at the times and locations of worst possible annoyance. The lower the background noise level, the more perceptible the intrusive noise becomes and the more potentially annoying.

The ambient  $L_{90}$  background noise level is a statistical measure of the sound pressure level that is exceeded for 90% of the measuring period (typically 15 minutes).

The Rating Background Level (RBL) is defined by the NSW EPA as the median value of the (lower) tenth percentile of  $L_{90}$  ambient background noise levels for the day, evening or night time periods, measured over a number of days during the proposed days and times of operation.

The places of worst possible annoyance are the residences located to the south-west across The Hermitage Way and to the south across Gledswood Hills Drive. These potentially affected locations can be seen in Figure 1. The times of greatest annoyance will be during the day time when children are outdoors.

An environmental noise logger was placed in the rear yard of 72 The Hermitage Way, Gledswood Hills to determine the Rating Background Level. This location is shown on Figure 1 as Location 'A'.

In quiet areas where the background noise level is 30 dBA or less, it is not necessary to carry out long-term noise monitoring to establish the average minimum or Rating Background Level. The NSW Industrial Noise Policy states: *"Where the rating background level is found to be less than 30 dBA, then it is set to 30 dBA."*

The measured noise levels are presented in the attached Appendix A and also in Table 1 below.

**Table 1 Ambient Noise Levels – Gledswood Hills**

Location	Time Period	$L_{90}$ Rating Background Level (dBA)	Existing $L_{eq}$ Noise Level (dBA)
Location 'A' – 72 The Hermitage Way, Gledswood Hills	Day (7 am to 6 pm)	37	48
	Evening (6 pm to 10 pm)	34	42
	Night (10 pm to 7 am)	30 *	41

\* The actual measured noise level at night was 28 dBA

Atmospheric conditions were ideal for noise monitoring. Noise measurements were therefore considered reliable and typical for the receptor area.



### 3.2 NSW EPA's Noise Guide for Local Government

The NSW Environment Protection Authority's (EPA) *Noise Guide for Local Government* was published in October 2010. The guide is specifically aimed at assessing noise from light industry, shops, entertainment, public buildings, air conditioners, pool pumps and other noise sources in residential areas.

The appropriate regulatory authority may, by notice in writing given to such a person, prohibit the person from causing, permitting or allowing:

- (a) any specified activity to be carried on at the premises, or
- (b) any specified article to be used or operated at the premises,

or both, in such a manner as to cause the emission from the premises, at all times or on specified days, or between specified times on all days or on specified days, of noise that, when measured at any specified point (whether within or outside the premises,) is in excess of a specified level.

It is an offence to contravene a noise control notice. Prior to being issued with a noise control notice, no offence has been committed.

The Protection of the Environment Operations Act 1997 defines "Offensive Noise" as noise:

- (a) that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:
  - (i) is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or
  - (ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or
- (b) that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances prescribed by the regulation.



### 3.3 NSW Industrial Noise Policy

The Environment Protection Authority (EPA) published their NSW Industrial Noise Policy in January 2000. The Industrial Noise Policy is specifically aimed at assessing noise from industrial noise sources scheduled under the Protection of the Environment Operations Act 1997 (POEO, 1997).

The Gledswood Hills Public School is not a 'scheduled premises' under the Protection of the Environment Operations Act 1997 as it is not required to hold a licence under that Act for operations at the site.

The appropriate regulatory authority may, by notice in writing given to such a person, prohibit the person from causing, permitting or allowing:

- (a) any specified activity to be carried on at the premises, or
- (b) any specified article to be used or operated at the premises,

or both, in such a manner as to cause the emission from the premises, at all times or on specified days, or between specified times on all days or on specified days, of noise that, when measured at any specified point (whether within or outside the premises,) is in excess of a specified level.

The Industrial Noise Policy provides a useful framework to assess noise emission from non-scheduled premises, whether that premises produces intrusive or non-intrusive noise.

While the Industrial Noise Policy is not strictly applicable to this site, as the site is not scheduled, in the absence of other relevant standards the limits set out in the NSW Industrial Noise Policy will be used as a guide in determining whether the level of noise is considered intrusive or not.

### 3.4 Residential Receptor Intrusiveness Criteria

Section 2.2.1 of the Noise Guide for Local Government and Section 2.1 of the NSW Industrial Noise Policy states that a noise source is generally considered to be intrusive if the noise from the source when measured over a 15 minute period exceeds the background noise by more than 5 dB.

The representative Rating Background Levels were as shown in Table 1 above. Therefore the acceptable  $L_{eq}$  noise intrusiveness criteria for broadband noise at the residences are as follows:

- $(37 + 5 =) 42$  dBA during the day (7 am – 6 pm);
- $(34 + 5 =) 39$  dBA in the evening (6 pm – 10 pm);
- $(30 + 5 =) 35$  dBA at night (10 pm – 7 am).



### 3.5 Amenity Criteria

Depending on the type of area in which the noise is being made, there is a certain reasonable expectancy for noise amenity. The NSW Industrial Noise Policy provides a schedule of recommended  $L_{eq}$  industrial noise levels that under normal circumstances should not be exceeded. If successive developments occur near a residential area, each one allowing a criterion of background noise level plus 5 dB, the ambient noise level will gradually creep higher.

The recommended  $L_{eq}$  noise levels in Table 2 below are taken from Section 2.2 of the INP.

**Table 2 Amenity Criteria**

Type of Receiver	Indicative Noise Amenity Area	Time of Day	Recommended $L_{eq}$ Noise Level, dBA	
			Acceptable	Recommended Maximum
Residence	Suburban	Day	55	60
		Evening	45	50
		Night	40	45
Area specifically reserved for passive recreation (eg National Park)	All	When in use	50	55
Active recreation area (eg school playground, golf course)	All	When in use	55	60
Commercial premises	All	When in use	65	70

Compliance with the amenity criteria will limit ambient noise creep. Wherever the existing  $L_{eq}$  noise level from industrial noise sources approaches or exceeds the amenity criteria at a critical receptor location, the intrusive  $L_{eq}$  noise from the noise source in question must be reduced to a level that may be as much as 10 dB below the existing  $L_{eq}$  industrial noise level.

The existing  $L_{eq}$  noise level at Gledswood Hills is shown in Table 1, with no contribution from any commercial development. Therefore the acceptable  $L_{eq}$  amenity criteria for in this area is:

- 55 - 60 dBA during the day;
- 45 - 50 dBA in the evening; and
- 40 - 45 dBA at night.



### 3.6 AAAC Noise Criteria for Outdoor Play Areas

In May 2008, the Association of Australian Acoustical Consultants (AAAC) first published the *Technical Guideline for Child Care Centre Noise Assessment*. The guideline was updated in 2010 to assist both AAAC members and local councils to assess the noise impact from proposed child care centres both accurately and fairly, (see [www.aaac.org.au](http://www.aaac.org.au)).

Although the proposed development is a new public school and therefore may produce different levels of noise than a childcare centre, there are similarities in noise emission from uses of outdoor play areas for schools and childcare centres. As students do not play outdoors continuously for long periods of time, and as the duration of time for students playing outside is reduced, the overall noise annoyance reduces. Therefore, it is reasonable to allow a higher level of noise impact for a shorter duration.

The AAAC document states that a total time limit of 2 hours of outdoor play per day (e.g. 1 hour in the morning and 1 hour in the afternoon) should allow an additional 5 dB noise impact.

We recommend that the noise criteria detailed in *Technical Guideline for Child Care Centre Noise Assessment* be applied to outdoor areas of the School.

The relevant criteria is  $L_{eq, 15min}$  noise level emitted from the outdoor play area shall not exceed the background noise level by more than 10 dB at the residential assessment location.

**Up to 2 hours (total) per day** – The  $L_{eq, 15min}$  noise level emitted from the outdoor areas shall not exceed the background noise level by more than 10 dB at the assessment location.

**More than 2 hours per day** – The  $L_{eq, 15min}$  noise level emitted from the outdoor areas shall not exceed the background noise level by more than 5 dB at the assessment location.





### 3.7 Road Traffic Noise Criteria

The NSW Road Noise Policy, in Section 2.3.1, sets out road traffic noise assessment criteria for residential land uses in Table 3. The information in that table is extracted below in Table 3.

**Table 3 Road Traffic Noise Assessment Criteria - Residential**

Road Category	Type of project/land use	Assessment Criteria – dB(A)	
		Day (7am – 10pm)	Night (10pm – 7am)
Freeway/ arterial/ sub-arterial roads	1. Existing residences affected by noise from <b>new</b> freeway/arterial/sub-arterial roads	L <sub>Aeq</sub> , (15 hour) 55 (external)	L <sub>Aeq</sub> , (9 hour) 50 (external)
	2. Existing residences affected by noise from <b>redevelopment</b> of existing new Freeway/arterial/sub-arterial roads	L <sub>Aeq</sub> , (15 hour) 60 (external)	L <sub>Aeq</sub> , (9 hour) 55 (external)
	3. Existing residences affected by <b>additional traffic</b> on existing freeways/arterial/sub-arterial roads generated by land use developments		
Local roads	4. Existing residences affected by noise from <b>new</b> local road corridors		
	5. Existing residences affected by noise from <b>redevelopment</b> of existing local roads	L <sub>Aeq</sub> , (15 hour) 55 (external)	L <sub>Aeq</sub> , (9 hour) 50 (external)
	6. Existing residences affected by <b>additional traffic</b> on existing local roads generated by land use developments		

Note: Land use developers must meet internal noise goals in the Infrastructure SEPP for sensitive developments near busy roads.

### 3.8 Project Specific Noise Emission Criteria

When all the above factors are considered, we find that the most stringent noise criterion at the nearby residential premises is:

- **47 dBA** during the day **for outdoor activities** for up to 2 hours (total) per day;
- **42 dBA** during the day for all other noise.

For commercial premises, **65 dBA** when in use.

These criteria apply at the most-affected point on or within the residential property boundary – or, if that is more than 30 metres from the residence, at the most-affected point within 30 metres of the residence. For upper floors, the noise is assessed outside the nearest window.



#### 4.0 SCHOOL NOISE EMISSION FOR OPERATION

The main sources of noise from Gledswood Hills Public School are children playing in the outdoor areas, amplified music and speech in the hall and mechanical plant. Calculations are based on the building layout provided by Perumal Pedavoli Architects dated 20 October 2017 shown in Appendix B.

##### 4.1 Children in Outdoor Areas

Children will be outside for a range of times, including before school, recess, lunch, PE classes and after school, however the outdoor areas are only likely to be at capacity during recess and lunch.

In order to model the worst case scenario of noise emission from students outdoors at play, we have assumed that 2/3 of the students will engage in active play at the one time.

Sound power levels of children at play were previously measured for other similar projects and are presented in Table 4. We believe these levels represent the typical maximum noise levels of children at play and will be used in this noise assessment.

**Table 4 Children at Play (outside)  $L_{eq}$  Sound Power Levels**

Description	Sound Power Levels (dB)								
	dBA	at Octave Band Centre Frequencies (Hz)							
	63	125	250	500	1k	2k	4k	8k	
1 Child at play – Primary School	79	54	64	69	73	76	73	68	65
1000 Primary Children at play	109	84	94	99	103	106	103	98	95

Knowing the sound power level of a noise source, the sound pressure level (as measured with a sound level meter) can be calculated at a remote location using suitable formulae to account for distance losses, sound barriers, etc.



The predicted level of noise from all students playing was used as a worst case scenario and is calculated to be as shown in Table 5 at the ground floor of the worst affected residences.

**Table 5 Predicted  $L_{eq}$  Outdoor Noise Levels**

Receptor Location	Predicted Noise Level (dBA)	AAAC Noise Criteria (dBA)	Amenity Noise Criteria (dBA)
Gledswood Hills Drive Residences (South)	56	47	55 - 60
Rymill Crescent Residences (South-West)	47	47	55 - 60
Gledswood Hills Town Centre (North)	54	65	65 - 70

The levels of noise above in Table 5 are above the acceptable noise criteria in Section 4.0 at the nearby residences to the south on Gledswood Hills Drive, however is within the amenity criteria of 55 – 60 dBA during the daytime period. Due to the land topography of the site, it is not possible to construct noise barriers to reduce noise from outdoor play. Day Design is of the opinion that the noise impact from outdoor play will only be for short periods during the day, meeting the amenity criteria of 55 – 60 dBA and considered acceptable.

#### 4.2 School Hall

The Hall will be used by students and teachers during school hours for activities such as indoor sport and fitness, assemblies, drama and music rehearsal and production. The School may be used infrequently outside of these hours by community groups and after hours school events.

A schedule of the sound power levels for loudest activities that may occur within the Hall is presented in Table 6.

**Table 6 Hall Activity  $L_{eq}$  Sound Power Levels**

Description	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dBA	63	125	250	500	1k	2k	4k	8k
Amplified music – concert	98	103	106	102	95	92	86	81	78
Fitness class – 30 people with amplified music	87	93	87	82	81	84	79	75	72
Indoor ball sports	97	71	74	79	84	94	92	87	81

The indoor sports and fitness class may occur during the daytime and are therefore compared against the daytime criteria. The amplified music during a concert may occur during the evening and is therefore compared against the evening criteria.

The predicted level of noise from activities within the hall is calculated with the roller doors open to the south as shown below in Table 7 below at the worst affected residences.

**Table 7 Predicted  $L_{eq}$  Hall Noise Levels (Roller Doors Open)**

Receptor Location	Predicted Noise Level (dBA)	Noise Criteria (dBA)	Compliance (Yes/No)
<b>Gledswood Hills Drive (South)</b>			
- Concert	44	39	No
- Fitness class	34	42	Yes
- Indoor ball sports	42	42	Yes
<b>Rymill Crescent (South-West)</b>			
- Concert	39	39	Yes
- Fitness class	29	42	Yes
- Indoor ball sports	37	42	Yes
<b>Gledswood Hills Town Centre (North)</b>			
- Concert	50	65	Yes
- Fitness class	31	65	Yes
- Indoor ball sports	39	65	Yes

The levels of noise in Table 7 are within the acceptable noise criteria in Section 4.0 and are therefore acceptable, with the exception of residences to the south during a concert after school hours.

Provided the roller doors are closed during concerts in the evenings, the level of noise at the residences directly to the south will be reduced to an acceptable level as shown in Table 8.



**Table 8 Predicted  $L_{eq}$  Hall Noise Levels (Roller Doors Closed)**

<b>Receptor Location</b>	<b>Predicted Noise Level</b>	<b>Noise Criteria</b>	<b>Compliance (Yes/No)</b>
<b>Gledswood Hills Drive (South)</b>			
- Concert	33 dBA	39 dBA	Yes
<b>Rymill Crescent (South-West)</b>			
- Concert	28 dBA	39 dBA	Yes
<b>Gledswood Hills Town Centre (North)</b>			
- Concert	49 dBA	65 dBA	Yes



#### 4.3 Public Address System and School Bell

The Gledswood Hills Public School will be provided with a public address system and a bell to signal the start and end of classes. The location of the speakers has not yet been determined however assuming up to 6 speaker locations are provided, the maximum sound pressure level should be no greater than **80 dBA** at 3 metres from each speaker in order to meet the residential noise criteria.

#### 4.4 Car Park Noise Emission

There is a total of 75 parking spaces provided for the School, over two car parking areas. A car parking area accommodating 17 vehicles is proposed to be located at the north-western corner of the School. A larger parking area will be located at the north-eastern corner of the School, accommodating 58 vehicles.

The  $L_{eq}$  sound power level and spectrum of car noise was previously measured by Day Design and is given in Table 9.

**Table 9**  $L_{eq}$  Levels of Car Park Noise

Description	dBA	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)							
		63	125	250	500	1k	2k	4k	8k
$L_{eq}$ level of Car door slam, ignition and drive away	77	89	81	74	72	71	68	66	60

We have assumed that it is likely the entire car park will be filled during the morning peak and emptied during the afternoon peak hour period. This results in a total of 75 car movements in a 1 hour period (equivalent to 19 car movements in 15 minutes).

Based on 19 car movements generated by the two car parks, the predicted level of traffic noise at the residences on Gledswood Hills Drive is 33 dBA. This level of noise is well below the acceptable noise criteria of 42 dBA in Section 3.8 and is therefore considered acceptable. All other residences are located further away and will also be acceptable.





#### 4.5 On Road Traffic Noise Emission

The traffic from the school site on local roads is assessed against the Road Noise Policy criteria of 55 dBA during the day.

AECOM, in a memorandum dated 29 Jan 2016 states in Section 5 (Table 2) that the peak traffic generated by the school site is 440 vehicle trips (39 trips per 100 students and 1 trip per teacher) visiting the school site in the morning. We have assumed that there may possibly be 10 bus trips included in the peak traffic.

The  $L_{eq}$  sound power level and spectrum of bus and car noise was previously measured by Day Design and is given in Table 10.

**Table 10**  $L_{eq}$  Levels of Car and Bus Noise

Description	dBA	Sound Power Levels (dB)							
		at Octave Band Centre Frequencies (Hz)							
		63	125	250	500	1k	2k	4k	8k
$L_{eq}$ level of car travelling 50 km/h	<b>88</b>	95	89	86	84	84	80	76	82
School Bus travelling 50 km/h	<b>101</b>	108	104	97	97	96	96	90	84

The closest receptors to The Hermitage Way are at a distance of approximately 11 metres from the road side.

In order to predict the 15 hour  $L_{eq}$  at the residential receptors, we have assumed 440 car movements before and after school and 10 bus movements before and after school. This results in a total of 880 car movements and 20 bus movements generated by the school site.

Based on 880 car movements and 20 bus movements generated by the school site per day, the predicted level of traffic noise at the residences on The Hermitage Way is 53 dBA. This level of noise is within the Road Noise Policy criteria of 55 dBA during the daytime in Section 3.7 and is therefore considered acceptable.



#### 4.6 Mechanical Plant

The location and type of mechanical plant have not yet been selected for new School. The proposed new mechanical plant will typically only operate during day time hours, Monday to Friday.

The sound power level for typical equipment used at school sites is presented in Table 11.

**Table 11 Mechanical Plant  $L_{eq}$  Sound Power Levels**

Description	dBA	Sound Power Levels (dB)							
		at Octave Band Centre Frequencies (Hz)							
		63	125	250	500	1k	2k	4k	8k
Kitchen Exhaust Fan	<b>90</b>	91	89	89	87	87	81	71	68
Supply Fan	<b>83</b>	74	76	77	80	80	73	69	61
Toilet Exhaust Fan	<b>59</b>	48	48	56	57	54	53	45	38
Split system Air Conditioner (Classrooms)	<b>71</b>	76	73	72	69	68	63	55	52
VRF Air Conditioner (Large Spaces)	<b>89</b>	82	82	85	74	87	80	77	69
Dust Extractor with Exhaust Silencer	<b>91</b>	99	94	91	90	86	79	77	77

Once mechanical plant has been selected, a final assessment should be made, prior to the issue of a Construction Certificate.



## 5.0 CONSTRUCTION NOISE AND VIBRATION CRITERIA

### 5.1 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 policies 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 6.2 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.



## 5.2 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.

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 37 dBA in the daytime, the recommended noise management level during all aspects of the construction program are summarised in Table 12 below.



**Table 12**  $L_{eq}$  Noise Management Levels from Construction Activities

Receptor Location	Noise Management Level	How to Apply
All Residential Receptors	47 dBA (37 + 10)	<p>The noise affected level represents the point above which there may be some community reaction to noise.</p> <ul style="list-style-type: none"> <li>▪ Where the predicted or measured <math>L_{Aeq(15\text{ min})}</math> 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 out, the expected noise levels and duration, as well as contact details.</li> </ul>
	Highly noise affected 75 dBA	<p>The highly noise affected level represents the point above which there may be strong community reaction to noise.</p> <ul style="list-style-type: none"> <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:               <ol style="list-style-type: none"> <li>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);</li> <li>2. if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.</li> </ol> </li> </ul>

\* 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 13 below. 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 13 Other Sensitive Land Uses**

<b>Land Use</b>	<b>Noise Management Level, <math>L_{Aeq,(15\text{ minute})}</math></b> <b>Applies when properties are being used.</b>
Passive Recreation Areas, (areas that generate no or little noise during use)	60 dBA – External Noise Level
Offices and retail outlets	70 dBA – External Noise Level





### 5.3 EPA Vibration Guideline

The NSW EPA published the *Assessing Vibration: a technical guideline* in February 2006. This guideline is based on the British Standard BS 6472:1992 "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 14 below for residential receptor locations.

**Table 14 Vibration Dose Values (VDV) from Construction Activities**

Receptor 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 BS 7385-2:1993 "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 15 below for residential buildings.

**Table 15 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.



## 6.0 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.

### 6.1 Stage 1 – Site Preparation

Site establishment works are likely to be completed within two 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 16 below.

**Table 16 Typical Site Preparation 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
Bulldozer (21 ton)	1	108
Generator	2	Up to 89
Pneumatic and Electric Hand Tools	Up to 5 simultaneously	Up to 110

<sup>^</sup>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 17 below.



**Table 17 Calculated Receptor Sound Pressure Levels from Site Preparation**

Receptor Location	Calculated Sound Pressure Levels (dBA)	Noise Management Level (dBA)	Compliance
Gledswood Hills Drive Residences (South)	57 - 61	47	No
Rymill Crescent Residences (South-West)	57 - 62	47	No
Gledswood Hills Town Centre (North)	62 - 78	70	No

## 6.2 Stage 2 – Earthworks

The Stage 2 Works will be completed within 12 months. The equipment likely to be used and their corresponding sound power levels are presented in Table 18 below.

**Table 18 Typical 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
Hydraulic Rock Breaker	Up to 2	Up to 118

<sup>^</sup>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 19 below.

**Table 19**      **Calculated Receptor Sound Pressure Levels from Earthworks**

<b>Receptor Location</b>	<b>Calculated Sound Pressure Levels (dBA)</b>	<b>Noise Management Level (dBA)</b>	<b>Compliance</b>
Gledswood Hills Drive Residences (South)	57 - 61	47	No
Rymill Crescent Residences (South-West)	57 - 62	47	No
Gledswood Hills Town Centre (North)	62 - 78	70	No
<b>Rock breaking or pile driving (If required)</b>			
Gledswood Hills Drive Residences (South)	67 - 72	47	No
Rymill Crescent Residences (South-West)	67 - 73	47	No
Gledswood Hills Town Centre (North)	73 - 88	70	No



### 6.3 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 20.

**Table 20 Recommended safe working distances for vibration generating plant**

Plant Item	Rating/Description	Safe Working Distance	
		Cosmetic Damage (BS 7385)	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 7.10 for the mitigation measures to be engaged to reduce the impact of adverse vibration.



#### 6.4 Stage 3 – Construction

The construction of the apartment blocks is estimated to take 48 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 21 below.

**Table 21 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

<sup>^</sup>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 22 below.

**Table 22 Calculated Receptor Sound Pressure Levels from Construction**

Receptor Location	Calculated Sound Pressure Levels (dBA)	Noise Management Level (dBA)	Compliance
Gledswood Hills Drive Residences (South)	55 - 60	47	No
Rymill Crescent Residences (South-West)	55 - 61	47	No
Gledswood Hills Town Centre (North)	61 - 77	70	No

Note that once the school buildings begin to be erected, the buildings will act as a noise barrier to the commercial premises to the north, reducing the level of construction noise as construction progresses.



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

The predicted level of noise (Section 6.1, 6.2, and 6.4) and vibration (Section 6.3) emission from the construction of the School show that noise levels will likely exceed the Noise Management Levels established in Section 5.2 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 7.3)
- Impulsive and tonal noise is 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 7.4)
- Management plan to ensure construction vehicles arrive and depart during construction hours only
- Reversing alarms to be of “quacker” broadband alarm style

### **7.1 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.





## 7.2 Attended Residential Noise Monitoring Procedure

The measurements will 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:  $L_{A1}$ ,  $L_{Aeq}$  and  $L_{A90}$ ; 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.

## 7.3 Noise Monitoring of Equipment

In addition to the residential noise monitoring procedures described above, the following equipment measurements will be undertaken:

- 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,  $L_{Aeq}$  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 16, 17 and 21. If noise checks on any equipment result in a prediction of non-compliance, quieter equipment will be substituted.



#### **7.4 Periods of Respite**

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

- 7:00 am to 6:00 pm, Monday to Friday inclusive; and
- 8:00 am to 1:00 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.

#### **7.5 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.



## 7.6 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 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 the site via, 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.



## 7.7 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.



## 7.8 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 (for larger projects), time of verbal response and timeframe for written response where appropriate.

## 7.9 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.



### 7.10 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 14, 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 14, 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.



## 8.0 TRAFFIC NOISE

AECOM, in a memorandum dated 29 Jan 2016 states in Section 5 (Table 2) that the peak traffic generated from the section of The Hermitage Way and surrounding roads near the school site is as follows:

- The Hermitage Way – AM Peak 1279 PM Peak 935
- New Road MC07 (North of School site) – AM Peak 473 PM Peak 627
- New Road MC06 (South of School Site) – AM Peak 782 PM Peak 20.

The NSW State Environmental Planning Policy (Infrastructure) 2007 (SEPP) details the following in Clause 102 with regards to road noise and vibration:

*This clause applies to development for any of the following purposes that is on land in or adjacent to the road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 40,000 vehicles (based on the traffic volume data published on the website of the RTA) and that the consent authority considers is likely to be adversely affected by road noise or vibration:*

- (a) a building for residential use,*
- (b) a place of public worship,*
- (c) a hospital,*
- (d) an educational establishment or child care centre.*

Given the AM and PM peak traffic flows on roads surrounding the school site as detailed above, it is unlikely that the AADT will reach 40,000, the SEPP is not applicable.

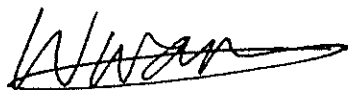




## 9.0 NOISE INTRUSION STATEMENT

Day Design Pty Ltd was engaged by Perumal Pedavoli Pty Ltd to provide acoustical advice for the proposed new Gledswood Hills Public School, located at The Hermitage Way, Gledswood Hills, NSW.

Measurements and calculations show that the level of noise emitted by the proposed Gledswood Hills Public School will be able to meet the acceptable noise level requirements of the EPA Noise Guide for Local Government as detailed in Section 4 of this report, with the exception for outdoor play, and will therefore be considered acceptable.



**William Wang**, BE (Mechatronics), MIEAust, MAAS

Senior Acoustical Engineer

for and on behalf of Day Design Pty Ltd

### AAAC MEMBERSHIP

Day Design Pty Ltd is a member company of the Association of Australian Acoustical Consultants, and the work herein reported has been performed in accordance with the terms of membership.

### Attachments:

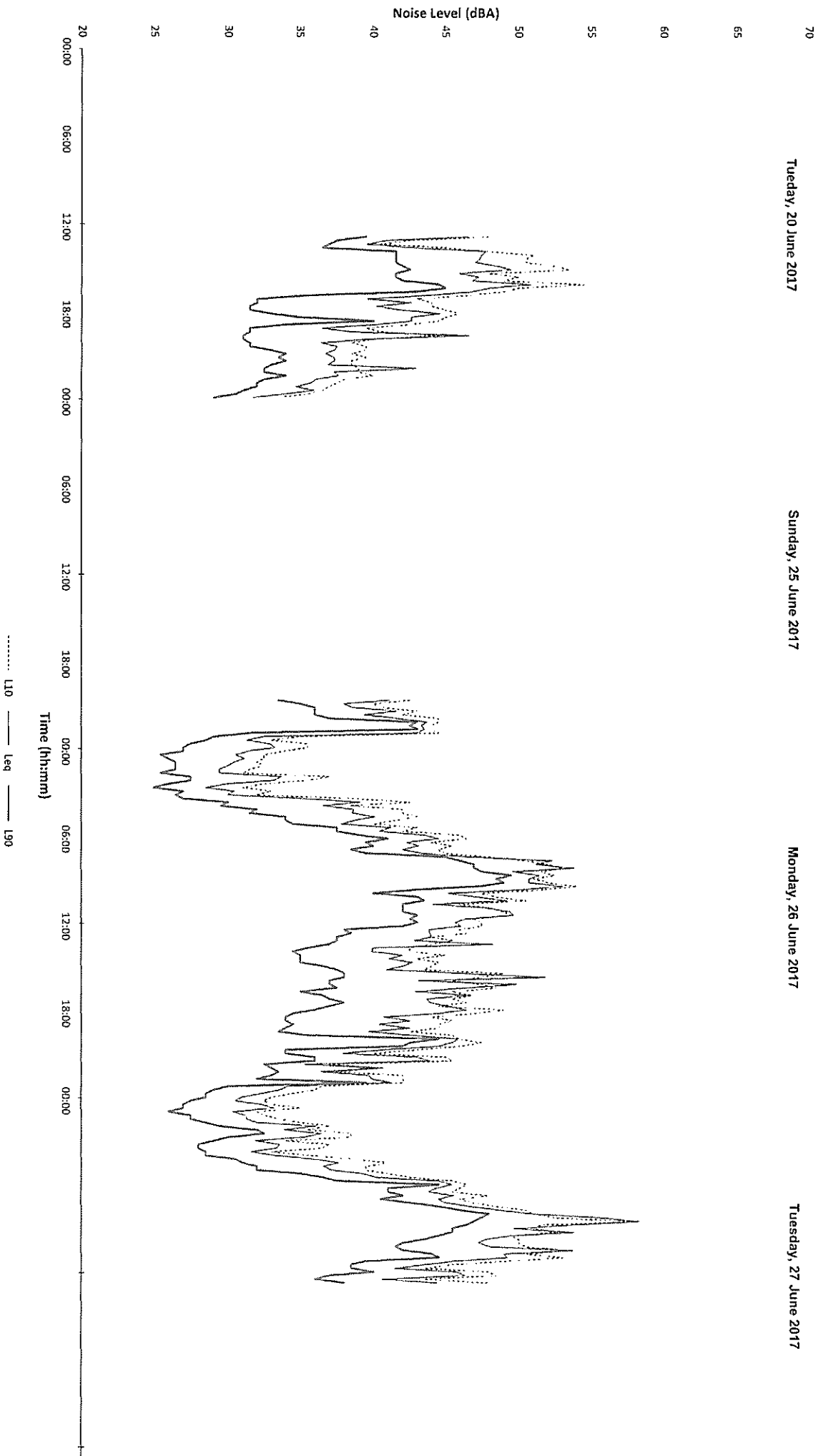
- Appendix A – Ambient Noise Survey
- Appendix B – Architectural Drawings
- AC108-1 to 4 – Glossary of Acoustical Terms



AMBIENT NOISE SURVEY

6130-1  
Appendix A

Located at 72 The Hermitage Way, Gledswood Hills, NSW



NO.	REVISION	DATE
1	ISSUED FOR PERUMAL PEDAYOCCI	20/10/2017
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**NSW**  
GOVERNMENT

**Education**

PERUMAL PEDAYOCCI

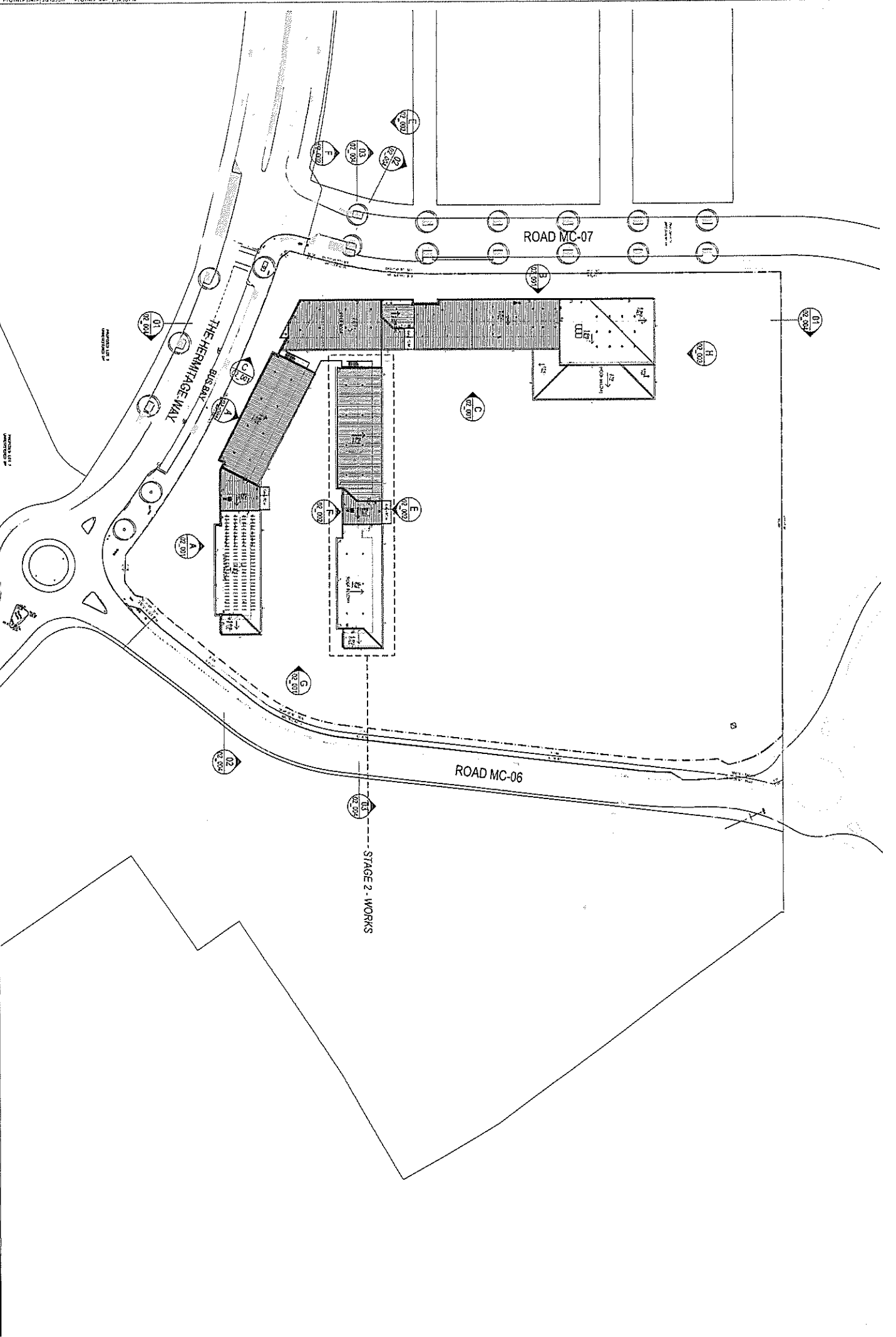
**GLEDSDOOD HILLS PUBLIC SCHOOL**  
HERNIMAGE WAY  
GLEDSDOOD HILLS NSW 2867

ROOF PLAN

SCALE 1:500 @ A1

20 OCTOBER 2017

3198 ARC SD 01 006 D



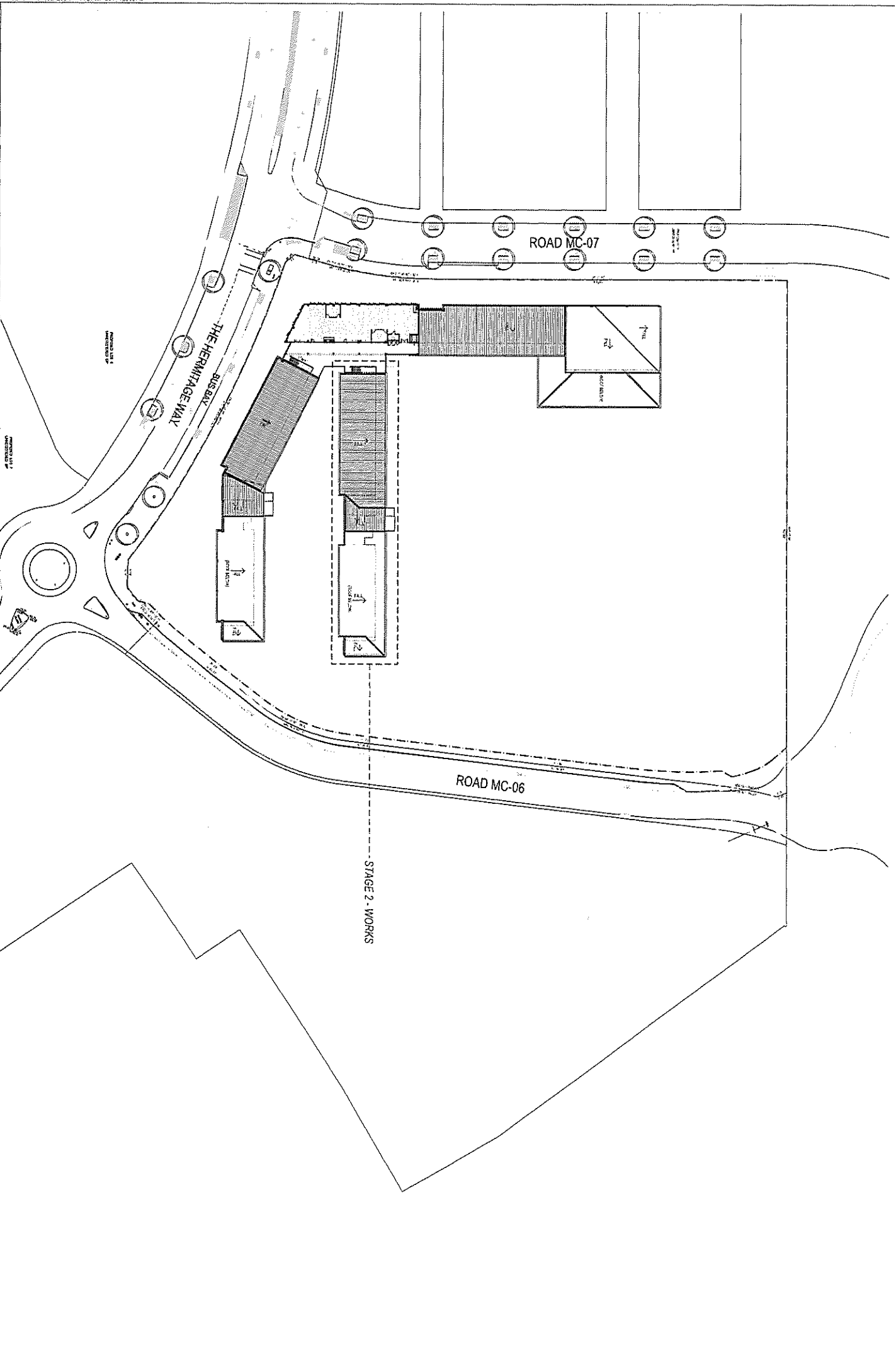
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**NSW GOVERNMENT**  
**Education**  
 PERUMAL PEBAVOLU  
 ARCHITECTS

**GLEDSDOWN HILLS PUBLIC SCHOOL**  
 GLEDSDOWN HILLS NSW 2157  
 THIRD FLOOR  
 SITE PLAN

SCALE 1:500 GAT  
 20 OCTOBER 2017  
 3190 ARC SD 01 005 D



NO.	DESCRIPTION	DATE
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2	ISSUED FOR PERMITS	2015/07
3	ISSUED FOR CONSTRUCTION	2015/07
4	ISSUED FOR AS-BUILT	2015/07
5	ISSUED FOR FINAL	2015/07

PROJECT NO.	132434
PROJECT NAME	GLEDSDOWN HILLS PUBLIC SCHOOL
CLIENT	NSW GOVERNMENT
DESIGNER	PERUMAL PEDAVOLI ARCHITECTS
DATE	2015/07

NO.	DESCRIPTION	DATE
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4	ISSUED FOR AS-BUILT	2015/07
5	ISSUED FOR FINAL	2015/07

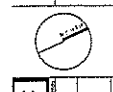


Education

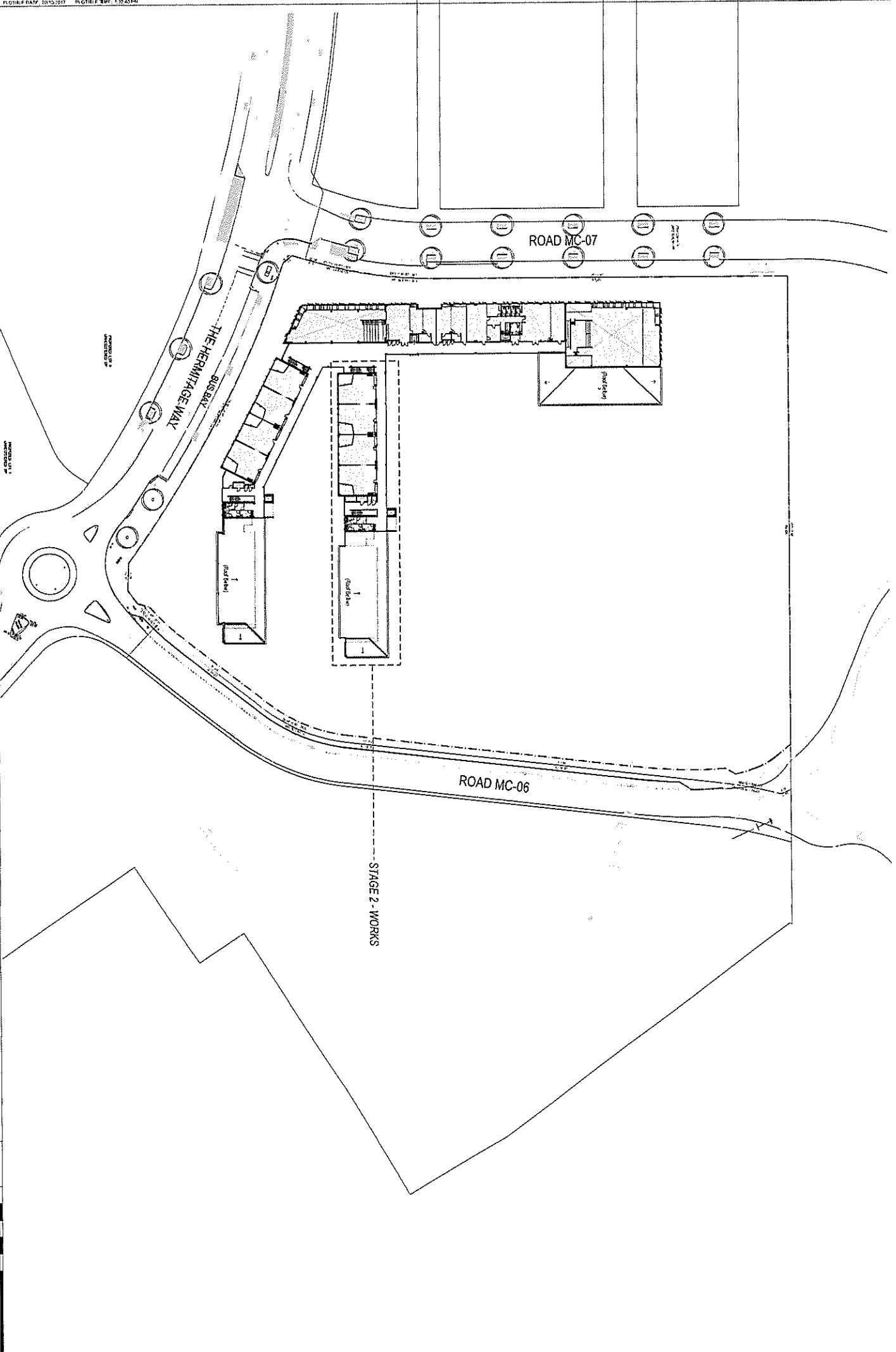
PERUMAL PEDAVOLI ARCHITECTS

GLEDSDOWN HILLS PUBLIC SCHOOL

SECOND FLOOR SITE PLAN

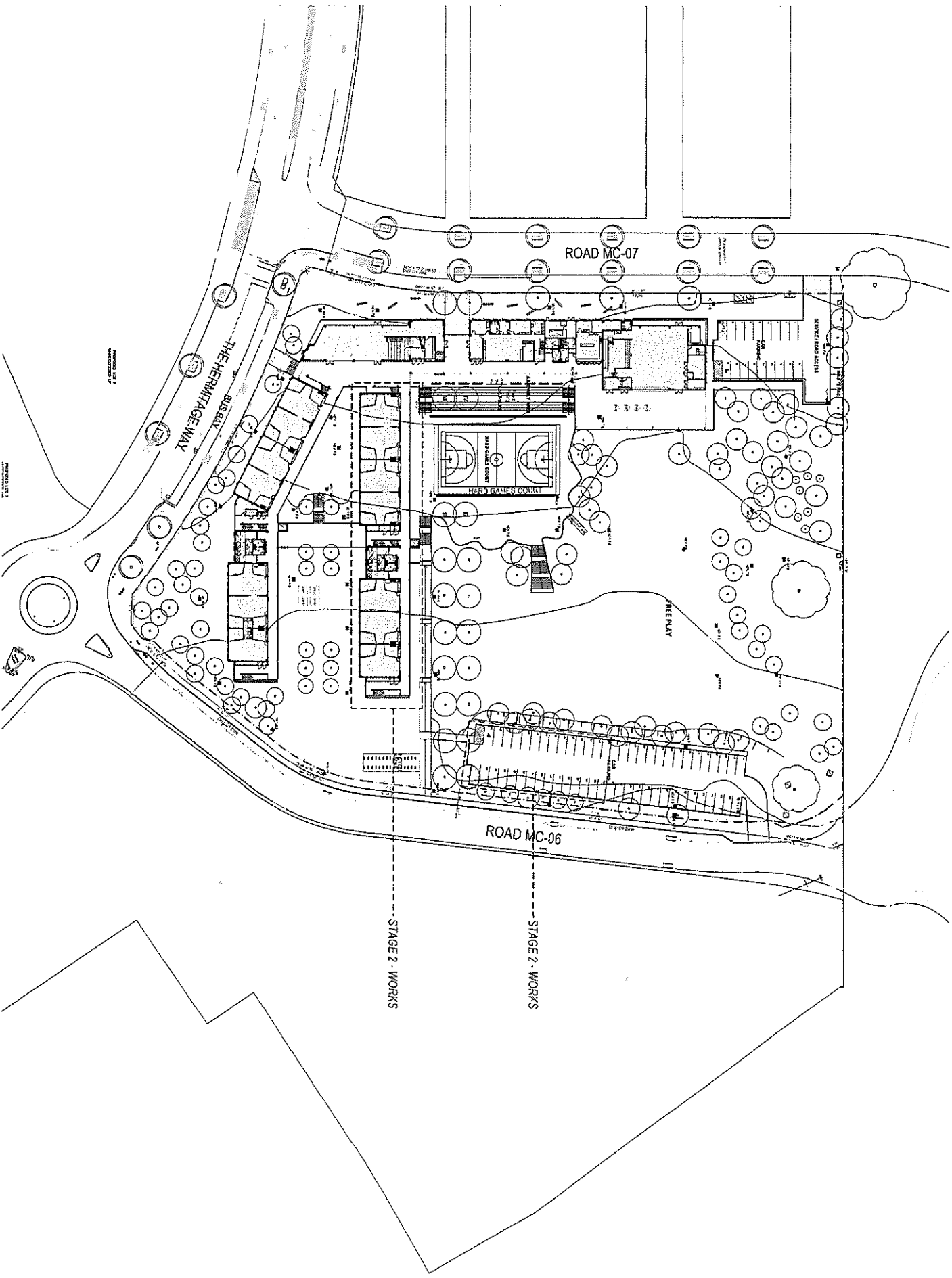


3188 ARC SD 01 004 D



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THE HERMITAGE WAY  
 BUSWAY  
 ROAD MC-07



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PROJECT NAME	GLEDSDOOD HILLS PUBLIC SCHOOL
CLIENT	NSW GOVERNMENT
DATE	2015/10/20
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DRAWN BY	ARC
CHECKED BY	SD
DATE	2015/10/20

DESIGNER	ARC
DATE	2015/10/20
SCALE	1:500
DRAWN BY	ARC
CHECKED BY	SD
DATE	2015/10/20



**Education**

PERUVAL PEDAVOLT

GLEDSDOOD HILLS PUBLIC SCHOOL  
 GLEDSDOOD HILLS NSW 1851

FIRST FLOOR  
 SITE PLAN



20 OCTOBER 2015  
 SCALE 1:500 @ A1  
 3198 ARC SD 01 003 D

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CLIENT	NSW GOVERNMENT
DESIGNER	PERUMAL PEDAVOLI
DATE	20/10/2011

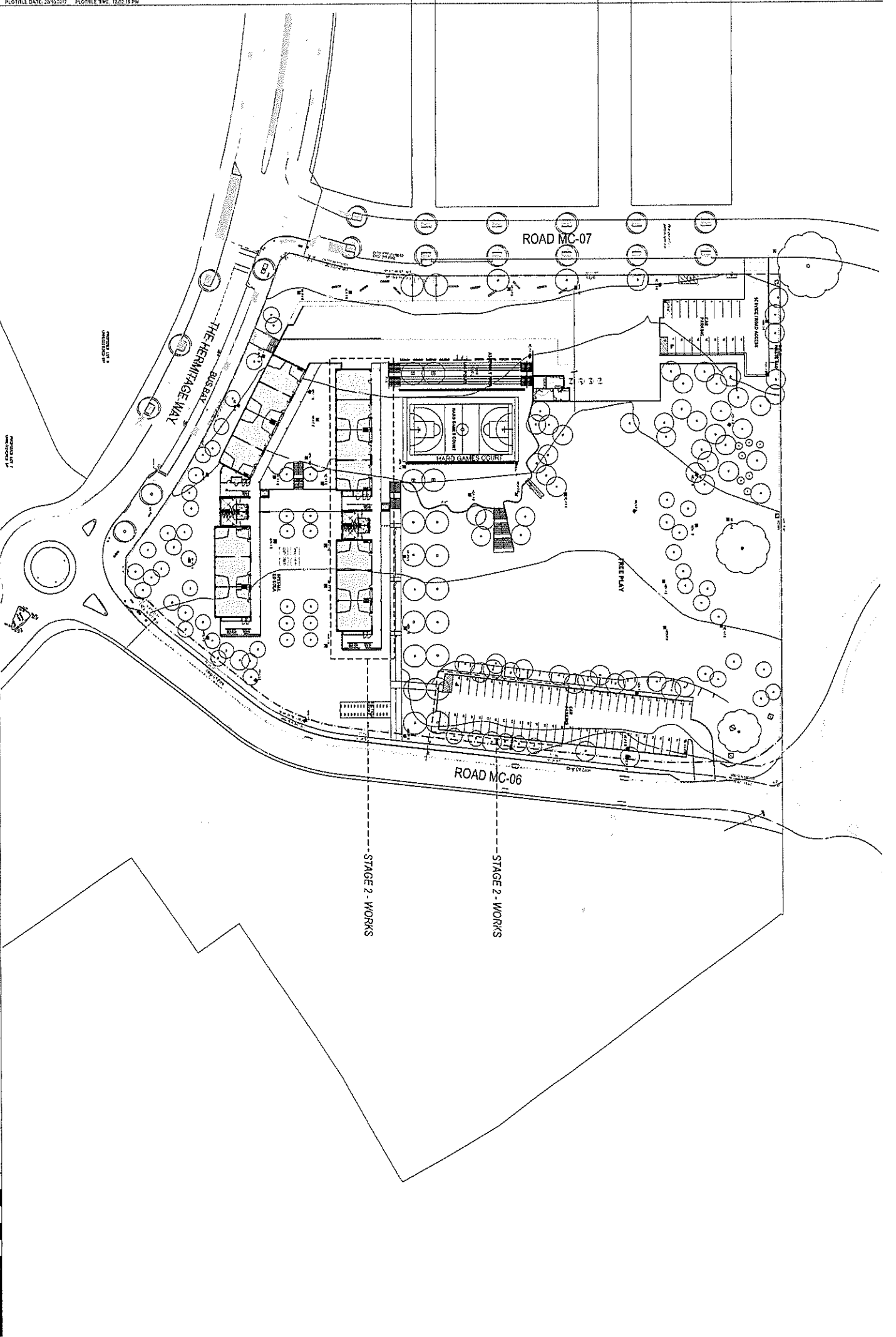
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20	15/09/2011	REVISED PER PERMIT CONDITIONS

**NSW**  
GOVERNMENT  
**Education**

**PERUMAL PEDAVOLI**  
ARCHITECTS

**GLEDSDOWN HILLS HERITAGE WAY PUBLIC SCHOOL**  
GLEDSDOWN HILLS NSW 2857  
GROUND FLOOR  
SITE PLAN

SCALE 1:500 @ A1  
20 OCTOBER 2011  
3198 ARC SD 01 002 D

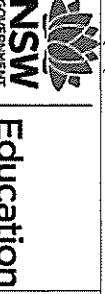




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17	REVISED	28/12/2017	ARC
18	REVISED	28/12/2017	ARC
19	REVISED	28/12/2017	ARC
20	REVISED	28/12/2017	ARC

NOTES:  
 1. THIS PLAN IS TO BE USED IN CONNECTION WITH THE TENDERS FOR THE CONSTRUCTION OF THE LOWER GROUND FLOOR OF THE GLEDSDWOOD HILLS PUBLIC SCHOOL.  
 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE RELEVANT AUTHORITIES.  
 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE RELEVANT AUTHORITIES.  
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PROJECT NO.	17/00000000000000000000
PROJECT NAME	GLEDSDWOOD HILLS PUBLIC SCHOOL
PROJECT ADDRESS	GLEDSDWOOD HILLS NSW 2557
PROJECT CONTACT	PERUMAL PEDAVOLI
PROJECT PHONE	08 8333 3333
PROJECT FAX	08 8333 3333
PROJECT EMAIL	perumal.pedavoli@arc.com.au
PROJECT WEBSITE	www.arc.com.au
PROJECT SOCIAL MEDIA	www.facebook.com/arc.com.au
PROJECT YOUTUBE	www.youtube.com/arc.com.au
PROJECT INSTAGRAM	www.instagram.com/arc.com.au
PROJECT TWITTER	www.twitter.com/arc.com.au
PROJECT LINKEDIN	www.linkedin.com/company/arc.com.au
PROJECT GITHUB	www.github.com/arc.com.au
PROJECT BITBUCKET	www.bitbucket.com/arc.com.au
PROJECT MEDIUM	www.medium.com/arc.com.au
PROJECT DEV	www.dev.com/arc.com.au
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PROJECT NETFLIX	www.netflix.com/arc.com.au
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PROJECT SONY	www.sony.com/arc.com.au



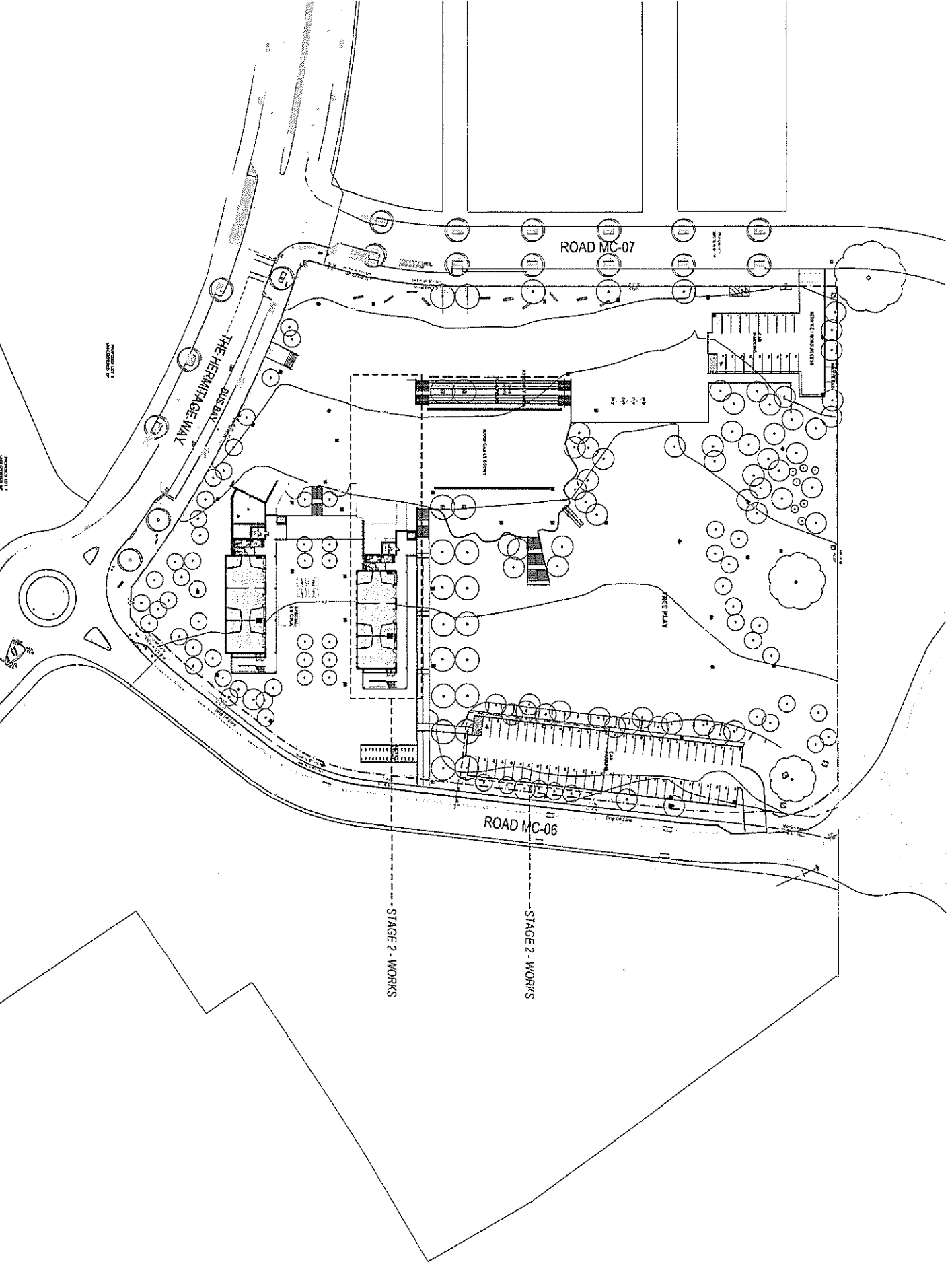
PERUMAL PEDAVOLI  
 17/00000000000000000000  
 GLEDSDWOOD HILLS PUBLIC SCHOOL  
 GLEDSDWOOD HILLS NSW 2557

PERUMAL PEDAVOLI  
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 GLEDSDWOOD HILLS PUBLIC SCHOOL  
 GLEDSDWOOD HILLS NSW 2557

GLEDSDWOOD HILLS  
 PUBLIC SCHOOL  
 GLEDSDWOOD HILLS NSW 2557  
 LOWER GROUND FLOOR  
 SITE PLAN



SCALE 1:500  
 20 OCTOBER 2017  
 3198 ARC SD 01 001 D



**ACOUSTICAL** – Pertaining to the science of sound, including the generation, propagation, effects and control of both noise and vibration.

**AMBIENT NOISE** – The ambient noise level at a particular location is the overall environmental noise level caused by all noise sources in the area, both near and far, including road traffic, factories, wind in the trees, birds, insects, animals, etc.

**AUDIBLE** – means that a sound can be heard. However, there are a wide range of audibility grades, varying from “barely audible” to “just audible”, “clearly audible” and “prominent”. Chapter 83 of the NSW Environment Protection Authority – Environmental Noise Control Manual (1985) states:

*“noise from a particular source might be offensive if it is clearly audible, distinct from the prevailing background noise and of a volume or character that a reasonable person would be conscious of the intrusion and find it annoying or disruptive”.*

It follows that the word “audible” in an environmental noise context means “clearly audible”.

**BACKGROUND NOISE LEVEL** – Silence does not exist in the natural or the built-environment, only varying degrees of noise. The Background Noise Level is the average minimum dBA level of noise measured in the absence of the noise under investigation and any other short-term noises such as those caused by cicadas, lawnmowers, etc. It is quantified by the  $L_{A90}$  or the dBA noise level that is exceeded for 90 % of the measurement period (usually 15 minutes).

- **Assessment Background Level (ABL)** is the single figure background level representing each assessment period – day, evening and night (ie three assessment background levels are determined for each 24hr period of the monitoring period). Determination of the assessment background level is by calculating the tenth percentile (the lowest tenth percent value) of the background levels ( $L_{A90}$ ) for each period (refer: NSW Industrial Noise Policy, 2000).
- **Rating Background Level (RBL)** as specified by the Environment Protection Authority is the overall single figure ( $L_{A90}$ ) background noise level representing an assessment period (day, evening or night) over a monitoring period of (normally) three to seven days.

The RBL for an assessment period is the median of the daily lowest tenth percentile of  $L_{90}$  background noise levels.

If the measured background noise level is less than 30 dBA, then the Rating Background Level (RBL) is considered to be 30 dBA.

**DECIBEL** – The human ear has a vast sound-sensitivity range of over a thousand billion to one. The decibel is a logarithmic unit that allows this same range to be compressed into a somewhat more comprehensible range of 0 to 120 dB. The decibel is ten times the logarithm of the ratio of a sound level to a reference sound level. See also Sound Pressure Level and Sound Power Level.

Decibel noise levels cannot be added arithmetically since they are logarithmic numbers. If one machine is generating a noise level of 50 dBA, and another similar machine is placed beside it, the level will increase to 53 dBA, not 100 dBA. Ten similar machines placed side by side increase the sound level by 10 dBA, and one hundred machines increase the sound level by 20 dBA.

**dBA** – The human ear is less sensitive to low frequency sound than high frequency sound. We are most sensitive to high frequency sounds, such as a child’s scream. Sound level meters have an inbuilt weighting network, termed the dBA scale, that approximates the human loudness response at quiet sound levels (roughly approximates the 40 phon equal loudness contour).



However, the dBA sound level provides a poor indication of loudness for sounds that are dominated by low frequency components (below 250 Hz). If the difference between the "C" weighted and the "A" weighted sound level is 15 dB or more, then the NSW Industrial Noise Policy recommends a 5 dBA penalty be applied to the measured dBA level.

**dBC** – The dBC scale of a sound level meter is similar to the dBA scale defined above, except that at high sound intensity levels, the human ear frequency response is more linear. The dBC scale approximates the 100 phon equal loudness contour.

**EQUIVALENT CONTINUOUS NOISE LEVEL,  $L_{Aeq}$**  – Many noises, such as road traffic or construction noise, vary continually in level over a period of time. More sophisticated sound level meters have an integrating electronic device inbuilt, which average the A weighted sound pressure levels over a period of time and then display the energy average or  $L_{Aeq}$  sound level. Because the decibel scale is a logarithmic ratio the higher noise levels have far more sound energy, and therefore the  $L_{Aeq}$  level tends to indicate an average which is strongly influenced by short term, high level noise events. Many studies show that human reaction to level-varying sounds tends to relate closely to the  $L_{Aeq}$  noise level.

**FREE FIELD** – This is a sound field not subject to significant reflection of acoustical energy. A free field over a reflecting plane is usually outdoors with the noise source resting on hard flat ground, and not closer than 6 metres to any large flat object such as a fence or wall; or inside an anechoic chamber.

**FREQUENCY** – The number of oscillations or cycles of a wave motion per unit time, the SI unit being the Hertz, or one cycle per second.

**IMPACT ISOLATION CLASS (IIC)** – The American Society for Testing and Materials (ASTM) has specified that the IIC of a floor/ceiling system shall be determined by operating an ISO 140 Standard Tapping Machine on the floor and measuring the noise generated in the room below. The IIC is a number found by fitting a reference curve to the measured octave band levels and then deducting the sound pressure level at 500 Hz from 110 decibels. Thus the higher the IIC, the better the impact sound isolation.

**IMPACT SOUND INSULATION ( $L_{nT,w}$ )** – Australian Standard AS ISO 717.2 – 2004 has specified that the Impact Sound Insulation of a floor/ceiling system be quantified by operating an ISO 140 Standard Tapping Machine on the floor and measuring the noise generated in the room below. The Weighted Standardised Impact Sound Pressure Level ( $L_{nT,w}$ ) is the sound pressure level at 500 Hz for a reference curve fitted to the measured octave band levels. Thus the lower  $L_{nT,w}$  the better the impact sound insulation.

**IMPULSE NOISE** – An impulse noise is typified by a sudden rise time and a rapid sound decay, such as a hammer blow, rifle shot or balloon burst.

**INTRUSIVE NOISE LEVEL,  $L_{Aeq}$**  – The level of noise from a factory, place of entertainment, etc. in NSW is assessed on the basis of the average maximum noise level, or the  $L_{Aeq(15 min)}$ . This is the energy average A weighted noise level measured over any 15 minute period.

**LOUDNESS** – The degree to which a sound is audible to a listener is termed the loudness. The human ear perceives a 10 dBA noise level increase as a doubling of loudness and a 20 dBA noise increase as a quadrupling of the loudness.



**MAXIMUM NOISE LEVEL,  $L_{Amax}$**  – The rms maximum sound pressure level measured on the "A" scale of a sound level meter during a noise survey is the  $L_{Amax}$  noise level. It may be measured using either the Fast or Slow response time of the meter. This should be stated.

**NOISE RATING NUMBERS** – A set of empirically developed equal loudness curves has been adopted as Australian Standard AS1469-1983. These curves allow the loudness of a noise to be described with a single NR number. The Noise Rating number is that curve which touches the highest level on the measured spectrum of the subject noise. For broadband noise such as fans and engines, the NR number often equals the dBA level minus five.

**NOISE** – Noise is unwanted sound. Sound is wave motion within matter, be it gaseous, liquid or solid. "Noise includes sound and vibration".

**NOISE REDUCTION COEFFICIENT** – See: "Sound Absorption Coefficient".

**OFFENSIVE NOISE** - (Reference: Dictionary of the Protection of the Environment Operations Act 1997). *"Offensive Noise means noise:*

- (a) *that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:*
  - (i) *is harmful to (or likely to be harmful to) a person who is outside the premise from which it is emitted, or*
  - (ii) *interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or*
- (b) *that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances prescribed by the regulations."*

**PINK NOISE** – Pink noise is a broadband noise with an equal amount of energy in each octave or third octave band width. Because of this, Pink Noise has more energy at the lower frequencies than White Noise and is used widely for Sound Transmission Loss testing.

**REVERBERATION TIME,  $T_{60}$**  – The time in seconds, after a sound signal has ceased, for the sound level inside a room to decay by 60 dB. The first 5 dB decay is often ignored, because of fluctuations that occur while reverberant sound conditions are being established in the room. The decay time for the next 30 dB is measured and the result doubled to determine the  $T_{60}$ . The Early Decay Time (EDT) is the slope of the decay curve in the first 10 dB normalised to 60 dB.

**SOUND ABSORPTION COEFFICIENT,  $\alpha$**  –  $\alpha$  Sound is absorbed in porous materials by the viscous conversion of sound energy to heat energy as the sound waves pass through it. Sound is similarly absorbed by the flexural bending of internally damped panels. The fraction of incident energy that is absorbed is termed the Sound Absorption Coefficient,  $\alpha$ . An absorption coefficient of 0.9 indicates that 90 % of the incident sound energy is absorbed. The average  $\alpha$  from 250 to 2000 Hz is termed the Noise Reduction Coefficient (NRC).

**SOUND ATTENUATION** – If an enclosure is placed around a machine, or a silencer is fitted to a duct, the noise emission is reduced or attenuated. An enclosure that attenuates the noise level by 30 dBA, reduces the sound energy by one thousand times.

**SOUND EXPOSURE LEVEL (SEL)** – The total sound energy of a single noise event condensed into a one second duration or in other words it is an  $L_{eq}$  (1 sec).



**SOUND PRESSURE LEVEL,  $L_p$**  – The level of sound measured on a sound level meter and expressed in decibels, dB, dBA, dBC, etc.  $L_p = 20 \times \log (P/P_0) \dots \text{dB}$

where P is the rms sound pressure in Pascal and  $P_0$  is a reference sound pressure of 20  $\mu\text{Pa}$ .  
 $L_p$  varies with distance from a noise source.

**SOUND POWER LEVEL,  $L_w$**  – The Sound Power Level of a noise source is an absolute that does not vary with distance or with a different acoustic environment.

$$L_w = L_p + 10 \log A \dots \text{dB, re: } 1\text{pW,}$$

where A is the measurement noise-emission area in square metres in a free field.

**SOUND TRANSMISSION CLASS (STC)** – An internationally standardised method of rating the sound transmission loss of partition walls to indicate the decibels of noise reduction of a human voice from one side to the other. (Refer: Australian Standard AS1276 – 1979)

**SOUND TRANSMISSION LOSS** – The amount in decibels by which a random sound is reduced as it passes through a sound barrier. A method for the measurement of airborne Sound Transmission Loss of a building partition is given in Australian Standard AS1191 - 2002.

**STATISTICAL EXCEEDENCE SOUND LEVELS,  $L_{A90}$ ,  $L_{A10}$ ,  $L_{A1}$ , etc** – Noise which varies in level over a specific period of time (usually 15 minutes) may be quantified in terms of various statistical descriptors:

The  $L_{A90}$  is the dBA level exceeded for 90 % of the time. In NSW the  $L_{A90}$  is measured over periods of 15 minutes, and is used to describe the average minimum or background noise level.

The  $L_{A10}$  is the dBA level that is exceeded for 10 % of the time. In NSW the  $L_{A10}$  measured over a period of 10 to 15 minutes. It was until recently used to describe the average maximum noise level, but has largely been replaced by the  $L_{Aeq}$  for describing level-varying noise.

The  $L_{A1}$  is the dBA level that is exceeded for 1 % of the time. In NSW the  $L_{A1}$  may be used for describing short-term noise levels such as could cause sleep arousal during the night.

**STEADY NOISE** – Noise, which varies in level by 6 dBA or less, over the period of interest with the time-weighting set to “Fast”, is considered to be “steady”. (Refer AS 1055.1 1997)

**WEIGHTED SOUND REDUCTION INDEX,  $R_w$**  – This is a single number rating of the airborne sound insulation of a wall, partition or ceiling. The sound reduction is normally measured over a frequency range of 100 to 3,150 Hertz and averaged in accordance with ISO standard weighting curves (Refer AS/NZS 1276.1:1999).

Internal partition wall  $R_w + C$  ratings are frequency weighted to simulate insulation from human voice noise. The  $R_w + C$  is always similar in value to the STC rating value. External walls, doors and windows may be  $R_w + C_{tr}$  rated to simulate insulation from road traffic noise. This is normally a lower number than the STC rating value.

**WHITE NOISE** – White noise is broadband random noise whose spectral density is constant across its entire frequency range. The sound power is the same for equal bandwidths from low to high frequencies. Because the higher frequency octave bands cover a wider spectrum, white noise has more energy at the higher frequencies and sounds like a hiss.







APPENDIX E

# GLEDSWOOD HILLS PUBLIC SCHOOL

## WASTE MANAGEMENT PLAN



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## 1 Introduction

Waste management plans (WMP) have a key role to play in achieving sustainable waste management. Their main purpose is to give an outline of waste streams and treatment options. More specifically they aim to provide a planning framework for waste management process.

This Waste Management plan (WMP) describes how Hindmarsh Construction will manage the Waste removal responsibilities of the site for the successful delivery and construction of the Gledswood Hills Project. It sets out responsibilities and targets for waste management throughout the construction phase of project.

This plan will be submitted a copy of the plan to the Planning Secretary and to the Sydney City Council prior to the commencement of work

### 1.1 Aims

- To achieve Company objectives and targets that generated waste from the project at least 90% will be recycled.
- To meet NSW Environmental Protection Agency “Rules and Guidance for Managing Construction and Demolition Waste”.
- To apply relevant information from available reference documents
- Promotes the implementation of the waste management hierarchy, improves resource recovery and reduces waste going to landfill
- Helps avoid or minimise the risks of environmental harm from waste management.
- To control, minimise and salvage waste at construction waste
- To provide improved options for regulating illegal dumping and inappropriate stockpiling

### 1.2 Objectives

The objectives of the Waste Management Plan are to provide a suitable method of removing waste from site. It is also to encourage and recognise management practices that minimise the amount to construction waste going to landfill and provide the following:

- Eliminating or minimising the amount of waste material brought to site
- Sorting the type and storing waste for appropriate disposal
- Disposal of all waste practicable by recycling
- Control of toxic and dangerous waste
- Relevant local recycling facilities and firms

- Minimising land-fill waste disposal
- Introduce and make aware plan to all subcontractors working onsite
- To adopt and implement the Waste Management Plan throughout the project. Monitor performance and review plan as required

## 2 Responsibilities

Hindmarsh's responsibilities as follow:

- Implement the Waste Management Plan (WMP)
- Secure waste bins and protect from contamination
- Communicate WMP and strategies to subcontractors during induction and safety meetings etc. Indicate where bins are located to all subcontractors.
- Ensure everyone working onsite is aware of their obligations and responsibilities
- Keeping disposal dockets and receipts
- Share findings of the monthly recycling % achieved as required

## 3 Glossary / Abbreviations

ACM	Asbestos Containing Material
CLM Act	Contaminated Land Management Act 1997
Compass	Hindmarsh Management System
CoP	Code of Practice
EIG	Environmental Impact Guides
EMMP	Environmental Management Plan
EMS	Environmental Management System
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Authority NSW
GSW	General Solid Waste
Hindmarsh	Hindmarsh Constructions Australia
LEP	Local Environmental Plan
POEO Act	Protection of the Environment Operations Act 1997
Project, the	Gledswood Hills Public School
RSW	restricted solid waste
SWNSW	SafeWork NSW
VENM	Virgin excavated natural material
WHS Act 2011	NSW Workplace Health & Safety Act 2011
WHS Regulation 2017	NSW Workplace Health & Safety Regulation 2017

## 4 Reference Documents

Environmental Site Assessment and Remediation Action Plan	Environmental Investigation Services	31 MAY 2018
Site Safety Plan for Targeted Hazardous Materials Survey	Greencap NAA	September 2015
Asbestos Clearance Inspection	EHO Consulting	19 March 2018
Waste Classification Guidelines Part 1	EPA	2014
Waste – Construction and Operational Waste Management Plan	Foresight Environmental	October 2017
Waste classification guidelines Part 4: Acid Sulphate soils	EPA	2014
How to safely remove asbestos	SafeWorkNSW	Sept 2016
How to manage and control asbestos in the workplace	SafeWorkNSW	Sept 2016

## 5 Construction Stages

The project has been provided with demolition completed, with only some insitu retaining walls remaining. Clearance certificates have been provided for demolition and ACM removal.

The stages of work will consist of:

- Cut and fill excavation
- Detailed excavations
- Structure
- Fit out

During these stages Hindmarsh will utilise the Hindmarsh Compass management procedures for unexpected finds of potential hazardous contaminated waste material

## 6 Hazardous Materials Management

The site is generally a brownfield site, existing buildings or building materials have been removed and it is anticipated for removal remaining retaining walls will be re used or treated as GSW and disposed at and EPA approved waste management facility.

All asbestos, hazardous and/or intractable wastes are to be disposed of in accordance with SafeWork NSW and EPA requirements.

Hindmarsh or its agents will notify Transport Management Centre (TMC) of the truck route(s) to be followed by trucks transporting waste material from the Site, prior to the commencement of the removal of any waste material from the Site.

Hindmarsh will apply applicable Compass procedures in the safe management of any identified hazardous materials.

- Health Surveillance, Exposure Monitoring, Hazardous Substances
- Asbestos

## 6.1 Removal or Remediation of Hazardous Materials

Identified Hazardous Materials shall be competently managed in accordance with the following EPA guidelines:

- Part 1: Classifying waste
- Part 4: Acid sulphate soils

Unexpected Finds of Asbestos shall be managed in accordance with NSW WHS Act 2011 and WHS Regulation 2017 and SWNSW codes of practice:

- How to safely remove asbestos
- How to manage and control asbestos in the workplace

Details demonstrating compliance with the relevant legislative requirements, associated with the removal of hazardous waste, particularly the method of containment and control of emission of fibres to the air, are to be submitted to the satisfaction of the Certifying Authority as appropriate prior to the removal of any hazardous materials.

## 7 Construction Waste Management

Hindmarsh will engage a specialist waste management contractor to sort individual recycling bins for cardboard, metal, concrete and general mix waste. Hindmarsh have sourced a waste plan from Bingo and this will be provided as a separate document to this plan. RSW and GSW materials if required to be removed from site will transported to an approved waste management facility for processing.

Hindmarsh or its agents will notify Transport Management Centre (TMC) of the truck route(s) to be followed by trucks transporting waste material from the Site, prior to the commencement of the removal of any waste material from the Site.

### 7.1 Waste Strategies

Hindmarsh is going to use and follow the “AVOID-REDUCE-REUSE-RECYCLE” framework from the waste management hierarchy to reduce waste on the project. The waste management hierarchy (figure as below) is recognised internationally as an aspiration framework for sustainability.



## Avoid

- Encourage Subcontractors to consider modular and prefabricated construction materials that minimise onsite waste
- Encourage Subcontractors to plan and choose method of construction to minimise waste. For example: Plan the use of plasterboard/glass cuttings and reuse offcuts where applicable.

## Reduce

- Encourage Subcontractors to limit waste when purchasing materials with minimal packaging, and consider recycling packaging off site and bringing minimal items to site, while ensuring goods are not damaged during delivery.
- Encourage Subcontractors to control purchasing to limit over-ordering & to encourage buying of recycled or recyclable materials where appropriate.

## Reuse & Recycle

Implement plan of action that indicate the collection systems, waste management facilities and responsibilities. locations of on-site storage facilities for material to be reused on-site, or separated for recycling off-site; and destination and transportation routes of all materials to be either recycled or disposed of off-site.

Waste to be collected by the waste management company for recycling and re use. Specific waste listed below will be managed by:

- re-use of excavated material on-site and disposal of any excess to an approved site;
- green-waste mulched and re-used in landscaping either on-site or off-site;
- bricks, tiles and concrete re-used on-site as appropriate, or recycled off-site;
- plasterboard re-used in landscaping on-site, or returned to supplier for recycling;
- timber re-used on-site or recycled elsewhere;
- windows, doors and joinery recycled off-site;

- Polystyrene recycled off-site
- plumbing, fittings and metal elements recycled off-site;
- Metal, an individual label waste bin is to be provided for any scrap metal waste on site. All metal waste on site will be collected and recycled into the individual bin and removed from site.
- Concrete waste on site will be monitored to not generate any waste water discharging into the stormwater system. Concrete slurry is to be dried and then to be disposed of in the appropriate manner.
- Synthetic Mineral Fibres Insulation will be controlled recycled off-site. Hindmarsh will implement CoP for the Safe Use of Synthetic Mineral Fibres 1993

The Percentages/Volume and mass amounts of recycled materials are to be maintained and monitored throughout the duration of the project and collected to note the required amount of recyclable materials that were completed over the duration of the project.

## 7.2 Removal of Construction Waste

Hindmarsh will liaise with the nominated waste management contractor for changeover bins and waste bin collections.

- Bin lifters or similar may be used to load waste materials into allocated bins. Minimum of manual tasks are required.
- Bins are loaded wholly within the site onto dump trucks with no risk damaging the public surrounding
- Hindmarsh to take all measure to keep dust a minimum when waste are collected

## 7.3 Recycling and Re use plan

The nominated waste management contractor will report against the Hindmarsh target of at least 90% of waste material is recycled or reused. The monthly recycle plan is attached for Just Skip Bins and will demonstrate evidence that the waste streams were effectively sorted and that recycling has occurred of each waste stream.

The nominated waste management contractor have indicated that have a number of EPA licenced recycling facilities in Sydney all with systems and processes that are ISO 14001 compliant. All facilities operate separately from any landfill operations and comply with Green Star credit rating requirements, providing auditable and accurate reporting on:

- The verification of resources recovered and recycled
- Waste residual separation vs recyclables (type, volume and weight)
- Non-conforming waste and the corrective action taken



- Current weighbridge maintenance certification and operational procedures
- In-bound and outbound facility waste balances

A monthly report will be provided to Hindmarsh

## 8 Controls

Hindmarsh to take all measure to keep dust and noise to a minimum when waste are collected. All waste on site to be monitored and is not to generate any surplus waste water discharging into the stormwater system.

As part of Hindmarsh Compass systems and the Environment Management Plan, Environmental Impact Guides (EIGs) have been developed. EIGs provide project team with general guidance in the management of each respective environmental impact, describes the processes involved, the control measures to be implemented, the monitoring and reporting requirements.

EIGs include:

- acid sulphate soil,
- noise,
- vibration,
- liquid pollution controls
- Land Contaminate
- Storage, Handling Hazardous / Dangerous Substances / Materials
- Hindmarsh will monitor the EIGs by reporting the inspections using Weekly Environmental & Sustainability Checklist.

Any potential hazardous and liquid waste identified onsite are required to report to the Project Manager and disposal in accordance with EPA requirements



# Roosters Traffic Control



**Hindmarsh**

**Gledswood Hills Public School**

**The Hermitage Way, Gledswood Hills**

**Traffic Management Plan**

**Author: Paul Winter**

**Date: 10<sup>th</sup> Oct 2018**

## Contents

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• Pedestrian Management Plan	10
• Site Access Plan	11
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## **Introduction;**

This traffic management plan (TMP) has been prepared on behalf of the applicants Hindmarsh to review the traffic arrangements to be implemented during the development of Gledswood Hills Public School, The Hermitage Way, Gledswood Hills.

**Please Note;** Roosters Traffic Control accepts responsibility for the preparation of this traffic management plan (TMP), but does not accept responsibility for its implementation if it is to be undertaken by other parties.

## **The Project & Project Background;**

Hindmarsh has been engaged by the principal – NSW Government Education, to develop the site at The Hermitage Way, Gledswood Hills Between Road MC-07 and Road MC-06.

## **Key Stakeholders:**

- Roads and Maritime Service – N/A – **Heavy Vehicle Route Notification Only**
- Camden Council – 70 Central Ave, Oran Park NSW 2570  
Ph. 02 4654 7777, Fax. 02 4654 7829  
E. [Mail@camden.nsw.gov.au](mailto:Mail@camden.nsw.gov.au)
- Busabout – 44a Bluett Dr, Smeaton Grange NSW 2567  
Ph. 02 4631 4200, Fax. 02 9647 0400  
E. [customerservice@busabout.com.au](mailto:customerservice@busabout.com.au)
- Utility Providers E.g. Gas, Power, Water, - as Per DA
- Local Shops and services – **Letter Box Drops and / or local advertisements**
- any other Residences – **Letter Box Drops and / or local advertisements**
- Hindmarsh – Suite 2, Level 27, 100 Miller Street, North Sydney NSW 2060  
Ph. 02 9274 1100 Fax. 02 6427 8898  
E: [nsw@hindmarsh.com.au](mailto:nsw@hindmarsh.com.au)
- Roosters Traffic Control  
Ph. 1300 365 903 Fax. 02 4647 6013  
E: [info@roosterstraffic.com.au](mailto:info@roosterstraffic.com.au)

**The Location; UBD Map, 305 Ref, L – 12.**

Gledswood Hills Public School Site located on The Hermitage Way between Road MC-06 and Road MC 07 and is approximately 195m East of Creekside Place and approximately 173m West of Parkers Farm Place.



**Figure 1**



**Figure 2 – Source Google Maps**



### **Proposed Works:**

#### **Deliveries / loading and unloading of vehicles during the development of Gledswood Hills Public School.**

- All deliveries, unloading and loading of vehicles shall be contained to the site area, ample room shall be provided for vehicles to enter and leave the site in a forward direction.

#### **Site Access and Heavy Vehicle Routes:**

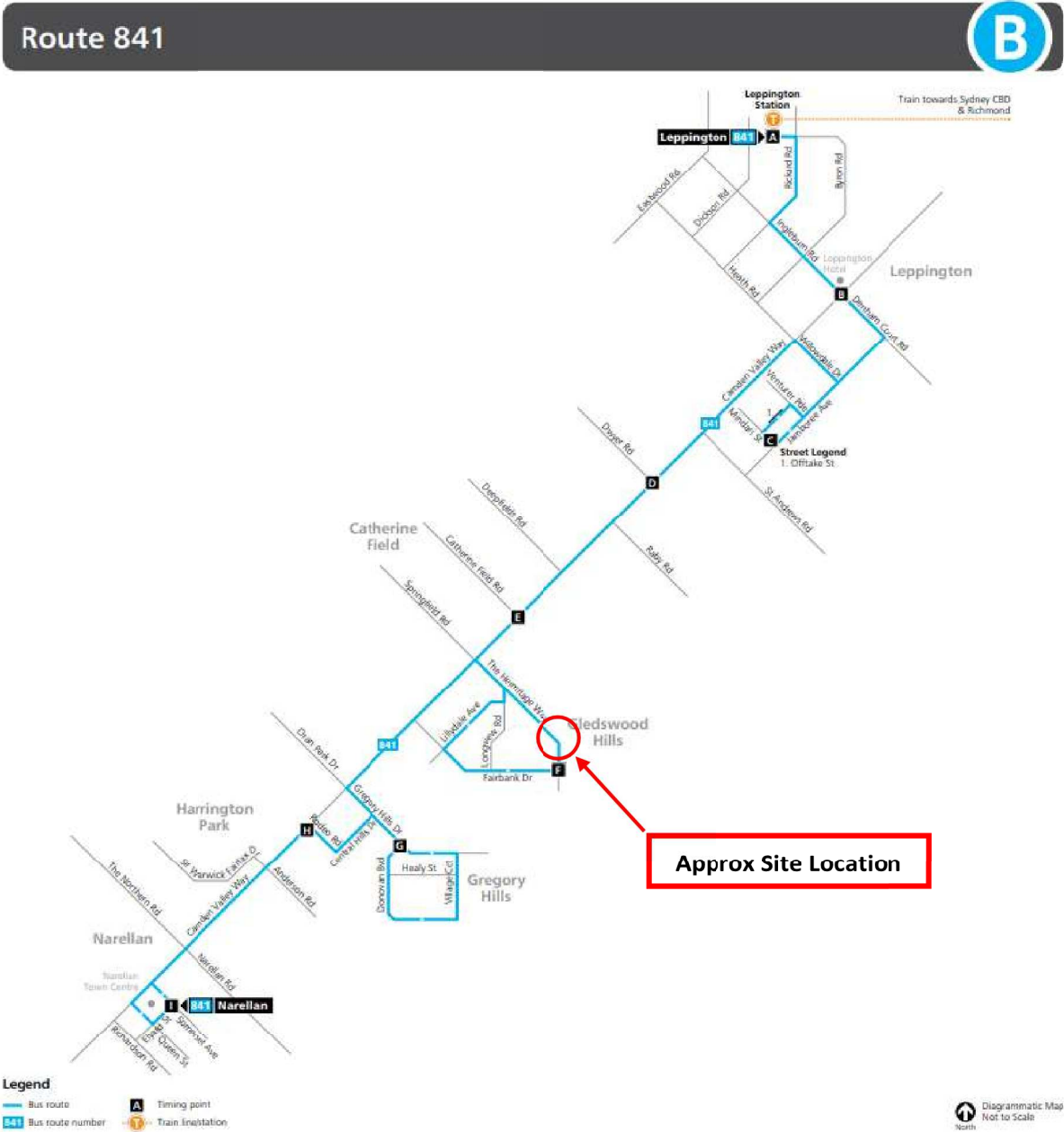
- It is recommended that all heavy vehicles travel to and from the site area using the most direct route on RMS state and regional roads where possible.
- The most direct route to the site shall be via Camden Valley Way and The Hermitage Way, Attachment C shows vehicle access routes from the main roads, Camden Valley Way and The Hermitage Way.
- **Consider the use of a traffic controller or spotter for vehicles needing to reverse into or out of site on all Roads.**
- **Any works affecting the road reserve e.g. Crane works / large deliveries that cannot fit within the site areas, Car park, driveway and / or footpath excavation works will require the approval of Camden council, see pg. 2 Key Stake Holders for contact information.**



**Bus Route Information:**

These works may affect Busabout bus service route 841, there are bus stops located on The Hermitage Way, Fairbank Dr and Lilydale Ave. Works should be planned to minimise any disruption to Bus routes, Bus Stops and traffic flows. contact should be made with relevant Transport providers prior to works.

**See pg. 2 Key Stake Holders for contact information.**

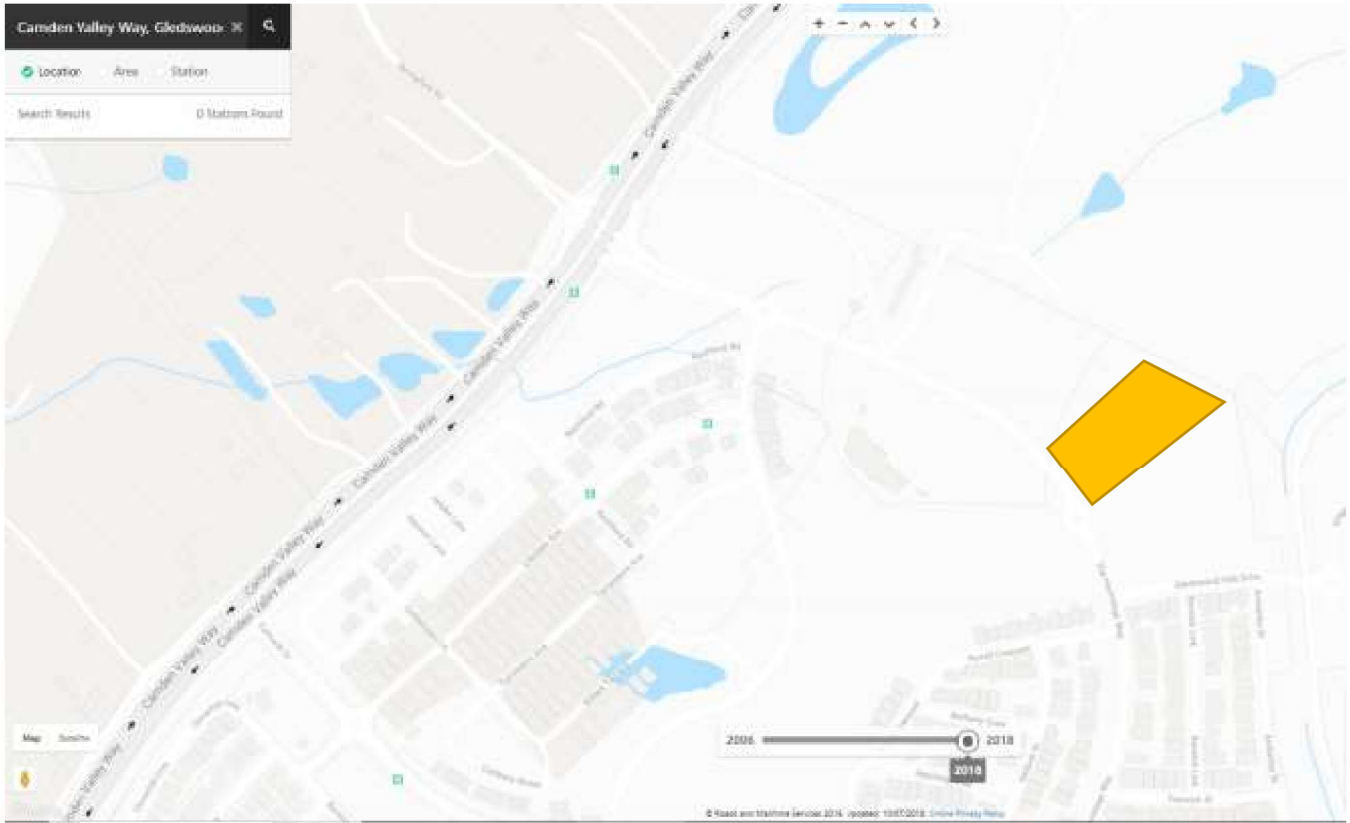


**Fig 3 – courtesy of**

[https://busabout.com.au/pdf/timetables/841\\_timetable.pdf](https://busabout.com.au/pdf/timetables/841_timetable.pdf)

**Traffic Volume Data;**

**Location:** The Hermitage Way and Camden Valley Way, Gledswood Hills.



**Fig 4 – courtesy of**

<http://www.rms.nsw.gov.au/about/corporate-publications/statistics/traffic-volumes/aadt-map/index.html>

### **Proposed construction schedule**

Site operation hours are between the hours of 7.00am to 5.00pm Mondays to Friday and 7.00am to 3.30pm Saturdays.

### **Heavy Vehicle Movements Per Day:**

- **Earthworks – On Site;** Approx. 20 Truck and (Dog) Trailer movements are expected over the length of a normal shift (10hrs).
- **Soil Export – Off Site;** Approx. 20 Truck and (Dog) Trailer movements are expected over the length of a normal shift (10hrs). Expected duration 15 Days.
- **Concrete pours;** up to <30 Concrete agitators per day.
- **General Construction;** 1-2 Semi Truck Trailer combinations per day for general deliveries e.g. roof sheeting, steel deliveries, pre-cast panels etc.

### **Construction Traffic**

A restriction to on street parking shall be required, all contractor parking and delivery vehicles shall be contained to the site areas and / or off-street car park areas provided.

A driver code of conduct shall be provided to all drivers and will be adhered to at all times during all stages of the works.

### **Neighbouring Properties:**

There shall be an effort to ensure there is Minimal disruption to parking facilities for neighbouring properties during any stage of works at the afore mentioned site,

### **Pedestrians:**

There are minimal pedestrian traffic movements past the work site frontage on The Hermitage Way. All works affecting the nature reserve area between the site boundary and the road way, e.g. Kerb / gutter, service connection etc should refer to attachment A

Site specific Tcp's may need to be created for separate specific situations and events when required and will need the approval of Camden Council prior to start of any works.



**Advertising: Letter Box Drops, Newspaper advertisements etc.**

Contractor and/or Principal to arrange prior to works or as per DA conditions

**Pedestrian Management Plan:**

Please see attached – attachment A

**Vehicle Access Plan:**

Please see attached – Attachment B

**Heavy Vehicle Movement Plan:**

Please see attached – Attachment C

A handwritten signature in black ink, appearing to read 'Paul Winter', is positioned above a dotted line.

.....

**Paul Winter**

**Roosters Traffic Control**

**0408 481 670**

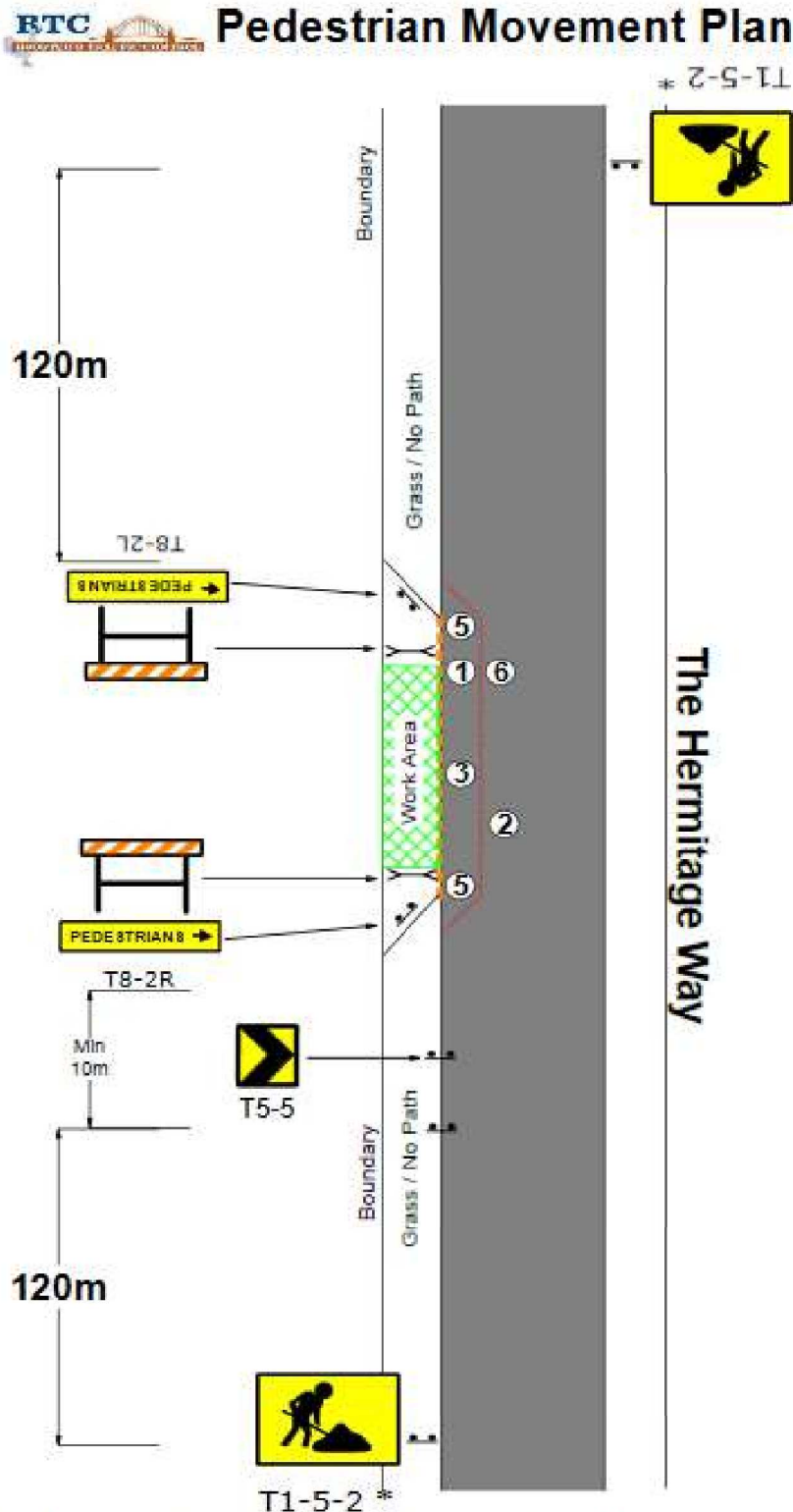
**Date 2<sup>nd</sup> September 2018**

**RMS Accreditation**


**Prepare Work zone Traffic Management Plan**

**0044558061 Exp 29-08/2020**

# Attachment A; Pedestrian Management Plan



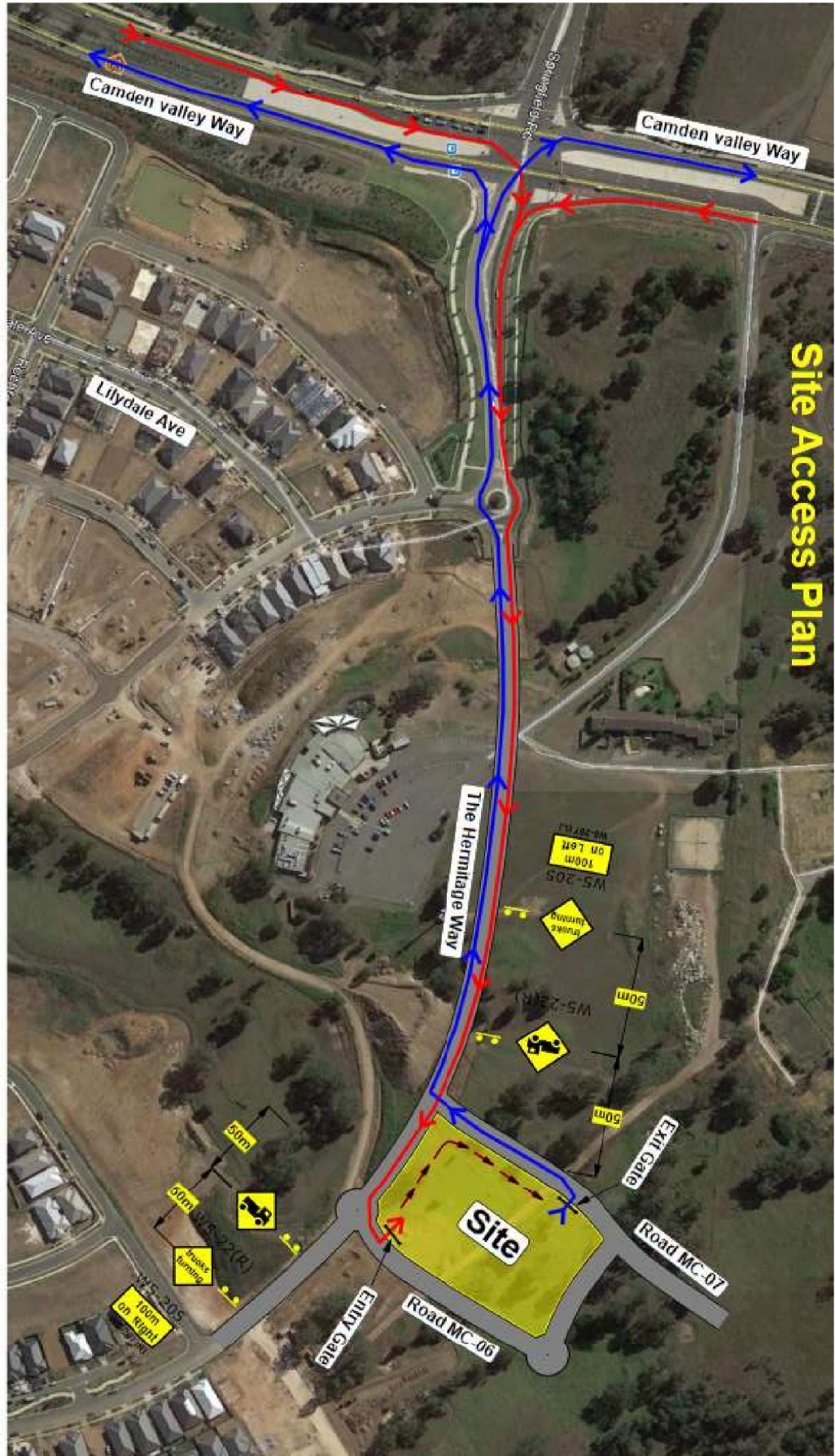
1. Prohibit vehicles from stopping along the length of narrowed carriageway.
2. Provide a minimum traffic lane width of 3.0m (desirable 3.5m)
3. Provide a minimum clear width of 1.2m (desirable 2m) for pedestrian traffic.
4. Arrange vehicular access across the work area using portable barriers or plastic mesh fencing.
5. Provide a temporary ramp for prams and a safe path for pedestrians.
6. Ensure that the requirements of Traffic Control at Worksites, section 3.6, safe clearances between workers and through traffic, at static work sites are met for pedestrians.

 <b>Changes to TOI</b> Prepare Workzone TMAP Ticket Number: Signature of Card Holder: Date:	 <b>BTC</b> ROOSTER'S TRAFFIC CONTROL	Job Location: <b>The Hermitage Way Gledswood Hills</b>
		Client: <b>Hindmarsh</b>
Date: <b>28/01/2018</b>	Job Reference: <b>PW_HTMP1</b>	Order Contact:
Signature: <b>[Signature]</b>	Issue Short Term - up to one day / shift: <b>1 of 1</b>	Mobile Number:
Date: <b>28/01/2018</b>	Volume / AADT: <b>UNKNOVN</b>	Job Number:
Signature: <b>[Signature]</b>	Remaining Lane Width: <b>3.2m</b>	Control: <b>Pedestrian Plan</b>
Signature: <b>[Signature]</b>	Posted Speed: <b>50</b>	Road Type: <b>ASPHALT</b>
Signature: <b>[Signature]</b>	Traffic Control Operation: <b>None</b>	Scale: <b>N/A</b>





Attachment B; Site Access Plan

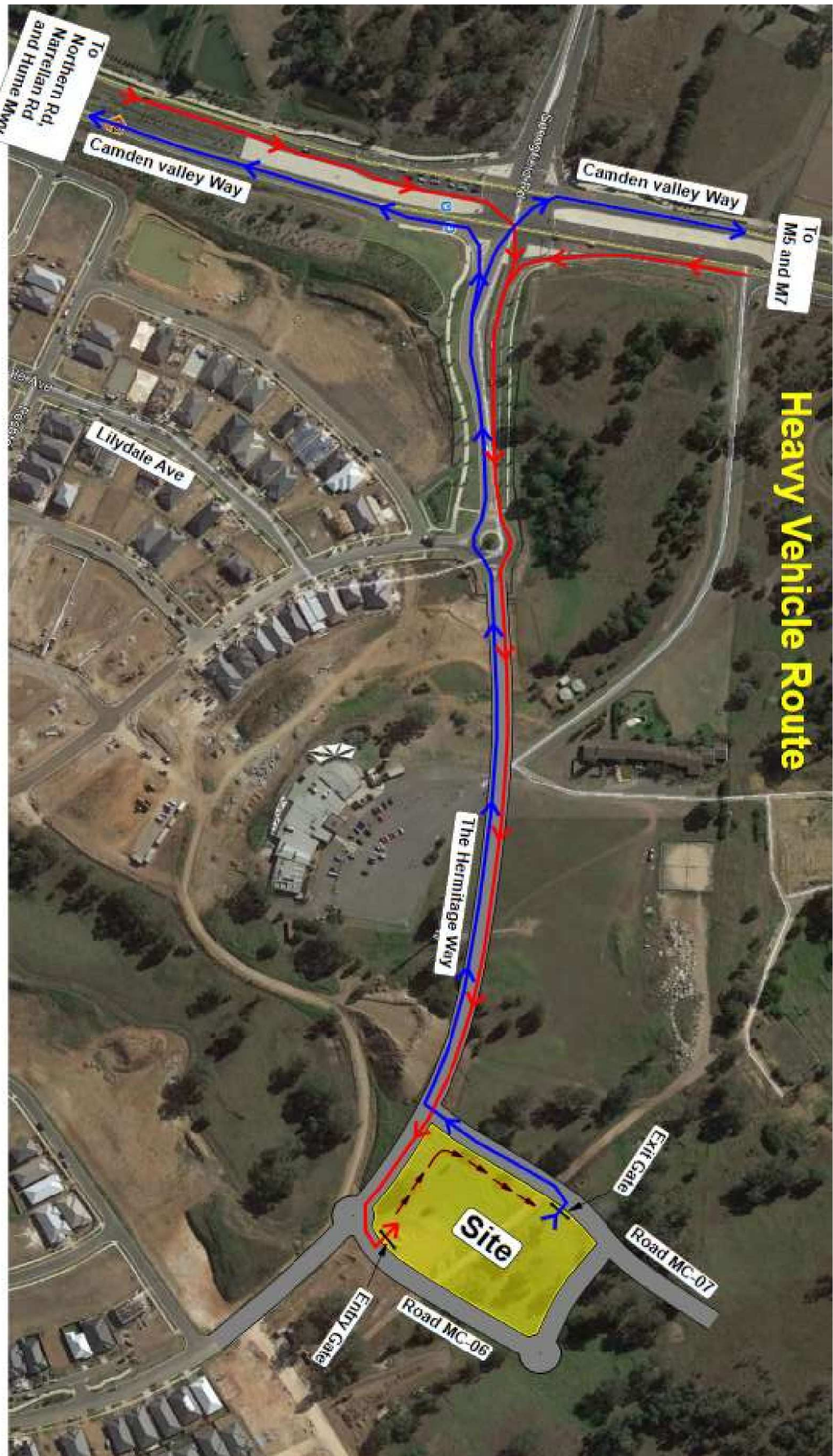
 <b>Changes to TGS</b> Prepare Workzone TMP Ticket Number: Signature of Card Holder: Date:	Drawn by: <b>Paul Winter</b> License Number: <b>04458061</b> Date: <b>29-08-20</b>
	All signs and equipment in accordance with the (CAHS 2007) based on a TGS 
Job Location: <b>The Hermitage Way Gledswood Hills</b> Client: <b>Hindmarsh</b> Drawing Number: <b>PW-HTMP1</b> In Reference to Diagram: <b>TCAWS V5 2018</b> Volume / AADT: <b>UNKNOWN</b> Remaining Lane Width: <b>3.2m</b> Traffic Control Operator: <b>None</b>	Onsite Contact: Sheet: <b>1</b> of <b>1</b> Term: Short Term - up to one day / shift Direction: <b>All</b> Posted Speed: <b>50</b> Worksite Speed: <b>50</b> Scale: <b>N/A</b>
Mobile Number: Draw Date: <b>10/10/2018</b> Control: <b>Site Access</b> Road Type: <b>ASPHALT</b>	Scale: <b>N/A</b>





Attachment C; Heavy Vehicle Movement Plan

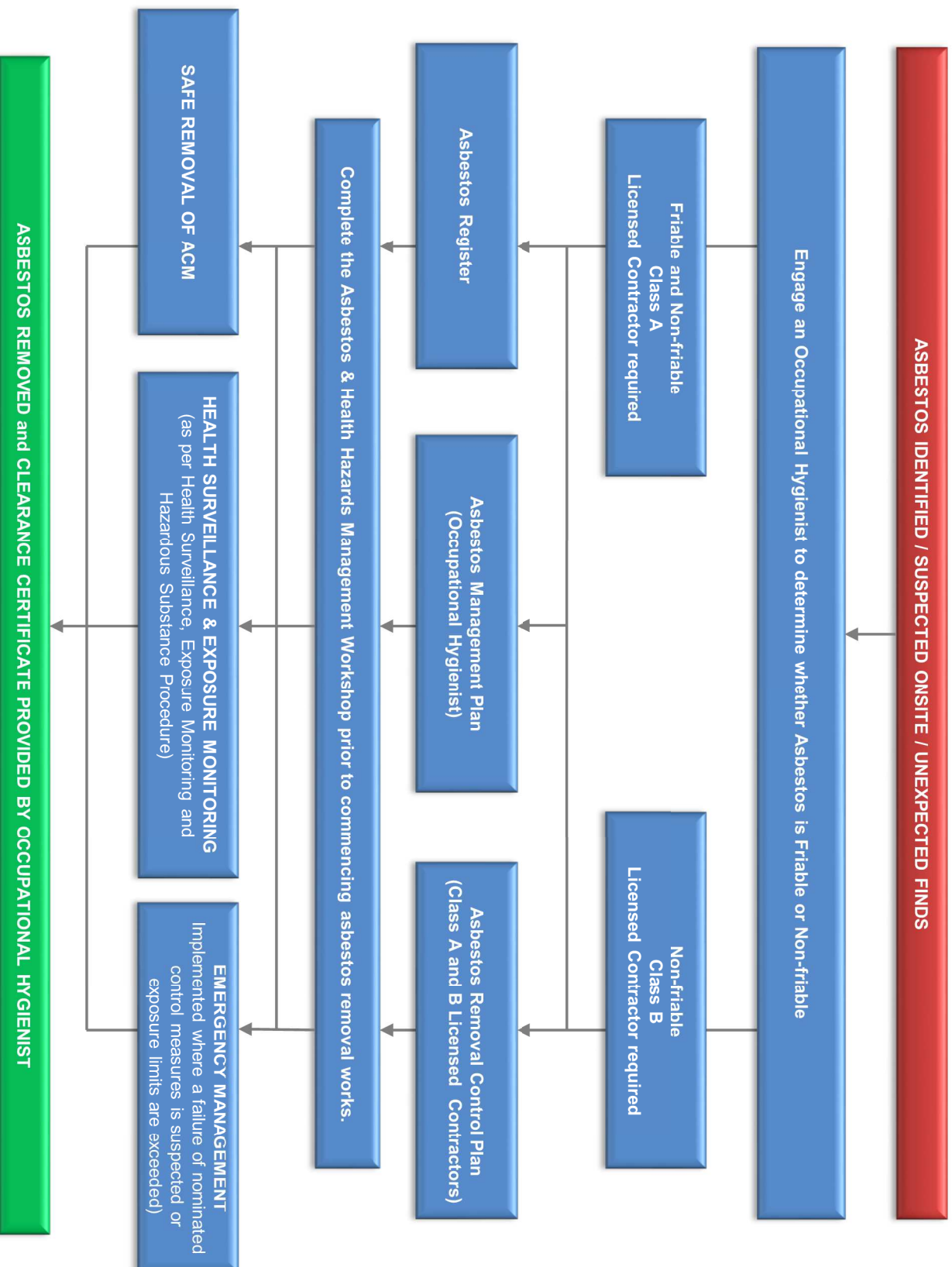
 <b>Changes to TGS</b> Prepare Workzone TMP Ticket Number: Signature of Card Holder: Date:	 <b>RTC</b> ROOSTER'S TRAFFIC CONTROL	Job Location: <b>The Hermitage Way Gledswood Hills</b>	
		Client: <b>Hindmarsh</b> Drawing Number: <b>PW-HTMP2</b> In Reference to Diagram: <b>TCAMS V5 2018</b> Volume / AADT: <b>UNKNOWN</b> Remaining Lane Width: <b>3.2m</b> Traffic Control Operation: <b>None</b>	Onsite Contact: Speed: <b>1</b> of <b>1</b> Term: Short Term - up to one day / shift Direction: <b>All</b> Posted Speed: <b>50</b> Worksite Speed: <b>50</b> Scale: <b>N/A</b>
Drawn By: <b>Paul Winter</b> License Number: <b>0444550061</b> Issue Date: <b>29-08-20</b>	Mobile Number: Draw Date: <b>10/10/2018</b> Control: <b>Vehicle Routes</b> Road Type: <b>ASPHALT</b>		



**Heavy Vehicle Route**



This flowchart shall be read in accordance with the Asbestos Procedure to assist management of Asbestos onsite.



**ACM** - Asbestos Containing Material

**TYPES OF ASBESTOS:**

- Friable
- Non-friable

**ASBESTOS REMOVAL LICENCES:**

- Class A – licenses the contractor to carry out work with friable and non-friable asbestos
- Class B – licenses the contractor to carry out work with non-friable asbestos ONLY

**EMERGENCY MANAGEMENT:**

- Cease work and evacuate work area
- Work area shall be made safe and secured if safe to do so
- Notify potentially affected workers and the regulator
- Review monitoring activities and nominated control measures
- Conduct an incident investigation in consultation with State SOE Managers in accordance with the Incident Management Procedure

**UNEXPECTED FINDS OF ACM:**

- In the event of an unexpected find of ACM, Hindmarsh site management shall
  - Cease work in the area and adjacent work areas and establish a 10m exclusion zone;
  - Communicate the unexpected find and immediate control measures to potentially affected workers and the regulator; and
  - Initiate actions in accordance with the above action steps