

OAKDALE WEST INDUSTRIAL ESTATE

Building 3B Construction Environmental Management Plan

Prepared for:

Goodman Property Services (Aust) Pty Ltd
The Hayesbery
1-11 Hayes Road
Rosebery NSW 2018

PREPARED BY

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goodman Property Services (Aust) Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

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1 Introduction

1.1 Development Overview

Oakdale West Industrial Estate (Oakdale West) is a regional warehouse and distribution hub, located at Kemps Creek within the Penrith local government area (LGA) and forms part of the broader Oakdale Industrial Precinct located within the Western Sydney Employment Area (WSEA). (see **Figure 1**).

Goodman Property Services (Aust) Pty Ltd (Goodman) obtained Development Consent SSD 7348 for the staged development of Oakdale West Industrial Estate (Oakdale West) comprising a warehousing and a distribution hub at Kemps Creek in Western Sydney. SSD 7348 incorporates the approval of a 'Concept Proposal' to guide the future development of the estate and consent for the 'Stage 1 Development' and all subsequent stages. The Stage 1 Development includes construction of the proposed Western North South Link Road (WNSLR), site-wide bulk earthworks, estate wide basins, and lead-in services. It also includes infrastructure and associated services, landscaping, and construction and use approval for Precinct 1 (**Figure 1**).

Stage 1 works, in accordance with SSD 7348 have been completed in accordance with the Stage 1 CEMP. Stage 1 works are not included in this CEMP.

SSD 7348 has since been modified seven times with the most recent modification (MOD 7) expected to be approved early October 2021. The modification seeks minor changes to the building layout within Precinct 3 and 4 with subsequent amendments to bulk earthworks and pad levels to accommodate these layout changes. Consequentially, it also results in the deletion of part Estate Road 7. Amendments to conditions are proposed relating to building fence height within Precinct 1 and night-time use of mechanical plant and forklift which will allow complete 24 hour, 7 days operation of Building 4E without acoustic concerns (Keylan 2021).

A copy of Development Consent SSD 7348 (as modified) is attached as **Appendix A**.

The development of Lot 3B in Precinct 3 (**Figure 3**), is expected to be approved by Penrith City Council by mid October 2021 under Development Application (DA) DA21/0440, attached as **Appendix B**.

This Construction Environmental Management Plan (CEMP) has been prepared to cover the construction of Lot 3B in Precinct 3 as part of Stage 5 works at Oakdale West (**Figure 2**) under DA21/0440. Works comprise the construction, use and fit-out of Warehouse 3B (2 tenancies) as a warehouse and distribution centre including:

- Warehousing
- Ancillary office space;
- Associated truck and car parking areas;
- Loading bays;
- Site Landscaping;
- Signage;
- Fit-out (office area and warehouse racking);

The layout of Lot 3B is shown in **Figure 3**.

For the purposes of this document, the development is described in:

- Environmental Impact Statement, Oakdale West Estate – State Significant Development Application (EIS) prepared by Urbis (2017), including all specialist assessments and other appendices;
- Oakdale West Industrial Estate (SSD 7348) Modification 1 prepared by Urbis (2019), including all specialist assessments and other appendices;
- Oakdale West Estate SSD 7348 S4.55(2), Modification No.2 – Environmental Assessment Report prepared by Urbis (2019), including all specialist assessments and other appendices;
- Oakdale West Industrial Estate Concept Plan and Stage 1 Modification (MOD 3 SSD 7348) and Stage 2 Development Application (SSD 10397) – Environmental Impact Statement prepared by GHD (2020), including all specialist assessments and other appendices;
- MOD 4, SSD 7348 – S4.55(1A) Application to Modify the consent to Include Works on Lot 9 DP 1157476 prepared by Goodman (2020), including all specialist assessments and other appendices;
- Oakdale West Estate SSD 7348, Section 4.55(1A) Modification No. 5 – Environmental Assessment Report prepared by Urbis (2020), including all specialist assessments and other appendices;
- Assessment Report Section 4.55(1A) Modification, SSD 7348 Modification 6 – 2 Aldington Road, Kemps Creek prepared by Keylan Consulting (2020), including all specialist assessments and other appendices;
- Assessment Report Section 4.55(1A) Modification, SSD 7348 Modification 7 – 2 Aldington Road, Kemps Creek prepared by Keylan Consulting (2021), including all specialist assessments and other appendices; and
- Oakdale West Industrial Estate – Warehouse 3B, 2 Addlington Road, Kemps Creek – Statement of Environmental Effects (SEE) (Keylan, 2020) including all specialist assessments and other appendices.



Figure 1 Oakdale West Precinct Plan

Figure 1 shows the Mod 7 Masterplan with Precinct 3 outlined in yellow (Source: SBA Architects).

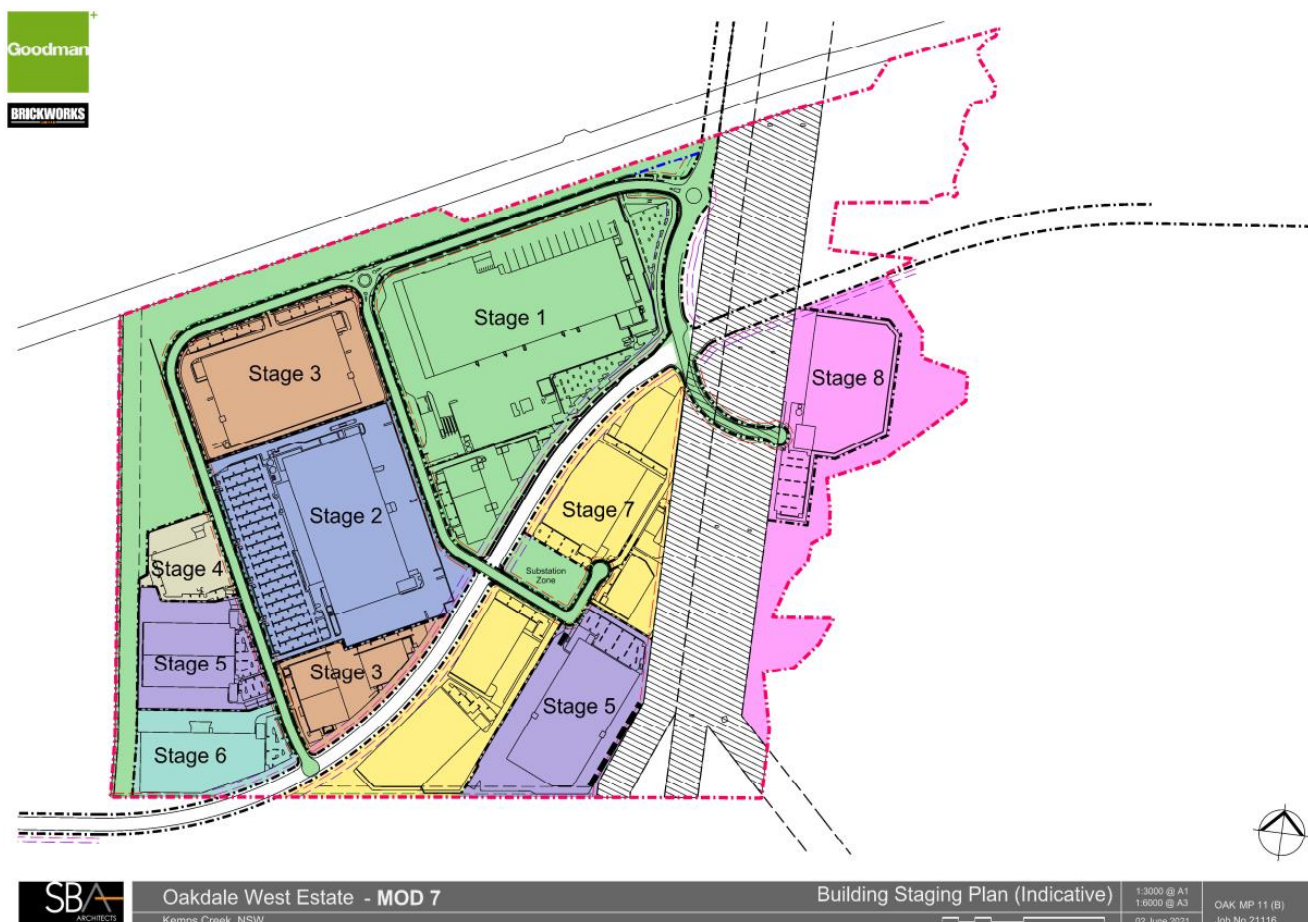


Figure 2 Oakdale West Staging Plan



Figure 3 Lot 3B Layout

Source: SBA Architects

1.2 Construction Environmental Management Plan

The CEMP has been prepared to address Schedule C Condition C18 of SSD 7348 as well as the specific construction requirements of DA21/0440 for Lot 3B.

In addition to the above, this CEMP has included the following specialist management plans:

- Construction Noise and Vibration Management Plan (CNVMP) (SLR);
- Construction Air Quality Management Plan (CAQMP) (SLR);
- Community Consultation Strategy (CCS) (SLR);
- Waste Management Plan (WMP) (SLR).
- Construction Traffic Management Plan (CTMP) (Ason);
- Erosion and Sediment Control Plan (ESCP), appended within the Soil and Water Management Plan (SWMP) (Rubicon Enviro);
- Fill Importation Protocol (FIP) (AECOM);
- Flora and Fauna Management Plan (Ecologique);
- Landscape Management Plan (Scape Design);
- Waste Management Plan (WMP) (SLR).

1.2.1 Scope

This CEMP has been prepared to satisfy Condition C18 of SSD 7348 for future development at Oakdale West. The specific requirements of these consent conditions, along with where these requirements have been addressed within this CEMP, are listed in **Table 1**.

Table 1 CEMP Context

SSD 7348 Consent Condition	CEMP Section
C18. A Construction Environmental Management Plan (CEMP) shall be submitted to the Consent Authority for each stage of the Concept Proposal prior to the commencement of construction of the relevant stage. The CEMP must:	This Plan
(a) be prepared by a suitably qualified and experienced environmental consultant, or the Environmental Representative appointed for Stage 1 of the Development;	Section 1.2.3
(b) be prepared in consultation with relevant Government agencies, infrastructure and utility providers, including but not limited to, TransGrid, Endeavour Energy, Water NSW and TfNSW, where relevant for each stage;	Section 1.2.4
(c) detail the construction activities to be undertaken in the relevant Stage of the Development;	Section 2
(d) include detailed procedures for managing the environmental impacts of construction, including stormwater, erosion and sediment controls, dust, noise and traffic management; and	Section 4
(e) detail the roles and responsibilities for environmental management on the Site.	Section 3.2

It is noted that the CEMP requirements under Schedule D Condition D119 to D122 of SSD 7348 are specific to the Stage 1 Development including the WNSLR and are generally not applicable to this Plan. Notwithstanding this, appropriate sub-plans have been prepared to ensure a consistent and robust approach to the management of construction environmental impacts across Oakdale West.

1.2.2 Objectives

The objectives of this CEMP are to:

- Establish the framework for managing and mitigating the potential for adverse environmental impacts as a result of the construction of the development;
- Clearly and concisely document the commitments made in the development application including relevant management plans, that are required to be implemented with during construction;
- Demonstrate to Council how the applicant proposes to meet all of its regulatory obligations including those outlined in the Conditions of Consent;
- Outline the controls to be implemented by the contractor in order to meet those obligations;
- Clearly and concisely document the conditions imposed by SSD 7348 and DA21/0440 that are required to be implemented and/or complied with during the construction phase; and
- Assist to establish Lot 3B at Oakdale West in a manner that avoids (where possible) or minimises impact to the surrounding environment and populace.

1.2.3 Preparation

This CEMP has been prepared by SLR Consulting (Australia) Pty Ltd (SLR). SLR provides global environmental and advisory solutions from a network of offices in Asia-Pacific, Europe, North America and Africa. Author qualifications are listed in the document control on Page ii.

This CEMP has been prepared with consideration to the *Guideline for the Preparation of Environmental Management Plans* (Department of Infrastructure, Planning and Natural Resources 2004).

1.2.4 Consultation

As required by Condition C18(b) this plan will be provided to relevant Government agencies, infrastructure and utility providers, including but not limited to, TransGrid, Endeavour Energy, Water NSW and TfNSW for consultation. Any feedback received will be considered prior to submission to DPIE for approval.

A copy of consultation responses will be included in **Appendix C**.

2 Development Description

2.1 Location

Oakdale West is legally described as Lot 11 DP 1178389 at the far south-western extent of the Western Sydney Employment Area (WSEA) within the Penrith Local Government Area (LGA).

The site is bound to the north by the Water NSW Pipeline and to the east by the Ropes Creek riparian corridor. Land along the eastern boundary of the site is also affected by a transmission easement associated with Transgrid infrastructure. To the east of the site is Goodman's Oakdale South Estate. Emmaus Catholic College and Emmaus Retirement Village is located to the west of the site. Other boundaries interface with adjoining rural lands used for a mix of rural-residential and agricultural.

As shown in **Figure 2**, the Lot 3B works are bordered by Emmaus Catholic College and Catholic Healthcare Emmaus Village to the west, Lot 3A to the north, 3C to the south and Lot 2B to the east.

2.2 Construction Staging and Activities

Stage 4 works will include the works to be undertaken on Lot 3B at Precinct 3 (**Figure 2**). Site works are proposed to commence in October 2021 and be completed in June 2022. Construction activities and staging are presented in **Table 2**.

Table 2 Construction Staging

Stage	Proposed Dates	Hours
1. Structure	01/10/2021 – 30/01/2022	Monday to Friday 7:00am – 6:00pm
2. Internal Concrete Slabs	30/01/2022 – 01/03/2022	Saturday 8:00am – 1:00pm Saturday
3. Externals incl. hardstands, carpark and landscaping.	13/02/2022 – 10/06/2022	No work public holidays

Source: CTMP (Ason 2021)

No vegetation clearing, bulk earthworks or supporting infrastructure will be required as part of Stage 4 as this has been approved and undertaken as part of Stage 1 in accordance with SSD 7348.

2.3 Construction Hours

Construction hours will be in accordance with Conditions D70 and D71 of Development Consent SSD 7348, which are reproduced below:

D70. The Applicant must comply with the hours detailed in Table 5, unless otherwise agreed in writing by the Planning Secretary.

Table 5: Hours of Work

Activity	Day	Time
Construction	Monday – Friday Saturday	7 am to 6 pm 8 am to 1 pm

D71. Works outside of the hours identified in Condition D70 may be undertaken in the following circumstances:

- a) works that are inaudible at the nearest sensitive receivers;*
- b) works agreed to in writing by the Planning Secretary;*
- c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or*
- d) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.*

The construction hours will be provided to all staff and contractors in the induction. The movements of staff and contractors will be recorded for this project.

Noisy works to be undertaken out of hours is discussed in the Construction Noise and Vibration Management Plan (CNVMP) attached as **Appendix D**.

2.4 Construction Site Access

Access to Site 3B will be via Compass Drive, the Link Road and Emporium Ave, as shown in **Figure 4**.

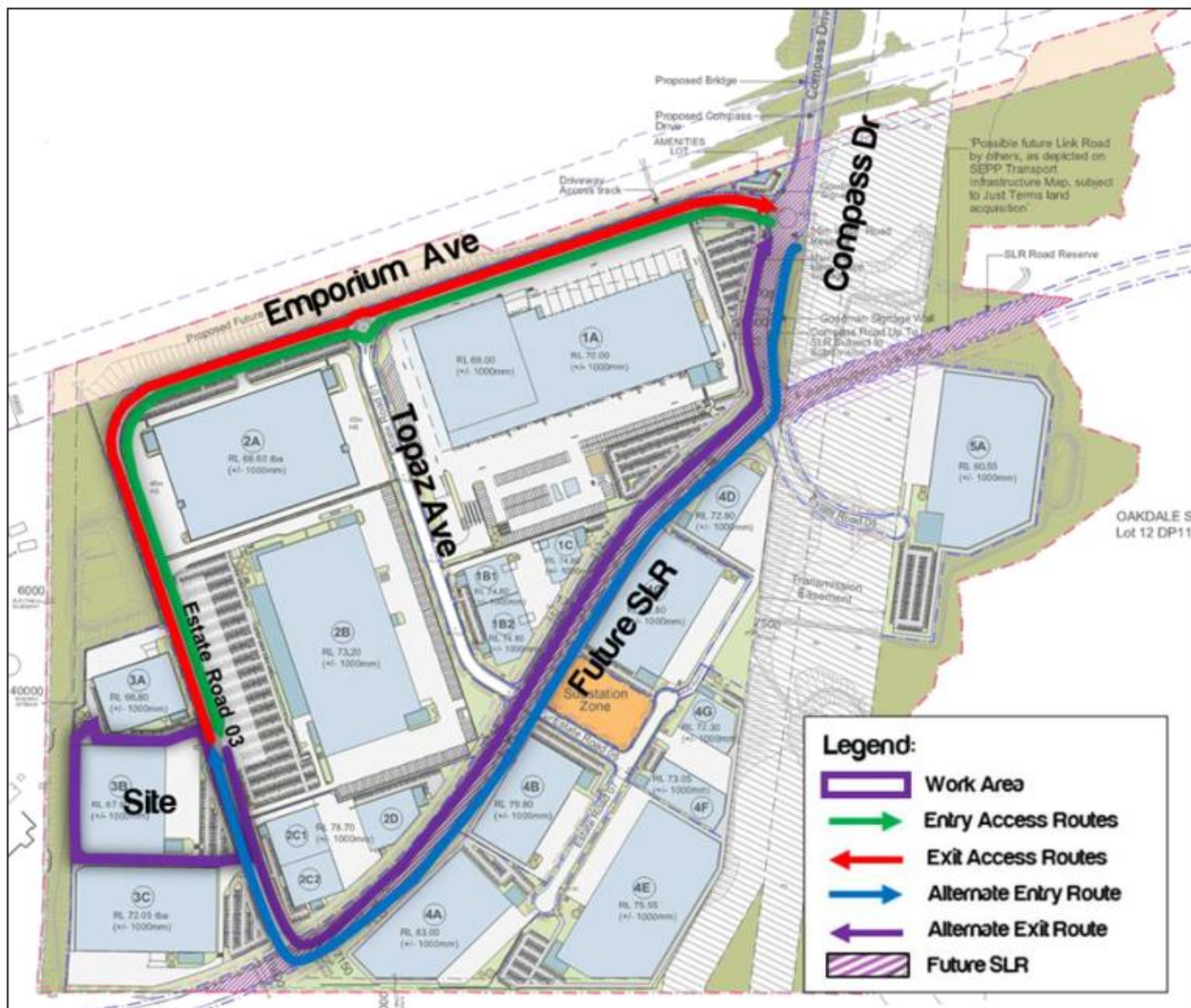


Figure 4 Construction Site Access

2.5 Construction Contact Details

Table 3 lists the key contacts during the construction of Lot 3B.

Table 3 Construction Contact List

Role	Name	Company	Contact Details
Project Principal	Adrian Tesoriero	Goodman	0420 973 607 Adrian.tesoriero@goodman.com
Contractor's Project Manager	Jack Wright	Qanstruct	0421 430 186 jwright@qanstruct.com
Contractor's National OHSE Manager	Wes Ellington	Qanstruct	wellington@qanstruct.com
Site Lead Environmental Consultant (Environmental Consultant)	TBC	TBC	TBC
Communications and Community Liaison Representative	Dan Thompson	SLR	0428 060 995 dthompson@slrconsulting.com

3 Environmental Management Framework

3.1 Goodman Sustainability Policy

Goodman maintains a Sustainability Policy with the primary purpose to:

- Communicate Goodman's commitment to sustainable operating principles endorsed by the Goodman Boards;
- Establish a sustainability mandate which supports the long-term commitment to Goodman's integrated business model;
- Support the adoption of sustainable design principles and innovations within Goodman's development specifications;
- Establish an ongoing commitment to engage with our investors, capital partners, customers, the community and industry peers on issues relating to sustainability; and
- Create a directive to engage with our supply chain to support Goodman in achieving innovative and sustainable outcomes.

3.2 Roles and Responsibilities

The key personnel responsible for environmental management during construction of Lot 3B are listed in **Table 4**.

At the time of writing of this CEMP, the construction contractor for Lot 3B has not been confirmed. Where Goodman is nominated as having responsibility as the Applicant, this may be delegated to their specialist consultants and their contractors.

Table 4 Personnel Responsible for Environmental Management

Role	Responsibilities
Project Principal	Environmental reporting responsibility associated with the development.
Contract Superintendent	Environmental reporting responsibility associated with the development.
Project Manager	Environmental reporting responsibility associated with the development.

Role	Responsibilities
Contractor's Project Manager	<ul style="list-style-type: none"> Overall responsibility for environmental management and compliance; Oversee the implementation of this CEMP and request adequate resources to enable implementation of this CEMP; Report on the performance of the CEMP to the Project Manager for review and as a basis for system improvement; Liaise with Goodman to keep them informed of the project's progress; Coordinate environmental inspections and reporting and authority liaisons; Record, notify, investigate and respond to any environmental incidents and, where necessary, develop and implement corrective actions; Direct reasonable steps be taken to avoid or minimise any unintended or adverse environmental impacts, and, failing the effectiveness of such steps, direct that the relevant actions cease immediately should an adverse impact on the environment be likely to occur. Attend the Environmental Review Group (ERG) meetings if ERG meetings are deemed necessary by the Environmental Consultant; and Provide adequate environmental inductions/training to employees and contractors regarding their requirements under this CEMP.
Contractor's National OHSE Manager	<ul style="list-style-type: none"> Ensure the legislative and corporate safety, health and environment management measures and controls are implemented and maintained; Participate in risk and hazard identification and control; Participate in incident investigations and management; and Participate in health and safety inspections.
All employees, contractors and subcontractors	<ul style="list-style-type: none"> Ensure familiarity, implementation and compliance with this CEMP and appended management plans; Support Goodman's commitment to sustainability, environmental management and compliance; Work in a manner that will not harm the environment or impact on surrounding receptors; Report all environmental incidents and complaints to the Project Manager without delay; and Report any inappropriate construction practices and/or environmental management practices to the Project Manager without delay.

3.3 Statutory Requirements

The Development will be constructed in accordance with DA21/0440 and also in accordance with:

- Statement of Environmental Effects (SEE), Oakdale West Industrial Estate – Building 3B, 2 Aldington Road, Kemps Creek* (Keylan, 2021) including all specialist assessments and other appendices; and
- The approved plans and drawings listed in Condition 1 of DA21/0440; and

- Relevant Conditions for the Concept Proposal and Conditions for Future Development Applications as specified by Schedule B and Schedule C of SSD 7348 respectively.

3.3.1 Development Approval D21/0440

The construction and operation of Lot 3B at Oakdale West is subject to DA21/0440, submitted to Penrith City Council. At the time of writing, DA21/0440 has yet to be approved. This CEMP will be updated to incorporate any additional requirements of DA21/0440.

A copy of DA21/0440 will be attached as **Appendix B** on approval.

3.3.2 SSD 7348

As required by Condition 9 of DA21/0440, the works at Lot 3B will comply with the relevant conditions of SSD 7348.

SSD 7348 incorporates the approval of a 'Concept Proposal' to guide the future development of the estate and consent for the 'Stage 1 Development'. As such, conditions applicable to this CEMP are limited to those contained in Schedule B and Schedule C of SSD 7348.

Schedule D of SSD 7348 is specific to the Stage 1 Development (including the WNSLR) and is therefore generally not applicable to this CEMP. Notwithstanding this, where appropriate, relevant conditions have been considered and addressed to ensure a consistent and robust approach to the management of construction environmental impacts across the Oakdale West Estate.

A copy of SSD 7348 is attached as **Appendix A**.

3.4 Inductions and Environmental Training

The Contractor's Project Manager will ensure that all employees and contractors involved in the construction of Lot 3B at Oakdale West are appropriately inducted and trained prior to commencing work on site. Training in relation to environmental responsibilities and implementation of this CEMP will take place initially through the site induction training and then on an ongoing basis through 'toolbox talks' (or similar).

The environmental induction training will cover all elements of the CEMP and will include, as a minimum, the following:

- Purpose and objectives of the CEMP;
- Requirements of due diligence and duty of care;
- Conditions of any environmental licences, permits and approvals;
- Potential environmental emergencies on site and the emergency response procedures (including the Emergency Spill Response Plan), locations and training in the use of emergency spill kits for spills on water and on land;
- Reporting, and notification and management requirements for pollution, contamination and other environmental incidents, and for damage and maintenance to environmental controls;
- High-risk activities and associated environmental safeguards i.e. earthworks, vegetation clearing, night works, operation and maintenance of concrete washouts, and washing, refuelling and maintenance of plant and equipment;

- Working in or near environmentally sensitive areas;
- Driver Code of Conduct, safety, responsibilities, crash or incident procedure, driver environmental procedures, and current verification of competency (VOC) for their current driver's licence of the appropriate class (Section 5 CTMP); and

Site-specific issues including:

- Erosion and sediment controls, water quality controls and sediment basin management (see **Section 4.6**);
- Responsibilities under the *Heritage Act 1977* if an object of potential non-Aboriginal heritage is uncovered during construction;
- Access into the Water NSW pipeline corridor is prohibited unless written access consent has been obtained from Water NSW;
- Noise, vibration and air quality management controls (see **Sections 4.2, 4.3 and 4.4**);
- Requirement to maintain surrounding property access for residences and businesses and to minimise disruptions to these properties for the duration of construction;
- Location of reuse bins, washing, refuelling and maintenance of vehicles, plant and equipment;
- Waste minimisation principles (see **Section 4.8**);
- Identification, reporting and management of contaminated land (see **Section 4.7**); and
- Incident management processes (see **Section 3.5**).

Toolbox talks will be held to identify environmental issues and controls when works commence in a new area of the site or a new activity, as well as when environmental issues arise on site. The toolbox talk will include but not be limited to:

- A description of the activity and the area;
- Identification of the environmental issues and risks for the area (including fauna or flora);
- Outline the mitigations measures for the works and the area (see **Section 4**); and
- Driver Code of Conduct (Section 5 of CTMP).

All employees conducting environmental training and site staff assigning work activities will demonstrate that they are competent and appropriately trained to train and manage construction site specific environmental issues.

A register of all environmental training carried out, including dates, names of persons trained, and trainer name and qualification details will be established and maintained for the duration of works.

3.5 Incident and Non-Compliance Response and Handling Procedure

For the purposes of this CEMP, SSD 7348 describes an 'incident' as an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance. SSD 7348 describes a 'non-compliance' as an occurrence, set of circumstances or development that is a breach of the consent.

3.5.1 Performance Objective

To ensure that any incident and/or non-compliance caused by or relating to the construction of the Lot 3B is effectively responded to, and any resulting adverse environment and/or human health impact is promptly prevented or effectively managed.

3.5.2 Responsibility

The Contractor's Project Manager is responsible for ensuring that the appropriate management response and handling procedures are instigated and carried through in the event of an incident and/or non-compliance. All employees, contractors and subcontractors are to:

- Notify the Contractor's Project Manager who will notify the Environmental Consultant of any hazard or potential hazard that may result in an incident and/or non-compliance, regardless of the nature or scale; and
- Take immediate action (where it is safe to do so) to prevent, stop, contain and/or minimise any adverse impact associated with an incident and/or non-compliance.

The induction and toolbox talks outlined in **Section 3.4** will be used to ensure all site employees, contractors and subcontractors are aware of and understand their obligations for incident and/or non-compliance response.

3.5.3 Notification Requirements

3.5.3.1 Incidents

Section 147 of the *Protection of the Environment Operations Act 1997* (POEO Act) defines material harm as:

- (a) *harm to the environment is material if:*
 - (i) *it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or*
 - (ii) *it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and*
- (b) *loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.*

Notification responsibilities for incidents that have caused or threatened to cause material harm to the environment are detailed in Section 148 of the POEO Act. In summary, these are broadly categorised as:

Duty of an employee or any person undertaking an activity:

Any person engaged as an employee or undertaking an activity with regard to Lot 3B will, immediately after becoming aware of any potential incident (even if outside of normal business hours), notify the Contractor's Project Manager who will notify the Environmental Consultant of the incident and all relevant information about it. The Contractor's Project Manager will be available 24 hours a day, seven days a week and will have the authority to stop or direct works.

Duty of an employer or occupier of the premises to notify:

The employer or occupier of the premises (in this case, the Environmental Consultant) on which the incident occurred, who is notified (or otherwise becomes aware of) of the incident, will immediately notify the relevant authorities about the incident and all relevant information.

Under the POEO Act, “relevant authority” means any of the following:

- The appropriate regulatory authority – the Environment Protection Authority (EPA);
- If the EPA is not the appropriate regulatory authority – the local authority for the area in which the pollution incident occurs (i.e. Council);
- NSW Public Health Unit;
- SafeWork NSW; and
- Fire and Rescue NSW.

Table 5 lists the contact details for these authorities. The person reporting the pollution incident will provide the following key details:

- Location of the pollution incident/emergency;
- Nature of the pollution incident/emergency;
- Their name and contact details; and
- Details of any required assistance.

Table 5 Regulatory Authority Contact List

Regulatory Authority / Stakeholder	Key Contact	Contact Details
Environment Protection Authority (EPA)	Environment Line	131 555 info@environment.nsw.gov.au
	Head office (Sydney)	02 9995 5000
Penrith City Council	Main switchboard	02 4732 777 council@penrith.city
Water NSW	Main switchboard	1300 662 077 Customer.Helpdesk@waternsw.com.au
	Incident Notification Number – 24 hours	1800 061 069
NSW Public Health Unit	Sydney Local Health District	Business hours: 1300 066 055 After hours: 02 9515 6111
SafeWork NSW	Incident Notification Hotline	131 050 Select Option 3 to report a “Serious Incident or Fatality” – this will result in the incident being recorded and the appropriate person being contacted.

Regulatory Authority / Stakeholder	Key Contact	Contact Details	
Emergency Services	NSW Police	131 444	In case of emergency – 000
	NSW Fire and Rescue	1300 729 579	
	NSW Ambulance Service	-	

In accordance with Condition D135 of Development Consent SSD 7348, once Goodman becomes aware of an incident Goodman is required to immediately (within 24 hours) provide a written incident notification via email to the DPIE and other relevant agencies of an incident, or potential incident, that causes (or may cause) harm to the environment. A detailed incident report is then to be provided to the DPIE within 30 days of the incident.

3.5.3.2 Non-Compliances

In accordance with Condition D136 of SSD 7348, the DPIE will be notified in writing to compliance@planning.nsw.gov.au within seven days of becoming aware of any non-compliance.

D137 and D138 of SSD 7348 states a non-compliance notification will identify the development and the application number for it, set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

3.5.4 Incidents and Non-Compliance Handling Procedure

Upon becoming aware of an incident and/or non-compliance, the procedure outlined below will be followed.

1. Preventative Action

Where possible and safe to do so, immediate action will be taken to prevent, stop, contain and/or minimise the environmental impact of the incident and/or non-compliance.

In the unlikely event that an incident and/or non-compliance requires the evacuation of the site, actions will be completed in accordance with evacuation procedures. All employees and contractors are to be made aware of the location of emergency assembly areas through site inductions, signage and regular toolbox talks.

2. Assistance

If adequate internal resources are not available and the incident and/or non-compliance threatens public health, property or the environment, it is essential that Fire and Rescue NSW be contacted by telephoning “000” for emergency assistance.

Contacting Fire and Rescue NSW does not negate the notification requirements in **Section 3.5.3**.

3. Notify

Under the provisions of the POEO Act, there is a duty to notify any incident that has caused or threatens to cause material harm to the environment and all relevant information about the incident. The specific duties to notify are outlined above in **Section 3.5.3**.

In the event of a serious incident or emergency, it is more than likely that Fire and Rescue NSW will take control and manage the required investigation and remedial activities. Any instructions issued will be strictly adhered to.

Condition D135 and Appendix 8 of Development Consent SSD 7348 requires that the DPIE and other relevant authorities be provided with a written incident notification via email within 24 hours after the incident.

A written notification will:

- Identify the development and application number;
- Provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
- Identify how the incident was detected;
- Identify when the Applicant became aware of the incident;
- Identify any actual or potential non-compliance with conditions of consent;
- Describe what immediate steps were taken in relation to the incident;
- Identify further action(s) that will be taken in relation to the incident; and
- Identify a project contact for further communication regarding the incident.

Non-compliances will be notified in accordance with **Section 3.5.3.2**.

4. Investigate

Undertake immediate investigative work to determine the cause of the incident and/or non-compliance.

5. Remedial Action

Undertake appropriate remedial action to address the cause of the incident and/or non-compliance and mitigate any further environmental impact. In some instances, outside resources such as specialist contractors/consultants may be required.

6. Record

It is imperative that an honest assessment of the situation is carried out and documented in order to minimise the potential for similar events in the future. On this basis, every incident is to be recorded in the Construction Contractor's Incident Report Form. A copy of the completed report will be maintained for at least five years by the Construction Contractor.

Condition D135 and Appendix 8 of Development Consent SSD 7348 requires that a detailed incident report be provided to the DPIE within 30 days of the incident occurring.

The Event Notification Report will include:

- A summary of the incident;
- Outcomes of an incident investigation, including identification of the cause of the incident;
- Details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
- Details of any communication with other stakeholders regarding the incident.

All non-compliances are recorded in accordance with Condition D137 of SSD 7348.

7. Preventative Action

Once the incident and/or non-compliance has been suitably handled, appropriate measures will be identified and implemented to reduce the possibility of re-occurrence.

3.5.5 Incidents and Non-Compliance Register

An Incidents and Non-Compliance Register will be maintained during construction and will contain the following:

- A copy of the environmental incident and non-compliance notification requirements and handling procedure contained above in **Section 3.5.3** and **3.5.4**;
- Site evacuation procedures;
- A separate reference sheet containing the contact details for the contacts listed in Table 3 and the contact details for the regulatory authorities listed in **Table 5**;
- Blank hard copies of Construction Contractor's Incident Report Form; and
- Copies of all completed Incident Report Forms, which are to be maintained for at least five years after the event to which they relate.

3.5.6 Minor Environmental Incidents

There is the possibility of minor environmental incidents occurring as part of this project. SLR have defined a 'Minor Environmental Incident' as an incident where there has been no potential or actual material harm to the environment (see 'material harm' definition outlined in **Section 3.5.3**). Examples may include excessive dust impacts sighted by the project team or a small contained hydrocarbon spill that does not leave a site boundary and are cleaned up without residual on-site environmental harm.

Minor environmental incidents will still be handled under the process outlined in **Section 3.5.4** except there will be no requirement for government notification. All minor or major incidents will be recorded in the Incidents Register, with details of the events also included in the Environmental Representative Monthly Report. A minor incident does not constitute a non-compliance with the Development Consent.

3.6 Complaints Response and Handling Procedure

All complaints will be handled in accordance with the sections below and the *Community Communication Strategy* (CCS) (SLR 2021a) (see **Appendix D**).

3.6.1 Performance Objective

To ensure that all environmental complaints in relation to the construction of the Lot 3B at Oakdale West are promptly and effectively received, handled and addressed.

3.6.2 Responsibility

The Communications and Community Liaison Representative is responsible for ensuring that the appropriate management response and handling procedures are instigated and carried through in the event of an environmental complaint. The induction and toolbox talks outlined in **Section 3.4** will be used to ensure all site employees are aware of and understand their obligations for complaints response.

All employees who take receipt of a complaint, either verbal or written, are to immediately notify the Contractor's Project Manager, who will then contact the Communications and Community Liaison Representative.

3.6.3 Complaints Handling Procedure

Upon becoming aware of a complaint, the protocol outlined below will be followed.

1. Record and Acknowledge

Any employee who takes receipt of a complaint, either verbal or written, are to immediately notify the Contractor's Project Manager who will then contact the Communications and Community Liaison Representative. The Contractor's Project Manager will be available 24 hours a day, seven days a week and have the authority to stop or direct works. All relevant contact details are available in **Table 3**.

In the normal course of events, the first contact for complaints will usually be made in person or by telephone.

The complainant's name, address and contact details, along with the nature of the complaint, will be requested. If the complainant refuses to supply the requested information, a note will be made on the form and complainant advised of this.

2. Assess and Prioritise

The Communications and Community Liaison Representative will prioritise all complaints by considering the seriousness of the complaint including risk to health and safety and will attempt to provide an immediate response via phone or email. This will be undertaken in accordance with the CCS (SLR 2020a).

3. Investigate

A field investigation will be initiated in an attempt to confirm details relevant to the complaint and the cause of the problem. Any monitoring information and/or records at and around the time of the complaint will be reviewed for any abnormality or incident that may have resulted in the complaint.

If the complaint is due to an incident, the notification requirements and handling procedures outlined in **Section 3.5.3** and **3.5.4** respectively will be followed.

4. Action or Rectify

Once the cause of the complaint has been established, every possible effort will be made to undertake appropriate action to rectify the cause of the complaint and mitigate any further impact. The Communications and Community Liaison Representative will assess whether the complaint is founded or unfounded and delegate the remediation of the issue to the Contractor's Project Manager for action, as required.

5. Respond to Complainant

The Communications and Community Liaison Representative will oversee the rectification of the issue and respond to the complainant once the issue has been resolved. The complainant will be provided with a follow up verbal response on what action is proposed within two hours during night-time works (between the hours of 6:00 pm and 10:00 pm) and 24 hours at other times. Where a complaint cannot be resolved by the initial or follow-up verbal response, a written response will be provided to the complainant within ten days.

6. Record

It is imperative that an assessment of the situation is carried out and documented in order to minimise the potential for similar complaints in the future. On this basis, every complaint received is to be recorded in Construction Contractor's Complaint Form. A copy of the completed form will be maintained for at least five years. The complaint will also be recorded in the Complaints Register, as per **Section 3.6.4**.

7. Preventative Action

Once the complaint has been suitably handled, appropriate measures will be identified and implemented to negate the possibility of re-occurrence. The Community Correspondence Register is not finalised until the preventative actions are completed and recorded on the form.

3.6.4 Complaints Register

A Complaints Register will be maintained during construction and will contain the following:

- A copy of the environmental complaint handling procedure contained in **Section 3.6.3**;
- A separate reference sheet containing the contact details listed in **Table 3**;
- Blank hard copies of the Construction Contractor's Complaint Form; and
- Copies of all completed Complaint Forms which are to be maintained for at least five years after the event to which they relate.

3.7 Dispute Resolution

In the event that a dispute arises between Goodman and Council or a public authority, in relation to an applicable requirement in this consent or relevant matter relating to the construction of the Oakdale West, either party may refer the matter to the Planning Secretary for resolution. The Planning Secretary's determination of any such dispute will be final and binding on the parties.

In the case of a dispute between Goodman and a community member/complainant, either party may refer the matter to the DPIE and/or relevant regulatory authority for consideration, advice and/or negotiation. If the matter escalates, a third party mediator may be required. It should be noted that Condition D127g states 'as may be requested by the Planning Secretary, assist the Department in the resolution of community complaints'.

Additional information can be located in the CCS (SLR 2021b) attached as **Appendix E**.

4 Environmental Management Commitments

Environmental aspects with the potential to be impacted through the construction of Lot 3B at Oakdale West are addressed in the following sub-sections. These issues have specific regulatory requirements imposed by DA21/0440 and Schedules B and C of SSD 7348 and/or are considered to have the highest potential to result in a non-compliance with a legislative requirement or generate community complaints. The tables in this section are a compliance management tool outlining how controls are to be implemented.

4.1 General

Table 6 lists the general environmental controls that will be implemented throughout the construction of Lot 3B to minimise the potential for adverse impacts on the local environmental and surrounding receptors.

Table 6 General Construction Environmental Management Controls

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Environmental Work Method Statements (EWMS) will be prepared and implemented.	Construction Contractor's Representative	Prior to commencing construction and ongoing	Best practice
All monitoring records will be maintained to demonstrate compliance with the CEMP, including: <ul style="list-style-type: none"> • Site environmental inspection reports • Environmental monitoring data • Internal and external audit reports • Reports of environmental incidents, environmental, associated actions taken, and follow-up actions • Minutes of management review meetings • Induction and training records 		For 5 years after completion date	
The incidents and complaints management strategies contained within Sections 3.5 and 3.6 will be implemented to ensure that any incidents and/or complaints relating to the construction activities are promptly and effectively addressed.		Ongoing	CEMP Sections 3.5 and 3.6
Construction employees and contractors will be suitably inducted and trained prior to commencing any work on site.		Prior to commencing construction and ongoing	CEMP Section 3.4

4.2 Noise

Construction noise at Lot 3B will be managed in accordance with the CNVMP (SLR 2021a) prepared to support this CEMP, attached as **Appendix D**.

Table 7 outlines the project specific Noise Management Levels (NMLs) to be adhered to during the construction of Lot 3B as outlined in the CNVMP (SLR 2021a).

Table 7 Project Specific Noise Management Levels

Receiver	Period	LAeq,15min Construction NMLs (dBA)	
		Standard Hours	Highly Noise Affected
N1, N7 & N8	Day	49	75
N9 – N14	Day	44	75
N2 & N6	Day	55 ¹	n/a

Note 1: Noise level of LAeq 55 dBA has been adopted, with consideration to the generally accepted 10 dB noise reduction typically achieved through a partially open window.

The environmental management controls in **Table 8** will be implemented to minimise the potential for adverse noise emissions from the construction of Lot 3B.

Table 8 Environmental Management Controls for Noise

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Project Planning			
Less noise and vibration intensive construction techniques for rock breaking and concrete sawing will be used.	Construction Contractor	Ongoing	Best practice
Where construction noise levels are predicted to be above the NMLs, all feasible and reasonable work practices will be investigated to minimise noise emissions, as detailed in this CNVMP.			EIS mitigation commitment
Construction works will be conducted during Standard Construction Hours, with out of hours work minimised as far as feasible and reasonable, and undertaken in accordance with Condition D71			
Works will be completed during standard daytime construction hours outlined in Section 2.3.			
Truck routes to site will be in accordance with the approved Construction Traffic Management Plan.			Best practice

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Scheduling			
<p>Respite offers will be considered where high-noise works are predicted to exceed 75 dBA for residential receivers. Respite offers will be considered for high-vibration works where the works are undertaken within the human comfort minimum working distances for all receiver types.</p> <p>Consultation with these receivers will be undertaken to determine appropriate respite periods, such as exam periods for schools.</p>	Communications and Community Liaison Representative	Ongoing	SSD 7348 Condition D73
<p>High-noise or vibration generating works will be carried out in continuous blocks no longer than three hours in length, with a minimum respite period of one hour between each block. 'Continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing these works.</p> <p>High-noise or vibration generating works conducted outside standard construction hours (where approved) will be limited to no more than two consecutive nights except where there is a Duration Respite (see below). For night-works these periods will be separated by no less than one week, and limited to six nights per month. Where possible, high-noise and vibration generating works will be completed before 11 pm.</p>	Communications and Community Liaison Representative	Ongoing	SSD 7348 Condition D73
<p>Duration Respite will be considered where it may be beneficial to the sensitive receivers to increase the duration of blocks of work or number of consecutive periods in order to complete the works more quickly. The project team will engage with the community where Duration Respite is considered in accordance with the CCS.</p>			
<p>Notification detailing work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone numbers will be undertaken in accordance with the CCS.</p>			
Site Layout			
<p>Compounds and worksites will be designed to promote one-way traffic and minimise the need for vehicle reversing.</p>	Construction Contractor	Ongoing	Best practice
<p>Where practicable, work compounds, parking areas, and equipment and material stockpiles will be positioned away from noise-sensitive locations and take advantage of existing screening from local topography.</p>			
<p>Equipment that is noisy will be started away from sensitive receivers</p>			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Training			
Training will be provided to all personnel on noise and vibration requirements for the project. Inductions and toolbox talks to be used to inform personnel of the location and sensitivity of surrounding receivers.	Construction Contractor	Ongoing	Best practice
Plant and Equipment Source Mitigation			
All construction plant and equipment used on Site must be, in addition to other requirements: a) regularly inspected and maintained in an efficient condition; b) operated in a proper and efficient manner.	Construction Contractor	Ongoing	SSD 7348 Condition D21
Where practicable, tonal reversing alarms (beepers) will be replaced with non-tonal alarms (squawkers) on all equipment in use (subject to occupational health and safety requirements).			Best practise
Noisy equipment will be sited behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise.			
Noise generating equipment will be regularly checked and effectively maintained, including checking of hatches/enclosures regularly to ensure that seals are in good condition and doors close properly against seals.			
Dropping materials from a height will be avoided.			
Loading and unloading will be carried out away from noise sensitive areas, where practicable.			
Trucks will not queue outside residential properties. Truck drivers will avoid compression braking as far as practicable.			
Truck movements will be kept to a minimum, ie trucks are fully loaded on each trip.			
Community Consultation			
Notifications will be provided to the affected community where high impacts are anticipated or where out of hours works are required. Notification will be a minimum of 24 hours. Refer to the CCS.	Communications and Community Liaison Representative	Ongoing	Best practice
Where complaints are received, work practices will be reviewed and feasible and reasonable practices implemented to minimise any further impacts.			
Monitoring			
Noise monitoring will be conducted (as appropriate) when noise/vibration intensive works are being undertaken in close proximity to sensitive receivers.	Construction Contractor	Ongoing	Best practice

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Noise monitoring will be conducted (as appropriate) in response to any complaints received to verify that levels are not substantially above the predicted levels.			
Refer to Section 5 for full details of monitoring requirements.			

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4.3 Vibration

Vibration during the construction of Lot 3B will be managed in accordance with the CNVMP (SLR 2021a) prepared to support this CEMP, and attached as **Appendix D**.

Vibration from construction works on the site, as measured at any residence or sensitive structure, must be limited to the criteria outlined in:

- For structural damage – German Standard *DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures (DIN 4150)*; and
- For human exposure, the EPA's *Assessing Vibration: a technical guideline*.

British Standard *BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2* (BS 7385) provides further guidance with regards to reducing the potential for structural damage.

The recommended safe working distances for vibration intensive construction plant are listed in **Table 9**. These recommendations are for the practical management of potential vibration to minimise the likelihood of cosmetic damage to buildings and disturbance or annoyance in humans.

Table 9 Recommended Minimum Working Distances for Vibration Intensive Equipment

Plant Item	Rating / Description	Minimum Distance		
		Cosmetic Damage		Human Response (NSW EPA Guideline) ¹
		Residential and Light Commercial (BS 7385) ¹	Heritage Items (DIN 4150 Group 3) ²	
Vibratory Roller	< 50 kN (Typically 1-2t)	5 m	11 m	15 m to 20 m
	< 100 kN (Typically 2-4t)	6 m	13 m	20 m
	< 200 kN (Typically 4-6t)	12 m	15 m	40 m
	< 300 kN (Typically 7-13t)	15 m	31 m	100 m
	> 300 kN (Typically 13-18t)	20 m	40 m	100 m
	> 300 kN (Typically > 18t)	25 m	50 m	100 m
Small Hydraulic Hammer	300 kg – 5 to 12t excavator	2 m	5 m	7 m
Medium Hydraulic Hammer	900 kg – 12 to 18t excavator	7 m	15 m	23 m
Large Hydraulic Hammer	1600 kg – 18 to 34t excavator	22 m	44 m	73 m
Vibratory Pile Driver	Sheet piles	2 m to 20 m	5 m to 40 m	20 m
Pile Boring	≤ 800 mm	2 m (nominal)	5 m	4 m
Jackhammer	Hand held	1 m (nominal)	3 m	2 m

Note 1: Criteria reference from Roads and Maritime CNVG.

Note 2: Criteria reference from DIN 4150.

In addition to the above minimum working distances, Condition D77 of the Development Consent SSD 7348 specifies that vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in Condition D76.

The environmental management controls in **Table 10** will be implemented to minimise the potential for adverse vibration impacts from the construction of Lot 3B.

Table 10 Environmental Management Controls for Vibration

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Vibration			
Locations for vibration intensive equipment will be reviewed during the planning of construction works adjacent to the most affected receivers.	Construction Contractor	Ongoing	EIS mitigation commitment
Where works are required within the minimum working distances, vibration monitoring will be undertaken to confirm that vibration is within acceptable levels.		Ongoing Before and after any vibration activities within minimum distances	Best practice
Where works are required within the cosmetic damage minimum working distances, building condition surveys will be completed before and after the works to ensure no cosmetic damage has occurred.			
Vibratory compactors will not be used closer than 30 m from residential and educational buildings unless vibration monitoring confirms compliance with the vibration criteria.			
Where there is a risk that vibration activities may cause damage to nearby structures and buildings or if these are located within the minimum working distance from the construction activity, a building condition inspection will be undertaken at least three weeks before the construction activity commences.			Best practice
The Building Condition Inspection Reports will contain photographs of the inspected properties and include details of the inspectors’ qualification and expertise, together with a list of any identified defects, where relevant. The reports will be submitted to the owner of each property and to Goodman before the commencement of any vibration intensive activities.			
A copy of the Building Condition Inspection Reports and CNVMP will be submitted to Goodman at least 10 working days prior to commencement of piling, excavation by hammering or ripping, compaction, demolition operations, or any activity which may cause damage through vibration.			
Monitoring			
Vibration monitoring will be conducted (as appropriate) when vibration intensive works are being undertaken in close proximity to sensitive receivers.	Construction Contractor	Ongoing	Best practice

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Vibration			
Vibration monitoring will be conducted (as appropriate) in response to any complaints received to verify that levels are not substantially above the predicted levels.			
Refer to Section 5 for full details of monitoring requirements.			

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4.4 Air Quality

Construction noise at Lot 3B will be managed in accordance with the CAQMP (SLR 2021) prepared to support this CEMP, attached as **Appendix F**.

Table 11 and **Table 12** outlines the Air Quality criteria to be adhered to during the construction of Lot 3B as outlined in the CAQMP (SLR 2021).

A summary of the relevant impact assessment criteria for particulate matter is provided in **Table 11**.

Table 11 NSW EPA Criterion for Particulate Matter

Pollutant	Averaging Period	Concentration
PM ₁₀	24 Hours	50 µg/m ³
	Annual	25 µg/m ³

Source: EPA 2017a

The relevant criterion for nuisance dust deposition is provided in **Table 12**. The rate of dust deposition is measured by means of a collection gauge, which catches the dust settling over a fixed surface area and over a period of about 30 days.

Table 12 NSW EPA Criterion of Nuisance Dust Deposition

Pollutant	Averaging Period	Assessment Criteria (g/m ² /month)
Deposited dust	Annual	2 (maximum increase in deposited dust level) 4 (maximum total deposited dust level)

The environmental controls in **Table 13** will be implemented to minimise the potential for adverse dust emissions and impacts during the construction.

Table 13 Environmental Management Controls for Air Quality

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Communications			
The Community Communications Strategy will be implemented.	Communications and Community Liaison Representative	Prior to commencing construction and ongoing	CAQMP Section 8
The name and contact details of person(s) accountable for air quality and dust issues will be displayed on the site boundary. This may be the Contractor's Project Manager.	Construction Contractor's Representative		
The head or regional office contact information will be displayed on site signage.			
Site Management			
All dust and air quality incidents will be undertaken as per Section 3.5 of the CEMP.	Construction Contractor	Ongoing	CEMP Section 3.5

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
All dust and air quality complaints will be undertaken as per Section 3.6 of the CEMP.	Construction Contractor	Ongoing	CEMP Section 3.6
Where excessive dust events occur (i.e. prolonged visual dust in a particular area), additional watering of dust producing activities will be undertaken or activities temporarily halted until such times that the dust source is under control.		During excessive dust events	CAQMP Section 8
Preparing and Maintaining the Site			
All reasonable steps to minimise dust generated will be undertaken during construction.	Construction Contractor	Ongoing	SSD 7348 Condition D98
Exposed surfaces and stockpile will be suppressed by regular watering or use of approved dust suppressants.			SSD 7348 Condition D99a
Land stabilisation works will be carried out in such a way on site to minimise exposed surfaces.			SSD 7348 Condition D99e
Construction of Oakdale West will not cause or permit the emission of any offensive odour, as defined in the POEO Act.	Construction Contractor	Ongoing	SSD 7348 Condition D102
Dust generating activities in areas close to receptors will be closely monitored and additional mitigation applied as required to best manage potential dust emissions			CAQMP Section 8
Stockpiles that will be in place for more than 20 days and are not actively used as well as any stockpiles that are susceptible to wind or water erosion will be suitably protected from erosion within 10 days of the establishment of each stockpile.			
Temporary stabilisation of disturbed surfaces will be undertaken within two weeks of the stockpile being established.			
Site fencing and barriers will be kept clean using wet methods.			
Operating Vehicle/Machinery and Sustainable Travel			
Project access roads used by delivery trucks will be kept clean.	Construction Contractor / Contractors	Ongoing	SSD 7348 Condition D99d
All on-road vehicles will comply with relevant vehicle emission standards (prescribed by the NSW RMS), where applicable, and will be maintained in good condition, in accordance with manufacturer’s specifications and POEO Act.			CAQMP Section 8
Delivery trucks will switch off engines whilst undertaking a delivery on-site, if idling time is likely to exceed 5 minutes.			

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Vehicle speed limit restrictions are implemented on site, including: <ul style="list-style-type: none">General - 20km/hHigh risk area - 10km/hHaul routes – 50 km/h	Construction Contractor / Contractors	Ongoing	CAQMP Section 8
Truck queuing and unnecessary trips will be minimised through logistical planning and by the identification and use of specific park up/hold areas away from the Project.			
Operations			
Only cutting, grinding or sawing equipment fitted with suitable dust suppression systems, such as water sprays will be used.	Construction Contractor	Ongoing	CAQMP Section 8
Adequate water supply will be available on the site for effective dust/particulate matter suppression/ mitigation using a combination of potable and non-potable water sources.			
Water carts will be used on all denuded or exposed surfaces and unsealed roads to minimise dust emissions.		Continuously and during high winds	
Works will be assessed during strong winds or in weather conditions where high levels of airborne particulates may potentially impact the sensitive receivers. Continual monitoring of wind speed and direction will be undertaken to guide this decision and ensure that adequate mitigation measures are undertaken			
Waste Management			
All trucks entering or leaving the Site will have their loads covered.	Construction Contractor	Ongoing	SSD 7348 Condition D99b
No waste materials, timbers or any other combustible materials will be burnt on site.			CAQMP Section 8
Earthworks			
Scopes of work will be planned in such a way to assist in minimising the duration that surfaces are left denuded.	Construction Contractor	Ongoing	AQMP Section 8
Rehabilitation of disturbed surfaces will be undertaken within 20 days of final construction levels.		Within 20 days of final construction levels	
If unanticipated strong odours or significant visual dust emissions are noted or observed on site, an investigation will be undertaken by the Construction Contractor’s Representative Project Manager to identify the scope of work or source of the emission prior to undertaking and applying any additional mitigation measures.		Ongoing	

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Construction			
Sand and other aggregates will not be allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	Construction Contractor	Ongoing	AQMP Section 8
Trackout			
Water-assisted road sweeper(s) will be used on an as required basis should any material be tracked out of the site.	Construction Contractor	Ongoing	Best practice
Record all regular inspections and maintenance undertaken of site haul routes and project related access roads in a site log book.			
A wheel washing system and/or cattle grid system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site) will be implemented.			
Demolition			
Ensure effective water suppression of dust is used during demolition operations.	Construction Contractor	Ongoing	Best practice
Bag and remove any biological debris or damp down such material before demolition.			

4.5 Traffic

Construction traffic will be managed in accordance with the Construction Traffic Management Plan (CTMP) (Ason 2021) prepared to support this CEMP and is attached as **Appendix G**.

The CTMP seeks to minimise traffic impacts on the surrounding road network, ensure safety and efficiency for workers, pedestrians and other road users, and provide information regarding the construction vehicle access routes and any changed road conditions.

The anticipated vehicle movements generated by the construction of the Site have been estimated, having consideration of the likely requirements for construction staff, plant, equipment and haulage. The anticipated construction schedule has been provided by the contractor, with the estimated traffic volumes for Lot 3B Construction Works is as follows:

- up to 70 light vehicle movements per day; and
- 120 heavy vehicle movements per day (including truck and dog and 3 tonne rigid trucks).

Not all vehicle movements will occur in the same time period per day. Notwithstanding this, the estimated maximum daily construction vehicle generation is up to 190 vehicle movements per day. See Section 4.1.2 of the CTMP (Ason 2021) for exempt vehicles not part of construction works within the Site.

Access to the site shall be available via Compass Drive, the Link Road and Emporium Ave as per **Figure 4**.

The environmental management controls in **Table 14** will be implemented to ensure road safety and network efficiency during construction.

Table 14 Environmental Management Controls for Traffic

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Primary construction access will be from Compass Drive via the Link Road, and an ancillary connection via Emporium Ave. However, construction activity on the site may require that access be made from the Construction Access Road (Future SLR road reserve).	Drivers	Ongoing	CTMP Section 4.1.3
A schedule for deliveries of materials and goods will be established for each day, on the previous day or earlier.	Construction Contractor	Daily	
Traffic Controllers will maintain radio contact with construction vehicles at all times.		Ongoing	
Vehicle Movement Plans (VMP) will be prepared for on-site circulation for key stages generating more than 20 truck movements (10 in, 10 out) per day. See Section 4.1.3 of the CTMP for details on VMP.		As required	
At no stage shall queueing occur on the public road network.	Drivers	Ongoing	

Measure	Person Responsible	Timing / Frequency	Reference / Notes
In the event that vehicles were required to use a layover prior to arrival to site. it is expected that the vehicles will laydown within Compass Drive before arriving to site in order to avoid any on-street queuing.	Construction Contractor / Drivers	In the event that vehicles were required to use a layover prior to arrival to site.	CTMP Section 4.1.3
Drivers will not use Bakers Lane for access to and from the site. This will be included within regular toolbox talks and within the Drivers Code of Conduct.		Ongoing	CTMP Section 4.1.4
All endeavours will be undertaken to limit vehicular movements with the easement areas, wherever practicable.			CTMP Section 4.2.1
No vehicle circulation will be undertaken within 5 m of any transmission structure or guy-wires.			CTMP Section 4.2.2
All drivers will adhere to the Driver Code of Conduct outlined in Section 5 of the CTMP and copies will be available for hand-out prior to or at Inductions and Toolbox talks (Section 3.4).			CTMP Section 4.2.3
Contractor Parking zones will be nominated and will not obstruct any vehicle manoeuvre routes. These locations are expected to change as construction continues.	Construction Contractor	Ongoing	CTMP Section 4.2.4
Vehicles will be tracked upon entry and exit of the Site's access to ensure that vehicles are abiding by both the timed restrictions and construction volume constraints.		As required	CTMP Section 4.2.5
Handling of all materials throughout the construction shall adhere to the following: <ul style="list-style-type: none"> • All material loading will occur within the construction site boundary; • No loading is proposed to occur outside of the provisioned areas; and • Equipment, materials and waste will be kept within the construction site boundary. 			
During latter stages of construction, tie in works will be required within the kerbside of Emporium Ave. All materials handling shall be undertaken off the public roadway, however if materials handling is required from the roadway, then prior approval shall be obtained from the relevant Authorities.		During Construction	CTMP Section 4.2.5
An on-street Works Zone is proposed for the use of hydrant fill points by Contractor water carts. Note: Locations to be confirmed and subject to approval by PCC.		As required	
An application to Council will be submitted in the event that any special or discreet work activities require the use of kerbside parking for the purposes of a Works Zone.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Temporary exclusion fencing will be erected along the entire boundary of the site and will be maintained for the duration of the construction program. The fencing is to ensure unauthorised persons are kept out of the Site.	Construction Contractor	Prior to commencing construction and ongoing	CTMP Section 4.2.6
Site access gates will be provided within Sepia Ave and will be closed at all times outside of the permitted construction hours.			
Chain mesh construction fencing will be provided along all site frontages accessible by the public to prevent unwanted pedestrian and/or cyclist access.			CTMP Section 4.2.7
Careful consideration for pedestrian protection shall be included within relevant TGS's, as outlined in section 4.2.9 of the CTMP.		Ongoing	CTMP Section 4.2.6, Section 4.2.7
Any Signage and/or line marking to be installed as a result of these construction works shall be installed as per Council's Engineering Construction Specification For Civil Works document (October 2017).			CTMP Section 4.2.8
Any Traffic Guidance Schemes (TGSs), associated risk assessment, consultation schedules, TGS verification checklist, and inspection checklists shall be prepared by an accredited person, in accordance with the TfNSW Traffic Control at Worksites Manual (Issue 6.0) and AS1742.3:2019.		As required	CTMP Section 4.2.9
Regular checks will be undertaken to ensure all loads are entering and leaving site covered.		Ongoing	CTMP Section 5.3
The Contractor is responsible to take all steps necessary to ensure company vehicles are as safe as possible and will not require staff to drive under conditions that are unsafe.		Ongoing	CTMP Section 5.4
Vehicles will be well maintained and enhance driver, operator and passenger safety by way of: – Pre-commencement checks for all new plant arriving on-site and prior to undertaking any work. – Daily prestart inspections for all plant, vehicles and equipment currently on-site. – All construction plant must be fitted with a flashing light, fire extinguisher and reverse alarms (or squawkers). – Ensure all operators onsite have a current verification of competency (VOC) for their current driver's licence of the appropriate class.			
All maintenance requirements will be met and recorded.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Driver training needs will be identified, including arranging appropriate training or re-training. This may include providing the below: - Operator VOC assessment as part of all inductions; and - Regular Toolbox discussions on safety features, managing fatigue, approved heavy routes, driver responsibility and drink-driving (Section 3.4)	Construction Contractor	Ongoing	CTMP Section 5.4
Safe Driving behaviour will be encouraged by: – Ensuring the subcontractor is informed if their staff become unlicensed; – Not covering or reimbursing staff speeding or other infringement notices; and – Ensuring Legal use of mobile phones in vehicles while driving only.			
Better fuel efficiency will be encouraged by: – Use of other transport modes or remote conferencing, whenever practical; and – Providing training on, and circulating information about, travel planning and efficient driving habits.			
Safety to motorists and pedestrians throughout the area will be maintained during construction through the preparation and execution of Traffic Guidance Schemes Plans (TGS's). A range of TGS's will be prepared for each access throughout construction, to identify all reasonably foreseeable hazards, assess the hazards, and manage the hazards as best possible by either eliminating or minimising the risks. TGS's shall be monitored and updated accordingly throughout the project.	Construction Contractor	Ongoing	CTMP Section 6.2
The CTMP will be reviewed in accordance with Section 7.1 of the CTMP.		Monthly, at minimum	CTMP Section 7.1

4.6 Soil and Water

The following documents have been prepared to ensure appropriate soil and water management during the construction of Lot 3B:

- Soil and Water Management Plan (SWMP) (Rubicon 2021) attached as **Appendix H**. The SWMP aims to reduce the potential for risk of environmental impacts caused by water and soil associated with project activities.
- Erosion and Sediment Control Plan (ESCP) (Rubicon 2021a) attached as Appendix A of the SWMP. The ESCP aims to reduce the potential for risk of environmental impacts caused by erosion and sedimentation associated with project activities.
- Fill Importation Protocol (FIP) (AECOM 2021) attached as **Appendix I**. The FIP aims to ensure that materials imported to the site are suitable for commercial / industrial land use.

The following will be implemented for maintaining erosion and sediment controls in efficient working order for the duration of construction.

While these documents should be referred to for specifics, the environmental management controls are listed in **Table 15**.

Table 15 Environmental Management Controls for Water and Soil

Measure	Person Responsible	Timing / Frequency	Reference / Notes
General			
The stormwater management system will be consistent with the plans lodged for development approval, prepared by AT&L, reference number 15-272, revision C, dated 17.03.2021.	Construction Contractor	Ongoing	DA21/0440 Condition 33
Trenching works on grade will be controlled with methods detailed in the 'Blue Book' – Volume 2A' - Section 6.			ESCP Section 9
Mobile plant, machinery and vehicles are to be regularly inspected and maintained to manufacturer's specifications.			
Planning, permits and personnel for soil and water management activities and controls will be managed as per Table 9 in the ESCP.		Pre-construction / Ongoing	SWMP Section 6
Training will be provided to all project personnel, including relevant sub-contractors on sound erosion and sediment control practices and the requirements from this plan through inductions, toolbox talks and pre-start briefings.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
A Project Soil Conservationist (Certified Professional in Erosion & Sediment Control - CPESC) will be engaged and consulted throughout construction to provide advice and review SWMP preparation, erosion and sediment control design, installation, maintenance and the development of Progressive Erosion and Sediment Control Plans (PESCPs).	Construction Contractor	Pre-construction / Ongoing	SWMP Section 6
Where topsoil is being disturbed, monitoring of works by appropriately qualified personnel, along with the implementation of an unexpected finds protocol in consultation with Aboriginal Stakeholders and Heritage Division of the Department of Planning, Industry and Environment would be put in place.		As required	CCS Section 3.2
Water			
Personnel responsible for approval and/or carrying out dewatering activities will be adequately trained and inducted on the dewatering procedures and requirements.	Construction Contractor	Ongoing	ESCP Section 9 and ESCP Appendix B
The rainwater tank must be maintained so as not to create a nuisance and it must be protected against mosquito infestation.			ESCP Section 9
Flooded excavations, ponded water, etc will be extracted as required and utilised for site purposes or treated to achieve acceptable water quality prior to discharge.			
Flooded excavations and groundwater encountered in Acid Sulphate Soils (ASS) areas or potentially contaminated areas will be tested and assessed.		Prior to being extracted for treatment & subsequent discharge or conveyed to a licensed liquid waste facility	
Site water that is to be discharged directly to a flow line, drain, watercourse, etc, will be tested, treated, and recorded.		Prior to discharge and ongoing	
The water levels in concrete washout pits will be monitored and dewatered regularly. The water pH will be tested and treated where it is outside the parameters of pH 6.5-8.5. Where suitable pH is attained, the water can then be used site purposes.		Regularly and ongoing	
The site machinery 'lay-up' area, re-fuelling areas and chemical storage areas will be located at least 5 meters away from major drainage line.		During construction and ongoing	

Measure	Person Responsible	Timing / Frequency	Reference / Notes
The re-fuelling and servicing of machinery will be undertaken at approved premises off-site where possible. Onsite refuelling and servicing will only occur with appropriate spill control measures at hand, or where established or temporary bunded areas are available.	Construction Contractor	During construction and ongoing	ESCP Section 9
Clean and dirty water runoff will be adequately separated to avoid mixing where possible through the use of diversions, clean water drains, and the early installation of permanent drainage infrastructure.		Pre-construction/ Construction	SWMP Section 6
Erosion and Sediment Control			
Erosion and sediment control measures will be installed, and the erosion and sediment control measures will be maintained in accordance with the approved erosion and sediment control plans for the development and the Department of Housing's "Managing Urban Stormwater: Soils and Construction" 2004.	Construction Contractor	Prior to the commencement of works on-site and throughout the construction phase of the development until the land, that was subject to the works, has been stabilised	DA21/0440 Condition 13
Hardstand material, rumble grids or similar will be provided at exit points from construction areas onto public roads to minimise the tracking of soil and particulates onto public roads.		During construction	SWMP Section 6
Site compounds, access tracks, stockpile sites and temporary work areas will be designed and located to minimise erosion.			
Works will be programmed to minimise the extent and duration of unstabilised soil surfaces.			
Stabilisation will be implemented for dormant areas by providing soil surface protection (i.e. geotextile fabric, stabilised mulch, soil binder or spray grass).		During construction for dormant areas exposed for four weeks or more including stockpiles and batters)	
Drains, banks or diversions will be formed (and stabilised where required) to direct runoff from disturbed areas to sediment basins or to areas with adequate sediment control devices, and away from watercourses or tributary drainage lines. Lip berms and batter chutes with velocity dams will be progressively formed and maintained on fill formations.	During construction.		

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Staged re-vegetation and/or other permanent stabilisation will be implemented in disturbed site areas.	Construction Contractor	During construction as work proceeds	SWMP Section 6
Stockpiles will be: <ul style="list-style-type: none"> Located in designated stockpile sites, above 10-year flood levels; Located at least 5 m from likely areas of concentrated water flows and drainage lines; Topsoil stockpiles formed to heights to no greater than 2 m, and all other soil materials to be no higher than 5m, and batter slopes to be no steeper than 2:1; Established so that any slump of the stockpile will not affect erosion and sediment control measures or infringe on specified minimum clearance requirement; Covered or otherwise protected from erosion where stockpiles will be in place for more than 20 days, or temporary stockpiles that are susceptible to wind or water erosion, within 5 days of forming each stockpile; Managed to avoid contamination with noxious weeds and cross-mixing with other stockpiled materials; Weed growth on stockpiles will be monitored and suppressed as required. 		Ongoing	
The construction sediment basin design/s, restoration and revegetation methodology will be formulated and/or reviewed by the Project Soil Conservationist.		Pre-construction during construction	
All sediment basins will have depth indicators installed that clearly show the sediment storage zone together with basin identification signage basin number.		Ongoing	
Run-off from areas within catchments (that are controlled by sediment basins) is to be diverted to the sediment basins in stabilised drainage lines where possible.			
Suitable all-weather access will be constructed and maintained to sediment basins to allow for basin testing, treatment, discharge and maintenance.		During construction and ongoing	
Water quality basins will be flocculated with an appropriate approved flocculant (eg. gypsum) using an early dosing system to minimise the settling time of suspended dispersible and small sediment particles and to maximise the efficiency of the basins.		Ongoing	
Prior to discharging any water from a sediment basin, representative water samples will be obtained and tested to ensure that it meets the NSW EPA water quality criteria.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Flocculant or coagulant (whether gypsum or another approved material) will be applied to settle suspended sediments.	Construction Contractor	Ongoing within 24 hours of the conclusion of each rain event causing runoff	SWMP Section 6
The cycle time to treat, dewater and return the maximum storage capacity to any individual construction water quality basin prior to the next rainfall event will not exceed 5 days.		Ongoing	
An application will be made to the Principal to allow for the discharge of supernatant waters based on turbidity measurements before confirmatory laboratory data is available.		Subsequent to the initial series of basin sample tests, where a statistical correlation can be demonstrated between turbidity and Total Suspended Solids (TSS).	
A sediment basin management register will be maintained for each sediment basin that records; <ul style="list-style-type: none"> Personnel approving the dewatering activities; Time and date; Water quality test results and estimated volumes for each discharge. 		Ongoing	
Personnel responsible for approval and/or carrying out dewatering activities will be adequately trained and inducted on the dewatering procedures and requirements.		Prior to personnel carrying out dewatering activities/ approvals of dewatering activities	
Water to be discharged from site will be discharged in accordance with a Site Dewatering Procedure. In accordance with NSW EPA water quality criteria, the water quality parameters for discharge from site discharge points will be: <ul style="list-style-type: none"> Total Suspended Solids <50mg/L; pH 6.5 - 8.5; Oil and grease – not visible. 		Ongoing	

Measure	Person Responsible	Timing / Frequency	Reference / Notes
<p>A site dewatering register will be maintained for site areas (other than sediment basins) that require treatment, dewatering and discharge to off-site areas. The register will record;</p> <ul style="list-style-type: none"> Dewatering procedure; Date and time for each discharge at each location; Water quality test results for each discharge; Personnel approving the dewatering activities; Evidence of discharge monitoring, or risk assessment and mitigation; Measures used to eliminate the risks of pollution or erosion. 	Construction Contractor	Ongoing	SWMP Section 6
<p>Water captured in sediment basins and other site works areas will be reused for dust suppression, compaction, or other construction activities where possible. If a proposed source, other than a town water supply or natural water source, procedures will be developed for regular testing to ensure that the water is suitable for the purpose and is not hazardous to health and the environment.</p>		During construction	
<p>The rehabilitation of disturbed areas will be undertaken progressively as construction stages are completed and in accordance with procedures detailed in the Blue Book Volume's 1 and 2D.</p>		During construction	
<p>Restoration of these disturbance areas includes;</p> <ul style="list-style-type: none"> Topsoiling; Seeding, planting, watering and maintenance; Removal of temporary erosion control devices and of accumulated sediments; Removal of unused construction materials and waste materials. 		Ongoing	
<p>The following measures will be included to limit sediment and other contaminations entering receiving waterways:</p> <ul style="list-style-type: none"> Chemicals will be stored within a sealed or banded area not within 5 m of any aquatic habitat, any areas of concentrated water flow, flood prone or poorly drained areas, or on slopes steeper than 1:10; Vehicle movements will be restricted to designated pathways where feasible appropriate controls will be in place where plant is stored; Areas that will be exposed for extended periods, such as car parks and main access roads, will be stabilised where feasible. 		Construction	

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Promote planning for seasonal restrictions for high-risk areas and/or activities ((i.e., late summer/autumn rainfall events for culvert works or cold winter temperatures affecting revegetation).	Construction Contractor	Ongoing	ESCP Section 9
Exclusion areas ('No Go' zones) will be identified, delineated where practical, and personnel instructed to avoid disturbance in these areas.		Prior to construction/ during construction	
Temporary fencing or barricading such as parawebbing or perimeter tape will be utilised on the perimeter with accompanying signage as required.		Site establishment	
Areas of proposed works with identified noxious weed infestations will treated with appropriate herbicide, in accordance with product directions. The weed treatment will occur in sufficient time prior to disturbance to ensure complete 'die back' prior to topsoil handling.		Prior to disturbance works during construction	
In areas requiring weed control, spray drift will be mitigated by conducting spraying activities in calm weather and application by hand sprayer unit where practical.		Ongoing	
The extent of earthworks will be demarcated to the footprint necessary for the proposed works.		Prior to earthworks commencing	
Construct erosion resistant access routes, site access/egress points, and compound roads will be formed and stabilised as early works.		During construction	
Car parking areas and frequently utilised areas will be stabilised (e.g. geotextile with asphaltic millings, rock aggregate overlay, bitumen chip seal or similar) to prevent soil churning, where required.			
Temporary drains, banks or diversions will be formed and stabilised to divert concentrated 'clean' flows around disturbed works areas.			
The installation of preliminary sediment controls such as perimeter sediment fencing, excavated sediment traps, check dams, coir log/straw bale filters, etc, will be implemented.			
The stockpile locations will avoid concentrated surface flows or areas subject to inundation during wet weather.		Ongoing	

Measure	Person Responsible	Timing / Frequency	Reference / Notes
The long-term soil stockpile locations will be located 5 metres away from major drainage lines. The stockpiles will not be established in areas subject to concentrated surface flows, waterlogging or prolonged inundation during wet weather.	Construction Contractor	Ongoing	ESCP Section 9
Stockpiles will stabilised if they are to remain in place for more than 20 days. Rolled Erosion Control Products (RECP's such as geotextile, jute mesh, coco fibre mat, etc) or soil binders can be used on smaller stockpiles, however, larger stockpiles will be formed into crowned structures to minimise erosion and be subsequently stabilised with cover crop seeding or applied geobinders. Plastic covers will only be utilised for short term cover for wind or storm protection.			
Maintain minor benches or contour berms on fill batter formations.			
Implement temporary scour protection lining for major 'dirty' drains for steep or long drains to sediment basins or other controls.			
Access to the works area, and movements on the site during construction will be limited to the defined access and project areas, where possible.			
Minimise vehicle movements & speed on unsealed areas and access tracks.	Contractors	Ongoing.	
Earthworks and hauling, and vehicular movements will be limited in wet conditions.		During construction	
Vehicles transporting bulk materials such as soils and fill will correctly cover loads to prevent loss of load and/or dust generation on public roads.			
Water carts will regularly spray access tracks, works areas, and temporary stockpiles and where works, soil handling and/or potentially contaminated soils are generating dust.	Construction Contractor	Throughout construction during dry weather conditions	
Bunded or controlled areas for re-fuelling, material stockpiling, (and contaminated soil treatment area if required) will be formed prior to commencement of those works in the relevant risk areas.	Construction Contractor	During construction	
The progress of earthworks will minimise slope lengths and gradients where practical utilising contour berms, batter berms, diversion banks, etc.			
Personnel to ensure visual dust monitoring is maintained during works, and dust suppression is undertaken regularly.	Construction Contractor / Contractors		

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Construct diversion drains or banks upslope of proposed works which will direct off-site water flows to existing drainage or adequately stable vegetated areas.	Construction Contractor		ESCP Section 9
Immediately line any constructed off-site water diversion with appropriate RECP's, OFM's and/or geobinders.			
Temporary spillways and associated structures will be suitably stabilised for the volume and turbulence of flows.			
Sheet flows in work areas have erosion measures such as surface roughening, scribed drains and/or contour banks to reduce slope lengths. Flows from diversions to have velocities controlled and directed to sediment controls.			
Temporary 'dirty' water drainage will be adjusted progressively to maximise flows to sediment filters and traps.			
Permanent storm water drains and outlet structures will be stabilised as soon as possible following completion.			
Check dams are to be constructed from geotextile/aggregate bags, sandbags, staked coir logs/straw bales or loose rock formations to reduce flow velocities in unlined drains and other areas of concentrated flow (i.e. against diversion banks). Check dams are to be installed at the required intervals in drains with the frequency of the dams increasing as the grade increases		During construction	
Dewatering devices or transfer pumps will be positioned to ensure that settled sediments are not disturbed or extracted.		Ongoing	
Discharge of concentrated, treated flows to lands will occur in well vegetated areas with diffusers or level spreaders to prevent erosion.			
Flows transferred from in-stream works to downstream areas will be released in a diffused manner.		During construction	
Adequately designed and constructed concrete washout facilities will be constructed in a suitable location away from drainage lines. Concrete wash down to occur directly into lined receptacles or formed washouts.			
Sediment fencing, non-woven geotextile etc, will be installed on down slope work boundaries, down slope of stockpiles, cut/fill batters, access tracks, etc, to filter sheet flows.		Ongoing	
Sediment filters will be formed from straw bales, aggregate & geotextile filter bags, coir logs, etc, to control concentrated on-site water flows as required.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Excavated sediment traps will be utilised at critical locations at the toe of the contributing catchment. They will be desilted at 60% capacity and will be dewatered prior to the onset of further rainfall. Note the excavated sediment traps will be a secondary control, relying on retention of coarse sediment in upslope controls within the construction area.	Construction Contractor	Ongoing	ESCP Section 9
Aggregate filter bags or sandbag inlet traps will be deployed on roadside pit inlets or other inlets to the drainage system.			
Gully pit inlets will be protected with filter inlet controls formed from sediment fence, filter bags, straw bales & geotextile, coir logs, etc.			
The sediment captured by control devices will be removed when 30% of capacity is reached. Regular desilting will also be employed to maintain catchment and settling capacity, and to reduce re-entrainment of settled materials in subsequent rain events.		During construction	SWMP Section 6
Any rectification measures which are identified from inspections of all disturbed areas, revegetated/stabilised areas and all permanent and temporary erosion and sediment control works will be addressed and / or recorded to ensure appropriate rectification within the nominated timeframe. The timeframe for rectification works is based on a risk assessment of deficiencies in controls, being; <ul style="list-style-type: none">High: within 24 hours of inspectionMedium: within 3 working days of inspection; andLow: within 3 working days of inspection.			
Soil			
Mud and soil from vehicular movements to and from the site must not be deposited on the road.	Construction Contractor	Ongoing	DA21/0440 Condition 14
Imported quarry product and fill materials will be clean, and free of contaminants (ie. weeds, waste, liquids, etc).		During construction	ESCP Section 9
Excavation of sub-soils will be inspected and monitored as works proceeds, to identify potential contamination. Any potentially contaminated soils will be stripped or excavated separately and transported directly to the designated stockpile, treatment area or licensed waste facility.			
Potentially contaminated soils will be stored within an appropriately bunded area and covered with heavy grade plastic or other impermeable covers for the duration of rainfall.		Ongoing for the duration of rainfall	

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Potentially contaminated excavated material that are required to be removed from site will be assessed and classified in accordance with the Protection of the Environment Operations Act 1997 and 'Waste Classification Guidelines: Parts 1 and 2 (DECC 2008)'.	Construction Contractor		
Excavated soils and materials (that have been assessed, classified, treated and re-assessed on site) will be re-used as fill material on site where appropriate.		Ongoing	ESCP Section 9
Vehicles transporting potentially contaminated soils both on internal access tracks and public roads will correctly cover loads to mitigate dust generation or spillage.	Contractors		
The ground disturbance and machinery/vehicle movements in potentially contaminated areas will be minimised to essential works.		During construction	
Earthworks, soil handling and general disturbance in potentially contaminated areas will be avoided.		Ongoing during periods of strong and/or gusty winds	
Water sprays will be utilised to mitigate dust from contaminated soils in works areas, contaminated soil handling or temporary stockpile areas.		Ongoing	
Efficient staging planning for early stabilisation of perimeter or completed areas. (i.e. stabilisation of permanent drains, batters, sealing & paving, and decommissioning of temporary controls) will be promoted.		Ongoing prior to works commencing	
Stabilisation of areas will occur progressively in conjunction with the completion of earthworks.	Construction Contractor	During construction	ESCP Section 9
Suitable design and construction techniques will be selected for stabilisation of relevant areas such as drain linings, batter treatments, etc.		Prior to stabilisation works	
Completed earthworks areas will be backfilled and compacted in a staged manner as soon as possible.		During construction	
Adjacent disturbed areas will be suitably trimmed and stabilised as required.			
Erosion and sediment controls will be maintained until the relevant catchments are stabilised, re-vegetated, or sealed adequately to achieve soil surface protection factors as per the 'Blue Book', SWMP & ESCP requirements.		Ongoing	
Fill Importation			
Only Virgin Excavated Natural Material (VENM), Excavated Natural Material (ENM) or other material approved in writing by NSW EPA will be brought onto the site.	Construction Contractor	Ongoing	FIP Section 1.1

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Where ENM and/or VENM assessment reports have been prepared by other consultants, the assessment reports must be supplied to Goodman and the environmental consultant for review, prior to materials being imported to Site. These reports will include but not be limited to the information outlined in the FIP Section 2.0.	Construction Contractor	Ongoing	FIP Section 2.0
Materials imported to Site will be either Excavated Natural Material (ENM), Virgin Excavated Natural Material (VENM), Recovered Aggregates, Basalt Fines or Recovered Glass Sand. Assessment requirements in the FIP Section 2 will be adhered to.			FIP Sections 2.1-2.5
A report will be required for each potential VENM or ENM source site. Each report must be prepared by an appropriately qualified consultant and meet the requirements of the FIP Section 2.6			FIP Section 2.6
The environmental consultant will be provided a copy of each Assessment Report of ENM and/or VENM for review purposes.	Construction Contractor / Environmental Consultant	Prior to importation of fill to Lot 3B.	FIP Section 2.8
In the event that the review indicates insufficient assessment data (as outlined in the FIP Section 2.6), no materials shall be imported to Lot 3B until the Consultant has satisfactorily addressed the identified data gaps.			
For any materials imported to Lot 3B under the applicable Resource Recovery Order (RRO), the requirements in Section 2.9 of the FIP will apply.	Construction Contractor	Prior to importation of fill to Lot 3B.	FIP Section 2.9
During importation of materials inspections of vehicles entering Lot 3B will be undertaken. The following information will be noted and recorded:		During importation of fill	FIP Section 2.10
<ul style="list-style-type: none"> Vehicle registration (license plate) number. Location of source site. Contact name at source site. Time left source site and time of arrival at Lot 3B. Contents of truck and are they similar to the expected contents. Inspection of materials when deposited from truck. GPS truck-tracking data (if applicable). 			
Where suspicious loads and/or evasive answers and/or incomplete vehicle tracking data are apparent, permission to unload will not be granted.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Where contaminants or suspected contaminants are observed in imported material during tipping, the truck will be reloaded and be sent back to the source site. Cartage from the source site will cease and will only recommence when the Construction Contractor's Representative is satisfied that the issue has been addressed.	Construction Contractor	During importation of fill	FIP Section 2.10
A Materials Tracking Register will be implemented to ensure that only "approved" ENM or VENM is imported to the Site. The Materials Tracking Register will include the requirements listed in the FIP Section 3.0.		Ongoing	FIP Section 3.0
A Spotter (or Spotters) will be at lot 3B to meet all trucks and will perform the duties outlined in the FIP Section 3.0.			

4.7 Hazardous Goods and Contamination

The Erosion and Sediment Control Plan (ESCP) (Rubicon 2021a) (attached as Appendix A of the SWMP) specifies environmental controls for dangerous and hazardous goods stored and used on site during the construction of Building 3B.

In addition, an Unexpected Finds Protocol (UFP) has been prepared by AECOM (2021a) for any potential contamination identified during construction. The UFP is attached as **Appendix L**.

The environmental controls that will be implemented to minimise the potential for environmental incidents relating to hazardous goods and contamination are presented in **Table 16**.

Table 16 Environmental Management Controls for Hazardous Goods and Contamination

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Storage and Management of Dangerous Goods			
A schedule of all hazardous materials kept on site will be maintained for the duration of the project.	Construction Contractor	Ongoing	ESCP Section 9
Appropriate spill kits will be kept on site at all times and any spillage will be immediately cleaned up. In the event of a large or hazardous spill, contact will be made with emergency and relevant authorities, where required.		During construction	
The location of spill response kits will be established close to works or operations areas.		Prior to commencing work and ongoing	
All site personnel will be instructed about emergency spill procedures, spill kit locations and requirements.			
Storage of liquid construction materials (chemicals, fuels, oils, etc) will be provided in appropriately bunded areas on site to prevent leaching into soils, leaking or other transfer of material into waterways.			
Bunded areas will satisfy requirements of the relevant Australian Standards and 'Bunding and Spill Management (DEC, 1997)'.			
Containment bunds will be monitored regularly and captured materials removed as required to ensure bund capacity is maintained.		During construction	
The requirements of the Australian Dangerous Goods Code will be observed for storage and transport of any hazardous materials.			
The compatibility of all chemicals, pesticides and fuels transported and stored will be assessed to avoid potential risk from reactions, explosion, etc.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
All chemicals, pesticides and fuel will be stored and transported in approved containers. Chemicals, pesticides and fuels will be labelled correctly and clearly; including using approved warning symbols etc.	Construction Contractor	Ongoing	ESCP Section 9
A MSDS register will be maintained and be readily accessible on site for all hazardous chemicals transported, handled or applied.			
An adequate record or log of all environmentally hazardous chemicals received, used and/or disposed of will be maintained.			
Unexpected Finds			
Any material identified as contaminated will be disposed off site, with the disposal location and results recorded prior to its removal from the site.	Construction Contractor / Contractors	As required	Best practice
The Construction Contractor’s Representative will be notified of any suspected or potential contamination exposed during construction activities, and cease all work activities within the vicinity of actual or suspected contaminated land.		Immediately	
All employees and contractors required to use potentially dangerous goods will be appropriately trained in the proper storage, use and handling.		Ongoing	
Any liquid wastes or dangerous goods waste generated by the construction activities (e.g. due to damage or leakage of containment) will be disposed of by a suitably qualified contractor to an appropriately licensed disposal facility.	Construction Contractor / Contractors	As required	UFP – Contamination Section 3.1
In the event that unexpected contamination finds are encountered: <ul style="list-style-type: none">Construction Contractor will immediately be informed.The Construction Contractor will inform Goodman and Contamination Consultant. AECOM will inspect the unexpected find (if required).	Construction Contractor/ AECOM		
Where the contamination is known or an unexpected contamination find has been identified, a Remediation Action Plan (RAP) will be prepared (as required) in accordance with applicable EPA guidelines and the UFP – Contamination.	Construction Contractor		
In the unlikely event that fragments of Asbestos Containing Materials (ACM) are identified during the earthworks, works will cease and the procedure outlined in Section 3.2 of the UFP will be implemented.	Construction Contractor		UFP – Contamination Section 3.2

Measure	Person Responsible	Timing / Frequency	Reference / Notes
In the unlikely event that burial pits relating to the former grazing activities are exposed, works will cease in that area and the procedure outlined in Section 3.3 of the UFP will be implemented.	Construction Contractor / Contractors	As required	UFP – Contamination Section 3.3
In the event that other contaminated materials are identified during the earthworks, works will cease and the procedure outlined in Section 3.4 of the UFP will be implemented.			UFP – Contamination Section 3.4
A Materials Tracking Plan (MTP) will be developed and implemented in accordance with Section 4 of the UFP.	Construction Contractor	Ongoing	UFP – Contamination Section 4
Contamination Consultant will prepare a Validation Report in accordance with the requirements of the NSW OEH (2011) <i>Guidelines for Consultants Reporting on Contaminated Sites</i> and EPA (2017) <i>Guidelines for the NSW Site Auditor Scheme (3rd Edition)</i> .	Construction Contractor / Contamination Consultant	At the completion of the earthworks and if any unexpected finds were encountered that required remediation	UFP – Contamination Section 5
The quantities of hazardous materials and chemicals stored or used will be minimised as far as practical and substitution of less hazardous materials or chemicals, or modifying methods of use/storage etc. will be implemented where possible.	Construction Contractor	Ongoing	ESCP Section 9
Sensitive areas (ie. drainage lines) will be identified before utilising or applying chemicals. Where sensitive areas are identified, appropriate guidance and relevant restrictions will be formulated for chemical use or applications.		Prior to applying chemicals, ongoing	
The application methods and dilution ratios specified in manufacturer's directions and/or associated MSDS will be observed by personnel.	Construction Contractor / Contractors	Ongoing	

4.8 Waste

Construction waste will be managed in accordance with the Waste Management Plan (WMP) (SLR 2020b). The WMP developed for the EIS has been used in this CEMP.

The environmental management controls in **Table 17** will be implemented to minimise the potential for adverse waste impacts from the construction of Lot 3B.

Table 17 Environmental Management Controls for Waste

Measure	Person Responsible	Timing / Frequency	References / Notes
All construction waste materials stored on-site are to be contained within a designated area such as a waste bay or bin to ensure that no waste materials are allowed to enter the stormwater system or neighbouring properties.	Construction Contractor	During construction	DA21/0440 Condition 17
The designated waste storage areas shall provide at least two waste bays/bins so as to allow for the separation of wastes and are to be fully enclosed when the site is unattended.			
All excavated material and other wastes generated as a result of the development are to be re-used, recycled or disposed of in accordance with the approved waste management plan.		Ongoing	DA21/0440 Condition 18
Waste materials not specified in the approved waste management plan are to be disposed of at a lawful waste management facility.			
All receipts and supporting documentation must be retained in order to verify lawful disposal of materials and are to be made available to Penrith City Council on request.			
Suitable measures will be implemented to manage pests, vermin and declared noxious weeds on the Site.	Construction Contractor	Ongoing	Best Practice
The Site will be inspected on a regular basis to ensure that the pest/weed/vermin measures are working effectively, and that they are not present on Site in sufficient numbers to pose an environmental hazard or cause the loss of amenity in the surrounding area.			
Waste Avoidance In accordance with Council's Development Control Plan (DCP) and better practice waste management waste avoidance measures listed in the WMP should be followed.			WMP Section 5.5

Measure	Person Responsible	Timing / Frequency	References / Notes
Reuse, Recycling and Disposal In accordance with Council's DCP and better practice waste management waste reuse, recycling and disposal measures listed in the WMP should be followed.		Ongoing	WMP Section 5.6
Waste Storage and Servicing In accordance with Council's DCP and better practice waste management waste reuse, recycling and disposal measures listed in the WMP should be followed.			WMP Section 5.7
All staff, including sub-contractors and labourers, employed during the site preparation and construction phases of the Project must undergo induction training regarding waste management for the Site.			WMP Section 5.8
Standard signage will be posted in all waste storage and collection areas. All waste containers will be labelled correctly and clearly to identify stored materials.			WMP Section 5.9
All waste will be handled, stored and disposed of in accordance with the 'Waste Classification Guidelines: Parts 1 and 2 (DECC 2008)'.	Construction Contractor	During construction	ESCP Section 9
Waste construction materials such as steel, concrete, etc will be removed to an appropriate recycling facility, to a suitable location for appropriate re-use, or to a licensed waste disposal facility.			
All putrescible, construction, and food wastes are to be immediately captured and stored correctly, prior to removal to a licensed waste facility. Putrescibles and food wastes will be removed from site on a least a weekly basis.			
The effluent from concrete wash down is to be captured by an excavated wash out pit lined with an impervious membrane at least 5 metres away from any waterway or major drainage lines. The pit is to be protected by a diversion bund to prevent entry of site run-off that may subsequently displace alkaline water/slurry. Concrete washouts to be covered for the duration of significant or prolonged rainfall.			
Any aggregate placed for vehicle access or as a work platform will be removed to a suitable location for recycling, appropriate re-use, or to a licensed waste disposal facility.		Following completion of construction	

4.9 Visual Amenity and Landscaping

Landscaping will be undertaken in accordance with the Landscape Management Plan (LMP) (Scape Design 2021) and is attached as **Appendix M**. The LMP seeks to manage the visual impacts of the project to comply with the landscape performance criteria and ensure the landscape treatments are consistent with the ecological revegetation works described in the Oakdale West LMP.

Table 18 outlines the mitigation measures to be implemented during construction to manage the impacts to visual amenity and landscaping.

Table 18 Environmental Management Controls for Visual Amenity and Landscaping

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Landscaping			
All landscape works are to be constructed in accordance with the stamped approved plans and Chapter C6 Landscape Design of Penrith Development Control Plan 2014.	Construction Contractor	During construction	DA21/0440 Condition 48
Landscaping will be maintained: <ul style="list-style-type: none">In accordance with the approved plan, andIn a healthy state, and in perpetuity by the existing or future owners and occupiers of the property.		Ongoing	
The approved landscaping for the site must be constructed by a suitably qualified and experienced landscape professional.			
All plant material associated with the construction of approved landscaping will be planted in accordance with Penrith Development Control Plan 2014.	Construction Contractor / Contractors	During construction	DA21/0440 Condition 51
All landscape works will meet industry best practice and the following relevant Australian Standards: <ul style="list-style-type: none">AS 4419 Soils for Landscaping and Garden Use;AS 4454 Composts, Soil Conditioners and Mulches; andAS 4373 Pruning of Amenity Trees.			DA21/0440 Condition 52
No trees will be removed, ringbarked, cut, topped or lopped or wilfully destroyed (other than those within the proposed building footprint or as shown on the approved plans) without the prior consent of Penrith City Council and in accordance with State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017.	Construction Contractor		Prior to construction and during construction.
The material sand colours of any new fencing or retaining walls will match or complement the external materials of the development. Retaining walls will be constructed of masonry. Note all required fencing and retaining walls will be at the full cost of the property owner/developer.		During construction	DA21/0440 Condition 54

Measure	Person Responsible	Timing / Frequency	Reference / Notes
All landscape works, including detailed design (if relevant), must be carried out by a competent, trained and qualified landscape contractor who is experienced in horticultural practices, landscape construction and planting techniques.	Construction Contractor / Landscape Architect	Ongoing	LMP Section 3.1.3
A proactive approach to all landscape tasks must be adopted to ensure that the appearance of the landscape as a whole is highly presentable at all times, in accordance with Goodman’s <i>Landscape Guidelines</i> .			LMP Section 5.1.2
It is the contractor’s responsibility to ensure the success of the landscaping work over the establishment period of the development.	Construction Contractor		LMP Section 5.1.3
The Contractor shall rectify all defects during installation that become apparent in the works during the defect’s liability period (DLP) (3 months).	Construction Contractor / Landscape Architect		LMP Section 5.2
A Maintenance Logbook will be kept to demonstrate that maintenance work has been undertaken and what materials, including chemical materials, have been used throughout the maintenance and establishment period.			LMP Section 5.2.7
The general appearance and presentation of the landscape and the quality of plant material at the date of practical completion will be maintained for the full planting establishment period.			LMP Section 5.3.1
Failed, dead and/or damaged plants will be replaced at maximum 3-week intervals as required throughout the full plant establishment period, as per the specifications outlined in Section 5.3.1.			
Stakes and ties will be removed. If plants are robust with well-developed systems are strong enough to no longer require support.		At the end of the Defects Liability Period).	LMP Section 5.3.5
A final inspection shall be made by the Project Superintendent, Contractor and Landscape Architect before the completion of the Plant Establishment Maintenance Period (Defects Liability Period).	Goodman / Construction Contractor / Landscape Architect	Prior to completion of Defects Liability Period.	LMP Section 5.4
The Landscape Maintenance Schedule, as outlined in Section 6.1 will be implemented	Construction Contractor / Landscape Architect	During the Establishment Period / Defects Liability Period	LMP Section 6.1
The Irrigation Maintenance Schedule in Section 6.3 shall be used as a check list of minimum attendance.			LMP Section 6.3

4.10 Flora and Fauna

A Flora and Fauna Management Plan (FFMP) has been prepared by Ecologique (2021) and is attached as **Appendix K**. The FFMP outlines mitigation measures relevant to manage potential impacts to biodiversity during both construction and operation.

It is noted that substantial cut and fill earthworks have been undertaken across the wider estate area in compliance with the wider estate's FFMP v7 (Ecologique, 2020). No native vegetation or fauna habitat features have been retained within the Lot 3B (the subject area).

Table 19 outlines the mitigation measures to be implemented during construction to manage the impacts to flora and fauna.

Table 19 Environmental Management Controls for Flora and Fauna

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
Wildlife Protection			
All personnel including contractors are to be made aware of the possibility of encountering fauna, through the site works induction process.	Management / Contractors / Employees	Pre-construction	FFMP Table 4.1 (FF1)
Vehicle and mobile plant operators shall remain vigilant when entering and exiting the works area, particularly at dusk and dawn. Specifically: <ul style="list-style-type: none">Should kangaroos be observed transiting across the entrance/exit to the works area, vehicle/mobile plant is to stop until animals have moved to a safe distance to ensure vehicle/mobile plant strike is prevented.All on site personnel shall alert vehicle/mobile plant entering or exiting the works area if kangaroo movement is observed (via two way radio).All personnel including contractors are to report any injured or near miss incidents with wildlife.		Ongoing throughout construction	FFMP Table 4.1 (FF2)
Should unexpected fauna be encountered within the works site, the stop works procedure provided in Section 5 of the FFMP must be followed.		FFMP Table 4.1 (FF3)	
Weed, Pests and Pathogen Management			
The following hygiene procedures are to be implemented to avoid the introduction and/or spread of soil borne pathogens and weeds: <ul style="list-style-type: none">Minimise work during wet/rainy periods;Vehicles, plant and machinery are to be clean and free of soil on arrival to the works area;Truck wash down, rumble grids to be installed and operated to ensure mud, weeds or pathogens are not transported around the region or onto roads;Mud spilt on roads to be immediately removed by a road sweeper.	Management / Contractors / Employees	Ongoing throughout construction	FFMP Table 4.1 (FF5)

4.11 Fire Safety and Emergency

The environmental controls that will be implemented to minimise the potential for environmental incidents relating to fire are presented in **Table 20**.

Table 20 Environmental Management Controls for Fire Safety and Emergency

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Cutting, welding, grinding or other activities likely to generate fires will not be undertaken in the open on days when a total fire ban is proclaimed, unless an exemption is granted by the relevant Fire Service.	Construction Contractor / Contractors	Ongoing	Best practice
When there is a risk of fire being caused by work such as welding, thermal or oxygen cutting, heating or other fire producing or spark producing operations or when burning off is proposed, training will be provided to all personnel in fire prevention, fire safety and basic firefighting skills.			
Appropriate firefighting equipment will be provided as required for the safety of persons and property.	Construction Contractor	Prior to commencing construction and ongoing	
Emergency vehicle access to and from the Site will be available at all times during construction.		Ongoing	
Fire extinguishers will be located at work locations where hot work is being undertaken or flammable gases are stored.			
Construction plant will be fitted with fire extinguishers, as required/appropriate.			
Waste material will not be burnt on site and no fires of any kind will be lit on site.			

5 Monitoring and Reporting

5.1 Environmental Monitoring and Inspections

Table 21 summarises the monitoring requirements for the construction of Lot 3B at Oakdale West as specified by the relevant management plans.

Table 21 Monitoring and Inspection Requirements

Monitoring / Inspection Requirement	Person Responsible	Timing / Frequency	References / Notes
General			
General environmental site inspection to ensure all relevant environmental controls listed in this CEMP are in place and any required maintenance and/or remediation works are identified and undertaken.	Construction Contractor	Weekly	Best practice
A program to monitor the effectiveness of the CEMP and all Construction Management Plans which form it will be established for the duration of construction, and any improvements identified will be incorporated in ongoing Management Plan updates.	Construction Contractor	Ongoing	Best practice
Noise and Vibration			
Attended noise measurements will be undertaken at the start of noise intensive works in the vicinity of sensitive receivers to verify the levels are as predicted and to check the effectiveness of mitigation and management measures used to minimise the impacts. This includes where works are adjacent to Emmaus Catholic College and the nearest residences in Kemps Creek and Emmaus Village.	Construction Contractor	As required	CNVMP Section 8.1
Monitoring will also be undertaken in response to any complaints regarding noise or vibration. The monitoring will take place during the expected noisiest construction periods and be representative / indicative of any impact across all potentially affected sensitive receivers.		Following a noise or vibration related complaint during construction	
All items of acoustic instrumentation utilised will be designed to comply with applicable guidelines and carry current calibration certificates.		Ongoing	
Vibration will be monitored continuously within the minimum working distances (see Table 9) where vibration intensive works are proposed to be undertaken within the minimum working distances of sensitive receivers or structures.		Continuously	CNVMP Section 8.2

Monitoring / Inspection Requirement	Person Responsible	Timing / Frequency	References / Notes
Attended vibration measurements will be undertaken at the commencement of vibration intensive works within the minimum working distances to confirm the levels of vibration are below the applicable vibration limits.	Construction Contractor	Prior to commencing vibration intensive works	CNVMP Section 8.2
Geophones will be installed by an acoustic consultant at the closest points of the sensitive structure to the vibration intensive works to continuously monitor vibration for the duration of the works. Should the works location change, the geophones will be relocated to remain at the closest point of the structure to the works.		Prior to commencing construction and ongoing	
The monitoring equipment will have visible and audible alarms in accordance with Section 8.2 of the CNVMP.		Ongoing	
Geophones will be installed by an acoustic consultant on top of each pipeline at the centre point between two saddles closest to the works.		Prior to commencing construction and ongoing	
Air Quality			
Visual inspections will be undertaken to assess dust levels and the effectiveness of any dust controls that have been implemented, which may include engaging additional resources to reduce or mitigate the risk of dust leaving the site.	Construction Contractor	Daily	CAQMP Section 8
Meteorological data recorded at Horsley Park AWS will be monitored and reviewed on a daily basis.			
The air quality monitoring program currently in place at Oakdale West will continue to be implemented throughout the construction of Stage 2.	Goodman Representative	Ongoing	CAQMP Section 10
Traffic			
Reporting and monitoring of movements will be undertaken to ensure that drivers are adhering to approved construction hours, and to ensure that the approved traffic generation, and subsequent impacts on the road network, are in line with those approved.	Construction Contractor	Ongoing	CTMP Section 6.2
A Dilapidation report will be undertaken periodically to assess the condition of the road and note whether there has been any reduction in quality of the road as result of construction vehicles.	Construction Contractor	Periodically	CTMP Section 7.1

Monitoring / Inspection Requirement	Person Responsible	Timing / Frequency	References / Notes
Soil and Water			
All disturbed areas, revegetated/stabilised areas and all permanent and temporary erosion and sediment control works will be inspected.	Construction Contractor	<ul style="list-style-type: none">Weekly;Immediately before extended site shut down;Following 10mm of rain; andAs soon as practicable following periods of prolonged rainfall.	SWMP Section 6
Monitoring of rainfall events (with observations of rainfall in millilitres) will be undertaken daily during normal work days.		During construction	
Environmental Site Inspection to evaluate the effectiveness of erosion and sediment control measures in accordance with Table 6-1 of SWMP.		Weekly	SWMP Section 7.3
Rainfall Inspection (10mm or greater rainfall) to evaluate the effectiveness of erosion and sediment control measures in accordance with Table 6-1 of SWMP. A rain gauge is to be installed in the main compound as per Section 7.5 of SWMP.		Prior to rainfall event, during event, within 24 hours after the event	
The adjoining local road network will be monitored for tracked sediments with affected areas cleaned as soon as possible in a safe manner.		Regularly	ESCP Section 9
The appearance of water quality at the discharge outlet will be regularly monitored for any increase in turbidity, and dewatering suspended until acceptable water quality levels are regained.			
The water levels in concrete washout pits will be monitored and dewatered regularly.			
All dewatering activities will be subject to prior approval from relevant project personnel. The dewatering activities will be monitored to ensure: <ul style="list-style-type: none">intake suction devices are positioned to prevent extraction or disturbance of settled sediments,no erosion is occurring at discharge locations and/or downstream areas,no inadvertent or intentional controlled discharge of untreated waters occurs.			
Containment bunds will be monitored.			
Waste			

Monitoring / Inspection Requirement	Person Responsible	Timing / Frequency	References / Notes
As per Council’s DCP, records of waste volumes recycled, reused or contractor removed are to be maintained.	Construction Contractor’s Representative	Daily	WMP Section 5.10
Visual inspections of waste storage areas will be undertaken.			
Visual Amenity			
The Site will be inspected to ensure that these measures are working effectively, and that pests, vermin or noxious weeds are not present on Site in sufficient numbers to pose an environmental hazard, or cause the loss of amenity in the surrounding area.	Construction Contractor / ER	During Environmental Consultant inspections	Best practice
The Maintenance Logbook shall be kept and available for inspection on request.	Construction Contractor	Ongoing	LMP Section 5.2.7
A final inspection shall be made by the Project Superintendent, Contractor and Landscape Architect before the completion of the Plant Establishment Maintenance Period (Defects Liability Period).	Construction Contractor	Before completion of the Defects Liability Period	LMP Section 5.4

5.2 Reporting

Table 22 summarises the reporting requirements for the construction of the Lot 3B at Oakdale West as set out in DA21/0440 and relevant management plans.

Table 22 Reporting Requirements

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
General Environmental Performance			
A copy of all environmental records will be maintained, including: <ul style="list-style-type: none"> Site environmental inspection reports Environmental monitoring data Internal and external audit reports Reports of environmental incidents, environmental, associated actions taken, and follow-up actions Minutes of management review meetings Induction and training records (Section 3.4) 	Construction Contractor's Representative	For at least 5 years after completion	Best practice
Meteorological data including rainfall will be recorded.		Daily	
Incident / Non-Compliance Reporting			
A register of all complaints and non-compliances will be kept.	Construction Contractor's Representative	For at least 5 years after completion	Best practice
Noise			
Monitoring reports will be produced following each monitoring survey.	Construction Contractor's Representative	Following each monitoring survey	CNVMP Section 8.1
Vibration			
Vibration monitoring reports will be prepared at the following stages: <ul style="list-style-type: none"> Monthly during works (at a minimum) Within one week of an exceedance of the vibration limit alarm level (15 mm/s PPV) Upon completion of construction 	Construction Contractor	Monthly at minimum	CNVMP Section 8.2
Water and Soil			
Certification that the erosion and sediment control measures have been installed in accordance with the approved erosion and sediment control plans for the development and "Managing Urban Stormwater: Soils and Construction 2004" will be obtained and issued to Goodman a minimum 2 days before any other site works are to commence, including earthworks and clearing of the site.	Environmental Consultant	Prior to commencing clearing and bulk earthworks	DA21/0440 Condition 33

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
Prepare and submit a Materials Tracking Register in accordance with the FIP and UFP.	Construction Contractor	Weekly	FIP Section 3.0 UFP Section 4.0
Waste			
Results of the daily inspections will be reported to the Project Manager.	Construction Contractor's Representative	Weekly	WMP Section 5.10
Waste records are to be provided to Goodman.		Quarterly	
Hazardous Goods and Contamination			
Any material identified as contaminated will be disposed of off-site, with the disposal location and results of testing recorded prior to its removal from the site.	Construction Contractor's Representative	As required	Best practice
Where the contamination is known or an unexpected contamination find has been identified, a Remediation Action Plan (RAP) will be prepared (as required) in accordance with applicable EPA guidelines and the UFP – Contamination.	Construction Contractor	Prior to remediation works	UCP Section 3.1
Prepare a Validation Report (or reports) in accordance with the requirements of the NSW EPA (2020) Consultants Reporting on Contaminated Land, Contaminated Land Guidelines and NSW EPA (2017) Guidelines for the NSW Site Auditor Scheme (3rd Edition). The Validation Report(s) will include the information outlined in Section 5 of the UFP.	Environmental Consultant – Contaminated Land	At the completion of the above ground asset construction and following remediation works	UFP Section 3.1 and Section 5.0

5.3 Auditing

Table 23 summarises the auditing requirements for the Lot 3B works as set out in DA21/0440 and relevant management plans.

Table 23 Audit Requirements

Reporting Requirement	Person Responsible	Timing / Frequency	References / Notes
A project audit will be undertaken to ensure all aspects of the project are implemented.	Construction Contractor	Within 6 months of the commencement of construction	Environmental Consultant recommendation
Traffic			
The CTMP will be reviewed in accordance with Section 7.1 of the CTMP.	Construction Contractor	Monthly, at minimum	CTMP Section 7.1
Soil and Water			
An audit program will be developed: <ul style="list-style-type: none"> Noting the condition of installed erosion and sediment controls onsite Detailing maintenance requirements (if any) for installed erosion and sediment controls Recording the volumes of sediment removed from sediment controls and sediment traps, where applicable Recording the location to where extracted sediments are disposed. 	Construction Contractor	Weekly, before extended shut-down and after rainfall events over 10 mm	ESCP Section 7.7
Audits (both internal and external) will be undertaken to assess the effectiveness of environmental mitigation and management measures.	Construction Contractor	As required	SWMP Section 7.6
Waste			
Waste audits will be undertaken to gauge the effectiveness and efficiency of waste segregation procedures and recycling and reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training will be undertaken and signage re-examined.	Construction Contractor	Quarterly	WMP Section 5.10

5.4 Contingency Management Plan

Table 24 lists the actions to be implemented if inspections, monitoring and/or auditing indicate that the mitigation measures listed in **Section 4** and the specialist management plans are not effective in managing environmental impacts.

All Condition Amber and Condition Red occurrences will be recorded in the Environmental Representative Monthly Report and discussed during the toolbox talks.

Table 24 Contingency Plan

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Noise impacts at sensitive receiver locations	Trigger	Noise levels do not exceed applicable NMLs.	Noise levels exceed applicable NMLs.	Noise levels exceed Highly Noise Affected criteria (75 dBA).
	Response	Ongoing best practice management measures to minimise noise emissions.	Undertake all feasible and reasonable mitigation and management measures to minimise noise impacts.	Undertake all feasible and reasonable mitigation and management measures to ensure noise levels are below Highly Noise Affected criteria. If noise levels cannot be kept below applicable limits then a different construction method or equipment will be utilised.
Vibration impacts at sensitive receiver locations	Trigger	Vibration intensive works undertaken outside minimum working distance for the specific equipment in use.	Vibration intensive works undertaken within minimum working distance for the specific equipment in use.	Vibration levels exceed applicable vibration limits.
	Response	Ongoing best practice management measures to minimise vibration emissions.	Undertake vibration monitoring for the duration of the works to confirm vibration levels.	Stop work. Undertake all feasible and reasonable mitigation and management measures to ensure vibration levels are below applicable limits. If vibration levels cannot be kept below applicable limits then a different construction method or equipment will be utilised.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Visible dust leaving the site	Trigger	Daily inspections show that there is no visible dust leaving the site.	Daily inspections show that there is visible dust leaving the site.	Daily inspections show that there is visible dust leaving the site multiple times during a day OR from multiple locations within the site.
	Response	Continue monitoring program as normal.	<p>Review and investigate construction activities and respective control measures, where appropriate. Implement additional remedial measures, such as:</p> <ul style="list-style-type: none"> • Deployment of additional water sprays, water trucks etc. 	Undertake an investigation of the dust generating activities, and if necessary, temporarily halt the dust generating activities.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Dust deposition reading of $>4\text{g/m}^2/\text{month}$	Trigger	Dust deposition rates are less than $4\text{g/m}^2/\text{month}$ at all the dust gauges.	Dust deposition rate greater than $4\text{g/m}^2/\text{month}$ is recorded by any of the dust gauges.	Dust deposition rates greater than $4\text{g/m}^2/\text{month}$ are recorded by two or more dust gauges for two months in a row.
	Response	Continue monitoring program as normal.	<ul style="list-style-type: none"> OWE Project Manager to analyse data to try to identify the source(s) of dust. Construction Contractor's Representative to review operations to reduce dust emissions from the identified key source(s). Implement any additional mitigation measures as required, such as additional watering. 	<ul style="list-style-type: none"> OWE Project Manager to review and investigate construction activities and respective control measures for the monitoring period. If it is concluded that construction activities at Lot 3B were directly responsible for the exceedance (i.e. the exceedance event was not caused due to high regional dust levels or local non-project dust source), Construction Contractor's Representative to submit an incident report to government agencies.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Complaints received regarding nuisance dust	Trigger	There are no complaints received during the construction.	An air-quality related complaint is received from a nearby resident.	Further complaints are received from the same complainant after the additional mitigation measures have been implemented.
	Response	Continue monitoring program as normal.	<ul style="list-style-type: none"> Report the complaint to the regulator, in line with complaints handling procedure. Review and investigate construction activities and increase dust suppression measures (additional watering, covering stockpiles etc.), where appropriate. 	Review real-time monitoring data at the existing continuous monitors to investigate the likelihood of onsite activities contributing.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Real-time suspended particulate matter monitoring (TSP and PM ₁₀)	Trigger	Running 24-hour average PM ₁₀ concentrations < 40 µg/m ³	Running 24-hour average PM ₁₀ concentrations > 40 µg/m ³ but < 50 µg/m ³	Running 24-hour average PM ₁₀ concentrations > 50 µg/m ³
	Response	Continue monitoring program as normal.	<p>OWE Project Manager to review and investigate construction activities and respective control measures.</p> <p>Where appropriate, implement additional remedial measures, such as:</p> <ul style="list-style-type: none"> • Deployment of additional water sprays, water trucks etc • Relocation or modification of dust-generating sources • Record findings of investigations and actions taken to reduce dust levels • Continue to closely monitor dust levels to ensure they are decreasing <p>If elevated dust levels are due to regional dust event (fire, dust storm etc) – still take action to minimise dust from the site to minimise cumulative impacts, but also record details of the cause of the elevated background levels.</p>	<ul style="list-style-type: none"> • OWE Project Manager to review and investigate construction activities and respective control measures for the monitoring period, in an air pollution incident report. • If it is concluded that construction activities were directly responsible for the exceedance (i.e. the exceedance event was not caused due to high regional dust levels or local non-project dust source), Construction Contractor's Representative submit an incident report to government agencies.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Construction movements	Trigger	Construction traffic volume is in accordance with permissible and programmed volume and time constraints	Construction traffic volumes exceeds programmed volume but is within permissible volume constraints	Construction traffic volumes exceeds permissible volume and time constraints
	Response	No response required. Continue monitoring program.	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: <ul style="list-style-type: none"> Review CTMP and update where necessary Provide additional training. 	As with Condition Amber, plus; <ul style="list-style-type: none"> If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies. Stop all transportation into and out of the site.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Construction Movements	Trigger	Construction traffic does not utilise Bakers Lane during School Peaks	Construction traffic utilises Bakers Lane close to School Peaks	Construction traffic utilises Bakers Lane during School Peaks
	Response	No response required Continue monitoring program	<p>Review and investigate construction activities, and where appropriate, implement additional remediation measures such as:</p> <ul style="list-style-type: none"> Review vehicles arriving to site and remind them of the strict exclusion time periods Provide additional training (including toolbox talks and further notification of Driver Code of Conduct) 	<p>As with Condition Amber, plus;</p> <ul style="list-style-type: none"> If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies. Stop all transportation into and out of the site. Review CTMP and update where necessary.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Queuing	Trigger	No queuing identified.	Queuing identified within site.	Queuing identified on the public road.
	Response	No response required. Continue monitoring program.	Review the prepared delivery schedule. If drivers are not following the correct schedule, then they should be provided with additional training and an extra copy of the Driver Code of Conduct .	As with Condition Amber, plus <ul style="list-style-type: none"> Review and investigate construction activities. If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies. Temporary halting of activities and resuming when conditions have improved Stop all transportation into and out of the site Review CTMP and update where necessary, provide additional training
Traffic noise	Trigger	Noise levels do not exceed imposed noise constraints.	Noise levels in minor excess of imposed noise constraints.	Noise levels greatly in excess of imposed noise constraints.
	Response	No response required. Continue monitoring program.	Undertake all feasible and reasonable mitigation and management measures to minimise noise impacts.	As with Condition Amber If noise levels cannot be kept below applicable limits, then a different construction method or equipment must be utilised.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Traffic Control Plans	Trigger	No observable issues.	Minor inconsistencies with TGS to onsite operations.	Near miss or incident occurring regardless of / as a result of the TCGS being implemented.
	Response	No response required. Continue monitoring TGSs.	Traffic Controller to amend TGS on site and to keep a log of all changes.	Stop work until an investigation has been undertaken into the incident. There are to be changes made to the TGS to ensure that the safety of all workers, students and civilians are catered for.
Traffic Air Quality Impacts	Trigger	No observable dust.	Minor quantities of dust in the air and tracking on to the road.	Large quantities of dust in the air and tracking on to the road.
	Response	No response required. Continue monitoring program.	<p>Review and investigate construction activities and respective control measures, where appropriate. Implement additional remedial measures, such as:</p> <ul style="list-style-type: none"> • Deployment of additional water sprays • Relocation or modification of dust-generating sources • Check condition of vibrating grids to ensure they are functioning correctly • Temporary halting of activities and resuming when conditions have improved 	<p>As with Condition Amber.</p> <ul style="list-style-type: none"> • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies. • Implement relevant responses and undertake immediate review to avoid such occurrence in future.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Erosion	Trigger	No evidence of erosion.	Minor gully or tunnel erosions present and/or rilling. Evidence of sediment or sediment laden water leaving the site.	Significant gully or tunnel erosions present and/or rilling. Evidence of sediment or sediment laden water leaving the site.
	Response	Continue CEMP implementation.	A suitably trained person to inspect the site. Review of erosions and sediment structures. Remediate as appropriate.	A suitably trained person to inspect the site. Review of erosion and sediment structures. Remediate as soon as practical.
Water management structures	Trigger	Water management structures have been designed, constructed and managed in accordance with the Blue Book and the ESCPs.	Inspections indicate that water management structures illustrate minor non-compliance with the Blue Book and the ESCPs.	Inspections indicate a failure of the water management structures.
	Response	Continue CEMP implementation.	A suitably trained person to inspect the site. Review of water management structures. Remediate as appropriate.	A suitably trained person to inspect the site. Remediate as soon as practical. Review of engineering design and revise ESCPs.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Waste	Trigger	Weekly reports to the Construction Contractor's Representative of the daily inspections identified no waste outside of dedicated bins and stockpiles.	Weekly reports to the Construction Contractor's Representative of the daily inspections identified minimal waste outside of dedicated bins and stockpiles.	Weekly reports to the Construction Contractor's Representative of the daily inspections identified large quantities of waste outside of dedicated bins and stockpiles. Complaints received regarding waste.
	Response	Continue CEMP implementation.	The Project Manager is notified and the waste is cleaned up immediately.	The Project Manager is notified and the waste is cleaned up immediately. The Communications and Community Liaison Representative is also notified and the complaints handling process outlined in Section 3.6 and the CCS is implemented.
Unexpected Contamination	Trigger	No contamination uncovered during earthworks.	Areas of possible contamination uncovered.	Areas of contamination uncovered.
	Response	Continue CEMP implementation.	Stop work immediately and the contamination assessed according to the UFP (AECOM 2021).	Stop work immediately and a RAP is to be prepared. A validation report is to be prepared following remediation.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Submission	Trigger	General feedback/comment (no complaint or query).	Enquiry made by formal or informal channels.	Complaint made by formal or informal channels.
	Response	Acknowledge receipt and record in consultation register. No further response required.	Acknowledge receipt and record in consultation register. Direct enquiry to relevant person for actioning and response within 5 days.	Acknowledge receipt and record in consultation register. Direct enquiry to relevant person for actioning and response within 48 hours.
Media	Trigger	Positive story in print, online, radio or television.	Neutral or advisory story in print, online, radio or television.	Negative story in print, online, radio or television.
	Response	Record in consultation register and advise Goodman media/marketing team. No further response required.	Record in consultation register and advise Goodman media/marketing team. No further response required.	Record in consultation register and advise Goodman Project Team for further action and response. Contact relevant person for actioning and response within 48 hours.
Unscheduled Event	Trigger	Event occurring outside of plan or schedule without impact or potential impact.	Event occurring outside of plan or schedule with minor impact or potential impact.	Event occurring outside of plan or schedule with major impact or potential impact.
	Response	No response required. Identify opportunities for improvement to manage potential future events.	Contact relevant person for actioning and response within 48 hours. Acknowledge in consultation register. Identify opportunities for improvement to manage potential future events.	Contact relevant person for actioning and response immediately. Acknowledge in consultation register. Identify opportunities for improvement to manage potential future events.

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Political Interest	Trigger	General or non-specific enquiry by Local, State or Federal political representative.	Enquiry or complaint relating to minor issue by Local, State or Federal political representative.	Enquiry or complaint relating to major issue by Local, State or Federal political representative.
	Response	Community consultation team in conjunction with Goodman Project Team to prepare and provide response or assign response task to relevant staff member for comment. Record in consultation register.	Community consultation team in conjunction with Goodman Project Team to prepare and provide response within 48 hours. Record in consultation register.	Community consultation team in conjunction with Goodman Project Team to prepare and provide response within 24 hours. Record in consultation register.

6 Review and Improvement of the CEMP

Review of the CEMP will be undertaken at least quarterly and will include participation by Goodman. The review will comprise, as a minimum, the following:

- Identification of areas of opportunity for improved environmental performance;
- Analysis of the causes of non-compliances, including those identified in environment inspections and audits;
- Verification of the effectiveness of corrective and preventative actions; and
- Highlighting any changes in procedures resulting from process improvement.

This CEMP will also be reviewed and, if necessary, revised in the following circumstances:

- Where there is any change to the scope of the construction activities and/or disturbance footprint;
- Where it is identified that the environmental performance is not meeting the objectives of the CEMP; and/or
- At the request of a relevant regulatory authority.

All employees and contractors will be informed of any revisions to the CEMP by the Contractor's Project Manager during toolbox talks.

7 References

AECOM (2021) *Lot 3B Fill Importation Protocol*

AECOM (2021a) *Lot 3B Unexpected Finds Protocol*

Ason (2021) *Construction Traffic Management Plan*

Department of Infrastructure, Planning and Natural Resources (2004) *Guideline for the Preparation of Environmental Management Plans*

Ecologique (2021) *Flora and Fauna Management Plan*

GHD (2020) *Oakdale West Industrial Estate Concept Plan and Stage 1 Modification (MOD 3 SSD 7348) and Stage 2 Development Application (SSD 10397) Environmental Impact Statement*

Keylan (2021) *Statement of Environmental Effects (SEE), Oakdale West Industrial Estate – Warehouse 3B, 2 Addlington Road, Kemps Creek*

Rubicon Enviro (2021) *Soil and Water Management Plan*

Rubicon Enviro (2021a) *Erosion and Sediment Control Plan*

Scape Design (2021) *Landscape Management Plan*

SLR (2021) *Construction Air Quality Management Plan*

SLR (2021a) *Construction Noise and Vibration Management Plan*

SLR (2021b) *Community Consultation Strategy*

SLR (2020a) *Sustainability Management Plan*

SLR (2020b) *Waste Management Plan*

APPENDIX A

Development Consent SSD 7348

APPENDIX B

Development Approval DA21/0440

APPENDIX C

Consultation

APPENDIX D

Construction Noise and Vibration Management Plan

DRAFT

APPENDIX E

Community Consultation Strategy

DRAFT

APPENDIX F

Construction Air Quality Management Plan

DRAFT

APPENDIX G

Construction Traffic Management Plan

DRAFT

APPENDIX H

Soil and Water Management Plan

DRAFT

APPENDIX I

Fill Import Protocol

DRAFT

APPENDIX J

Waste Management Plan

DRAFT

APPENDIX K

Flora and Fauna Management Plan

DRAFT

APPENDIX L

Unexpected Finds Protocol - Contamination

DRAFT

APPENDIX M

Landscape Management Plan

DRAFT

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APPENDIX A

Development Consent SSD 7348

APPENDIX B

Development Approval DA21/0440

APPENDIX C

Consultation

APPENDIX D

Construction Noise and Vibration Management Plan

DRAFT

APPENDIX E

Community Consultation Strategy

DRAFT

APPENDIX F

Construction Air Quality Management Plan

DRAFT

APPENDIX G

Construction Traffic Management Plan

DRAFT

APPENDIX H

Soil and Water Management Plan

DRAFT

APPENDIX I

Fill Import Protocol

DRAFT

APPENDIX J

Waste Management Plan

DRAFT

APPENDIX K

Flora and Fauna Management Plan

DRAFT

APPENDIX L

Unexpected Finds Protocol - Contamination

DRAFT

APPENDIX M

Landscape Management Plan

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APPENDIX A

Development Consent SSD 7347

Development Consent

Section 4.38 of the Environmental Planning and Assessment Act 1979

As delegate of the Minister for Planning and Public Spaces under delegation executed on 11 October 2017, I determine:

- (a) to grant consent to the Stage Development Application referred to in Schedule A subject to the Concept Proposal conditions in Schedule B and C and the Stage 1 Development Application conditions in Schedule D;
- (b) that pursuant to section 4.37 of the *Environmental Planning and Assessment Act 1979*, any subsequent development not being for the purpose of a warehouse or distribution centre with a capital investment value in excess of \$50 million is to be determined by the relevant Consent Authority and that development ceases to be State Significant Development.

These conditions are required to:

- prevent, minimise, or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

Anthea Sargeant
Executive Director
Regions, Industry and Key Sites

Sydney

2019

File: 15/15802

SCHEDULE 1

Application Number: SSD 7348

Applicant: Goodman Property Services (Aust) Pty Ltd

Consent Authority: Minister for Planning and Public Spaces

Site: Lot 1 DP 663937, Lot 2 DP 1215268, Lot 6 DP 229784, Lot 2 DP 84578, Lot 3 DP 85393 and Lot 11 DP 1178389
2 Aldington Road, Kemp Creek NSW 2178
Lot 9 DP 1157476
57-87 Lockwood Road, Erskine Park NSW 2759

Development: A Concept Proposal including:

- concept layout of 18 warehouse buildings inclusive of dock offices and ancillary offices providing 556,824 square metres of

gross lettable area, built over seven development stages;

- concept layout of development lots, internal roads, drainage, landscaping, noise walls, basins and biodiversity offsets; and
- development controls.

A Stage 1 Development including:

- bulk earthworks across all five stages including retaining walls and noise walls;
- lead in services including but not limited to drainage, power, sewer, water and telecommunications;
- service infrastructure to Precinct 1, including drainage, power, sewer, water and telecommunications;
- construction and operation of three warehouse buildings inclusive of dock offices and ancillary offices in Precinct 1 (1A, 1B and 1C) providing 88,867 square metres of gross lettable area;
- Western North-South Link Road and associated subdivision, basins and drainage;
- estate roads 1, 2, ~~and 6 and 8~~ and eastern part of road 7;
- landscaping of Stage 1, the western boundary, Western North-South Link Road, estate roads 1, 2, ~~and 6 and 8~~ and the eastern part of road 7, detention basins and the amenity lot
- subdivision of Stage 1 lots and road infrastructure including the services (substation) lot;
- stormwater drainage infrastructure for Lots 2A and 2B and all basins;
- temporary works to facilitate construction including but not limited to swales, haul road (construction access), landscaping and basins; ~~and~~
- works including construction of traffic signals at Lenore Drive/Grady Crescent/WNSLR intersection; ~~and~~
- works within Lot 9 DP1157476 including reconfiguration of car park, relocation of car park access on Lockwood Road, infrastructure, landscaping and all works associated with the WNSLR.

SSD 7348 – Mod 1

SSD 7348 – Mod 2

SSD 7348 – Mod 3

SSD 7348 – Mod 4

SSD 7348 – Mod 5

SSD 7348 – Mod 6

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DEFINITIONS

Applicant	Goodman Property Services (Aust) Pty Ltd, or any person carrying out any development to which this consent applies
Biodiversity Covenant	A restriction on the use of land forming part of the Erskine Park Biodiversity Corridor, as shown on Figure in Appendix 6
Building 1A	Warehouse building 1A including high-bay (39 metres) and low-bay (27 metres) components, located on Lot 1A as described in the EIS and RtS for MOD 2
Bulk earthworks	As described in the EIS and RtS
Certifying Authority	A person who is authorised by or under section 6.17 of the EP&A Act to issue Part 6 certificates
CEMP	Construction Environmental Management Plan
CAQMP	Construction Air Quality Management Plan
Concept Proposal	Concept layout of 22 warehouse buildings and ancillary offices built over five development stages, as described in the EIS and RtS
Conditions of this consent	Conditions contained in Schedules B to D of this document
Consent Authority	The relevant consent authority for development in accordance with the EP&A Act
Construction	The demolition and removal of buildings or works, the carrying out of works for the purpose of the development, including bulk earthworks, and erection of buildings and other infrastructure permitted by this consent
Council	Penrith City Council
CTMP	Construction Traffic Management Plan
Day	The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays
Demolition	The deconstruction and removal of buildings, sheds and other structures on the site
Department	NSW Department of Planning, Industry and Environment
Development	The development described in the EIS and RtS, including construction and operation of 18 warehouse buildings, offices and associated infrastructure, as modified by the conditions of this consent and shown on the plans in Appendix 1 , Appendix 2 and Appendix 3 and as modified by SSD 7348 MOD 1, SSD 7348 MOD 2, SSD 7348 MOD 3, SSD 7348 MOD 4, SSD 7348 MOD 5, and SSD 7348 MOD 6.
DA	Development Application submitted in accordance with the EP&A Act
EIS	The Environmental Impact Statement titled <i>Oakdale West Estate</i> , prepared by Urbis dated November 2017, submitted with the application for consent for the development, including any additional information provided by the Applicant in support of the application
ENM	Excavated Natural Material
Environment	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings
Environmental Representative Protocol	The document of the same title published by the Department
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)

EPL	Environment Protection Licence under the POEO Act
Erskine Park Biodiversity Corridor	The land described in the <i>Biodiversity Management Plan Erskine Park Employment Area</i> , HLA-Envirosciences, 2006 and shown on Figure in Appendix 6
Evening	The period from 6 pm to 10 pm
Feasible	Feasible relates to engineering considerations and what is practical to build
FFMP	Flora and Fauna Management Plan
Fibre ready facility	As defined in Section 372W of the <i>Telecommunications Act 1997</i>
GLA	Gross lettable area
GFA	Gross floor area
Heritage	Encompasses both Aboriginal and historic heritage including sites that predate European settlement, and a shared history since European settlement
Heritage item	An item as defined under the <i>Heritage Act 1977</i> (NSW), and assessed as being of local, State and/ or National heritage significance, and/or an Aboriginal Object or Aboriginal Place as defined under the <i>National Parks and Wildlife Act 1974</i> (NSW), the World Heritage List, or the National Heritage List or Commonwealth Heritage List under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth), or anything identified as a heritage item under the conditions of this consent
Incident	An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance <i>Note: “material harm” is defined in this consent</i>
Land	Has the same meaning as the definition of the term in section 1.4 of the EP&A Act
Landscape Bund	Landscaping along the western boundary of the Site, included as part of Stage 1 works as described in the EIS and RTS and shown on Error! Reference source not found.4 in Appendix 2
LMP	Landscape Management Plan
Material harm	Is harm that: <ul style="list-style-type: none"> a) involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment)
Minister	NSW Minister for Planning and Public Spaces (or delegate)
Mitigation	Activities associated with reducing the impacts of the development prior to or during those impacts occurring
Monitoring	Any monitoring required under this consent must be undertaken in accordance with section 9.40 of the EP&A Act
NCC	National Construction Code
Night	The period from 10 pm to 7 am on Monday to Saturday, and 10 pm to 8 am on Sundays and Public Holidays
Non-compliance	An occurrence, set of circumstances or development that is a breach of this consent
NRAR	NSW Natural Resources Asset Regulator
OEH	(former) NSW Office of Environment and Heritage (now Biodiversity and Conservation of the Department)

OEMP	Operational Environmental Management Plan
Operation	The use of warehouse buildings for storage and distribution of goods upon completion of construction
Penrith DCP	Penrith Development Control Plan 2014
Planning Agreement	Planning Agreement titled <i>Oakdale West Estate Planning Agreement</i> , between the Minister for Planning and Public Spaces, Goodman Property Services (Aust) Pty Ltd and BGMG 11 Pty Limited as trustee for the BGMG 1 Oakdale West Trust, executed on 5 August 2019 and included in Appendix 4
PCA	Principal Certifying Authority in accordance with the EP&A Act
Planning Secretary	Planning Secretary under the EP&A Act, or nominee
POEO Act	<i>Protection of the Environment Operations Act 1997</i> (NSW)
Roads Authority	As defined in Dictionary of the <i>Roads Act 1993</i> (NSW)
Reasonable	Means applying judgement in arriving at a decision, taking into account: mitigation benefits, costs of mitigation versus benefits provided, community views, and the nature and extent of potential improvements.
Registered Aboriginal Parties	Means the Aboriginal persons identified in accordance with the document entitled <i>Aboriginal cultural heritage consultation requirements for proponents 2010</i> (DECCW)
Rehabilitation	The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting
Relevant Roads Authority	The authority responsible for ownership and maintenance of the applicable road
RMS	(former) NSW Roads and Maritime Services (now TfNSW)
RtS	The Response to Submissions titled <i>Oakdale West Estate SSDA 15_7348 Response to Submissions</i> prepared by Urbis dated 8 May 2018 and document titled <i>Oakdale West Estate SSDA 15_7348 Response to Matters Raised by the Department of Planning</i> , prepared by Urbis dated 12 October 2018
Sensitive receivers	A location where people are likely to work, occupy or reside, including a dwelling, school, hospital, office or public recreational area
Site	The land defined in Appendix 1
SLR	(proposed) Southern Link Road as shown in the WSEA SEPP and the Broader WSEA SLRN Options Refinement Report prepared by AECOM, 2014
SSD 7348 MOD 1	The section 4.55(1A) modification application prepared by Goodman Property Services (Aust) Pty Ltd titled 'Section 4.55(1A) Modification Application (SSD 7348 MOD 1) Oakdale West Estate – Amendments to Concept Plan and Stage 1 development', dated 16 December 2019.
SSD 7348 MOD 2	The section 4.55(2) modification application prepared by Goodman Property Services (Aust) Pty Ltd titled 'Section 4.55(2) Modification Application (SSD 7348 MOD 2) Oakdale West Estate – Amendments to Concept Plan and Stage 1 development', dated 12 December 2019.
SSD 7348 MOD 3	The section 4.55(1A) modification application prepared by Goodman Property Services (Aust) Pty Ltd titled 'Oakdale West Industrial Estate Concept Plan and Stage 1 Modification (SSD 7348 MOD 1)', dated January 2020.
SSD 7348 MOD 4	The section 4.55(1A) modification application prepared by Goodman Property Services (Aust) Pty Ltd titled 'mod 4, SSD 7348 – S4.55(1A) Application to Modify the Consent to Include Works on Lot 9 DP 1157476, dated 17 February 2020.
SSD 7348 MOD 5	The section 4.55(1A) modification application prepared by Urbis, titled <i>Oakdale West Estate SSD 7348, Section 4.55(1A) Modification No. 5 Environmental Assessment Report</i> , dated 23 July 2020
SSD 7348 MOD 6	The section 4.55(1A) modification application prepared by Keylan Consulting Pty Ltd, titled 'Assessment Report Section 4.55(1A) Modification, SSD 7348 Modification 6', dated 10 February 2021.

Stage	Each component or Stage of works to deliver the Concept Proposal, as shown on Figure 2 in Appendix 1 , or as amended by an approved Staging Plan under this consent
Stage 1	Bulk earthworks across the Site, construction and operation of three warehouse buildings (1A, 1B and 1C), the WNSLR and associated infrastructure and construction of the landscape bund along the western boundary of the Site, as described in the EIS and RTS and shown on the plans in Appendix 2 and Appendix 3
TfNSW	Transport for New South Wales
VENM	Virgin Excavated Natural Material
Vicinity of the site	Bakers Lane, Kemps Creek
WAD	Works Authorisation Deed issued by TfNSW (former RMS)
Waste	Has the same meaning as the definition of the term in the Dictionary to the POEO Act
Water Pipelines	Two Sydney drinking water pipelines located on land owned by Water NSW along the northern boundary of the Site
WMP	Waste Management Plan
WNSLR	Western North-South Link Road as shown in the WSEA SEPP and the plans in Appendix 3
WSEA	Western Sydney Employment Area
WSEA SEPP	State Environmental Planning Policy (Western Sydney Employment Area) 2009
WSFL	Western Sydney Freight Line corridor as shown in TfNSW Western Sydney Freight Line Corridor Identification – Consultation, March 2018
Year	A period of 12 consecutive months

SCHEDULE B CONDITIONS FOR THE CONCEPT PROPOSAL

FUTURE DEVELOPMENT APPLICATIONS

- B1. In accordance with section 4.22 of the EP&A Act, each stage of the Concept Proposal (excluding Stage 1) is to be subject to future development applications (DAs). Future DAs are to be consistent with this development consent.
- B2. To avoid any doubt, this Concept Proposal consent does not permit the construction or operation of any Development, except for the Stage 1 DA covered by **Schedule D**.
- B3. This Concept Proposal consent does not approve the building layouts shown on [Lots 3A, 3B, 3C, 3D, 3E, 3F, 3G and 4A](#) on **Figure 1** in **Appendix 1**. The location of the buildings on these lots must be assessed by separate DAs, and must satisfy the interface requirements of Conditions C3 and C4.

STATUTORY REQUIREMENTS

- B4. The Applicant shall ensure that all licences, permits, and approvals/consents are obtained as required by law and maintained as required throughout the life of the Concept Proposal. No condition of this consent removes the obligation for the Applicant to obtain, renew or comply with such licences, permits or approvals/consents.

TERMS OF CONSENT

- B5. The Applicant shall carry out the Concept Proposal in accordance with the:
- (a) EIS and RtS;
 - (b) the plans in **Appendix 1** and **Appendix 2**;
 - (c) **SSD 7348 MOD 1**;
 - (d) the Applicant's Management and Mitigation Measures in **Appendix 7**; and
 - (e) [modifications to this consent](#).
- B6. If there is any inconsistency between the plans and documents referred to above, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.
- B7. The Applicant shall comply with any reasonable requirement(s) of the Planning Secretary arising from the Department's assessment of:
- (a) any reports, plans or correspondence that are submitted in accordance with this consent; and
 - (b) the implementation of any actions or measures contained within these reports, plans or correspondence.

LIMITS OF CONSENT

- B8. This consent lapses five (5) years after the date from which it operates, unless any Stage of the Development has physically commenced on the land to which the consent applies before that date.
- B9. The following limits apply to the Concept Proposal:
- (a) the maximum GLA for the land uses in the Development shall not exceed the limits in **Table 1**;
 - (b) a minimum 60 metre (m) wide corridor along the northern Site boundary shall not be developed and shall be maintained and preserved for the future WSFL corridor, in accordance with the requirements of TfNSW;
 - (c) the building layouts and footprints shown on [Lots 3A, 3B, 3C, 3D, 3E, 3F, 3G and 4A](#) on **Figure 1** in **Appendix 1**, are not approved. The position, layouts and footprints of the buildings on these lots must be assessed by separate DAs, and must satisfy the interface requirements of Conditions C3 and C4;
 - (d) [any rooftop mechanical plant on buildings on Lots 2C, 2D, 2E, 3A, 3B, 3C, 3D, 3E, 4A, 4B and 4E are not to be operated during the night-time period](#);

- (e) forklifts are not to operate during the night-time period on Lots 2C, 2D, 2E, 3B, 3C, 3D, 3E, 4A, 4E and 5A; and
- ~~(f) vehicles associated with the Development shall adhere to the following speed limits when using estate roads within the Development:~~
- ~~(i) 25 kilometres per hour for heavy vehicles; and~~
- ~~(ii) 40 kilometres per hour for light vehicles.~~
- (g) all traffic associate with operation of the Development shall use the West North South Link Road, and the future SLR, to access the site and shall not use Bakers Lane or Aldington Road

Table 1: GLA Maximum for Concept Proposal

Land Use	Maximum GLA square metres (m ²)
Total Warehousing	529,625
Total Office	22,770
Other	4,429
Total GLA	556,824

Notes: Other includes but is not limited to the skybridge, gatehouse, dangerous goods store and energy complex in Building 1A.

- B10. The Applicant shall ensure the Concept Proposal is consistent with the development controls in **Table 2:**

Table 2: Development Controls

Development Aspect	Control
Minimum building setbacks from:	
• Southern Link Road	17.15 m
• Western North-South Link Road	20 m
• Local estate Roads	7.5 m
• Western site boundary	40 m
• Southern site boundary	20 m (excluding parking areas)
Rear boundary setbacks within the estate	5 m
Side boundary setbacks within the estate	0 m, subject to compliance with fire rating requirements
Height	15 m
- Building 1A	39 m
- Building 2A	18 m
- Building 2B	28 m
Minimum lot size	5,000 m ²
Minimum frontage	40 m (excluding cul-de-sacs) 35 m minimum lot width at the building line
Site coverage	Maximum of 65 per cent (excluding awnings)

- B11. Notwithstanding the controls listed in **Table 2** in Condition B10, no warehouse building in the Concept Proposal, **except Building 1A in Precinct 1 and Buildings 2A and 2B in Precinct 2**, shall exceed a ridgeline height of 13.7 m, excluding roof mounted mechanical plant and solar panels.
- B12. The Applicant shall lodge the proposed revisions to the *Penrith Development Control Plan 2014* (Penrith DCP), in accordance with **Table 2** in Condition B10, with Council within 6 months of the date of this consent.
- B13. The Applicant shall ensure the Concept Proposal provides car parking in accordance with the following rates:
- (a) 1 space per 300 m² of warehouse GFA;
 - (h) 1 space per 40 m² of office GFA; and
 - (i) 2 spaces for disability parking for every 100 car parking spaces.
- B14. The Applicant shall provide bicycle racks, and amenity and change room facilities for cyclists in accordance with *Planning Guidelines for Walking and Cycling* (December 2004, NSW Department of Infrastructure, Planning and Natural Resources and the Roads and Traffic Authority).

STAGING PLAN

- B15. Prior to the commencement of construction of any stage of the Concept Proposal, the Applicant shall prepare a Staging Plan for the Development, to the satisfaction of the Planning Secretary. The plan shall:
- (a) be prepared in consultation with Council, utility and service providers and other relevant stakeholders;
 - (b) describe how the implementation of the Concept Proposal, would be staged to ensure it is carried out in an orderly and economic way and minimises construction impacts on adjacent sensitive receivers;
 - (c) show the likely sequence of DAs that will be lodged to develop the Site, with the estimated timing for each Stage and identification of any overlapping construction and operational activities;
 - (d) include concept design for the staged delivery of landscaping, focusing on early implementation of screen planting to minimise the visual impact of subsequent development stages; and
 - (e) include conceptual design for the provision of services, utilities and infrastructure to the Site.
- B16. The Applicant must:
- (a) not commence construction of any stage of the Development until the Staging Plan required by Condition B15 is approved by the Planning Secretary; and
 - (b) implement the most recent version of the Staging Plan approved by the Planning Secretary.
- B17. The Planning Secretary may require the Applicant to address certain matters identified in the Staging Plan. The Applicant must comply with any such requirements of the Planning Secretary given as part of the Staging Plan approval.

Notes:

- *The Applicant may amend the Staging Plan as desired, with the approval of the Planning Secretary.*
- *The Staging Plan is intended to broadly describe the development sequence for the Site and the delivery of infrastructure for all stages. It is not required to provide detailed design for latter Stages.*

NOISE LIMITS

- B18. The Applicant shall ensure the Development does not exceed the noise limits in **Table 3** at the receiver locations N1, N2, N3, N4 and N5 shown on the plan in **Appendix 5**.

Table 3: Noise Limits dB(A)

Location	Day		Evening	Night	
	L _{Aeq} (15 minute)	(15)	L _{Aeq} (15 minute)	L _{Aeq} (15 minute)	L _{AMax}
N1 Emmaus Village Residential	44		43	41	52
N3 Kemps Creek – nearest residential property	39		39	37	52
N4 & N5 Kemps Creek – other residences	39		39	37	52
All other non-associated residences	40 ²		35 ²	35 ²	52
N2 Emmaus Catholic College (school)	When in use: 45 L _{eq} (1h)				

Notes:

1. Noise generated by the development is to be measured in accordance with the relevant procedures and modifications, including certain meteorological conditions, of the Noise Policy for Industry (EPA, 2017). Refer to the plan in Appendix 2 for the location of residential sensitive receivers.
2. or background + 5 dB, whichever is higher.

B19. The noise limits in **Table 3** do not apply to receiver N3, **N4 and N5** if the Applicant has a Noise Agreement with the relevant landowner to exceed the noise limits, and the Applicant has provided written evidence to the Planning Secretary that an agreement is in place.

BUSHFIRE PROTECTION

B20. The Applicant shall ensure the Development complies with:

- (a) the relevant provisions of *Planning for Bushfire Protection 2019*;
- (b) the construction standards and asset protection zone requirements recommended in the Oakdale Industrial Estate - West Bushfire Protection Assessment, prepared by Australian Bushfire Protection Planners Pty Ltd, dated September 2016 and updated 13 January 2020, and the SSD-7348 (MOD 6) Bushfire Hazard Assessment prepared by Blackash Bushfire Consulting, dated 12 November 2020; and
- (c) AS2419.1 – 2005 Fire Hydrant Installations for firefighting water supply.

TRANSGRID EASEMENT

B21. The Applicant must:

- (a) provide safe and unobstructed access for TransGrid plant and personnel to access the transmission towers, lines and easement on the Site, 24 hours a day, 7 days a week;
- (b) comply with the requirements of TransGrid for any works in the TransGrid easement; and
- (c) advise TransGrid of any proposed amended or modified encroachment into the easement.

ENDEAVOUR ENERGY

B22. The Applicant must comply with the requirements of Endeavour Energy for the provision of land for a new zone substation as shown on the plans in the RtS.

WATER NSW

B23. The Applicant must:

- (a) provide safe and unobstructed access for Water NSW plant and personnel to access the water pipelines corridor adjacent the Site, 24 hours a day, 7 days a week;
- (b) comply with the requirements of Water NSW for any works adjacent to or over, the water pipelines corridor; and
- (c) advise Water NSW of any proposed amended or modified encroachment into the water pipelines corridor.

AMENITIES LOT

- B24. The amenities lot located north of Estate Road 1, as shown on the plans in **Appendix 1**, must only provide for small-scale local services such as commercial, retail, community facilities and landscaping that service or support the needs of local employment-generating uses.

SCHEDULE C CONDITIONS FOR FUTURE DEVELOPMENT APPLICATIONS

DEVELOPMENT CONTRIBUTIONS

- C1. Future DAs shall identify whether any Development Contributions Plan made by Council (under Section 7.11 of the EP&A Act) applies to that stage of the Concept Proposal (excluding Stage 1).
- C2. Prior to the issue of a Construction Certificate for any stage of the Development, the Applicant shall pay contributions to Council in accordance with the relevant Development Contributions Plan identified in accordance with Condition C1.

INTERFACE WITH RESIDENTIAL AREAS

- C3. Future DAs for warehouses on [lots 3A, 3B, 3C, 3D, 3E, 3F, 3G and 4A](#) shall be accompanied by an Urban Design Assessment. The assessment must:
 - (a) be prepared by an independent urban design consultant;
 - (b) be prepared in consultation with Council and the Emmaus Catholic College;
 - (c) detail the key objectives for the interface with the sensitive receivers on the western and southern Site boundaries, including consideration of optimal uses and operational hours;
 - (d) determine the optimal building location and setbacks on the western and southern boundaries, noting the design controls in Condition B10 are the minimum setback requirements;
 - (e) present the optimal design for the building layouts along the western and southern site boundaries with detailed justification for the preferred option;
 - (f) identify appropriate orientations and architectural treatments for the facades facing sensitive receivers; and
 - (g) incorporate noise mitigation into the layout and design of buildings, internal roads, loading docks and parking areas to ensure the Development can meet the noise limits in Condition **Error! Reference source not found.**
- C4. Prior to the commencement of construction of warehouses or office buildings on [lots 3A, 3B, 3C, 3D, 3E, 3F, 3G and 4A](#), the Applicant must obtain approval from the Consent Authority for the preferred design option, including uses, building and loading dock layouts, setbacks, façade treatments and colours.

VISUAL AMENITY

Landscaping

- C5. Future DAs shall be accompanied by a Landscape Assessment. The assessment must:
 - (a) be prepared by a qualified landscape design consultant;
 - (b) be prepared in consultation with Council;
 - (c) describe how the landscaping for the relevant Stage of the Development is consistent with the Staging Plan approved in accordance with Condition B15;
 - (d) describes the landscaping works to be completed as part of the relevant Stage of the Development and details a program for monitoring the success of landscaping works over time;
 - (e) assesses the condition of and adequacy of landscaping completed as part of earlier Stages of the Development, in providing visual screening for adjacent sensitive receivers; and
 - (f) details any additional landscaping or rehabilitation works required to ensure the visual impacts of the Development are minimised for the adjacent sensitive receivers.

Outdoor Lighting

- C6. Future DAs must ensure compliance with *AS/NZS 1158.3.1:2005 Pedestrian Area (Category P) Lighting* and *AS/NZS 4282:2019 Control of Obtrusive Effects of Outdoor Lighting*.

Signage

- C7. Future DAs must ensure illuminated signage is oriented away from the sensitive receivers on the western and southern Site boundaries.

Reflectivity

- C8. The visible light reflectivity from materials used on the façades and roofs of the warehouses and office buildings shall be designed to minimise glare. A report demonstrating compliance with these requirements must be submitted to the satisfaction of the Certifying Authority for each future warehouse and office building prior to the issue of the relevant Construction Certificate.

TRANSPORT, ACCESS AND PARKING

- C9. Future DAs shall be accompanied by a transport, access and parking assessment. The assessment must:
- (a) assess the impacts on the safety and capacity of the surrounding road network and access points during construction and operation of the relevant Stage;
 - (b) demonstrate internal roads and car parking complies with relevant Australian Standards and the car parking rates in Condition B13;
 - (c) detail the scope and timing of any required road upgrades to service the relevant Stage; and
 - (d) detail measures to promote non-car travel modes, including a Sustainable Travel Plan identifying pedestrian and cyclist facilities to service the relevant Stage of the Development.

NOISE AND VIBRATION

- C10. Future DAs shall be accompanied by a noise and vibration impact assessment. The assessment must:
- (a) identify the noise and vibration impacts during construction and operation;
 - (b) demonstrate compliance with the noise limits in Condition **Error! Reference source not found.**;
 - (c) provide an analysis of all external plant and equipment, including but not limited to, forklifts, air conditioners and refrigeration systems;
 - (d) incorporate noise mitigation measures, such as increased building setbacks, building insulation, noise barriers, layout of truck loading areas or source controls, to demonstrate the noise limits in Condition B18 can be achieved;
 - (e) detail the timing to construct the noise walls shown in **Appendix 5**, to ensure noise from operation of the Development does not exceed the noise limits in Condition B18**Error! Reference source not found.**; and
 - (f) recommend mitigation and management measures to be implemented to minimise noise during construction.

STORMWATER MANAGEMENT

- C11. Future DAs shall demonstrate the design of the warehouses, offices and hardstand areas are consistent with (or the latest revision of) the:
- (a) *Civil, Stormwater and Infrastructure Services Report*, prepared by At&L, dated October 2018; and
 - (b) *Flood Impact Assessment: Oakdale West Estate*, prepared by Cardno, dated 27 March 2017.

BUSHFIRE PROTECTION

- C12. The Applicant shall ensure future DAs comply with:
- (a) [the relevant provisions of *Planning for Bushfire Protection 2019*](#);

- (b) the construction standards and asset protection zone requirements recommended in the Oakdale Industrial Estate - West Bushfire Protection Assessment, prepared by Australian Bushfire Protection Planners Pty Ltd, dated September 2016 and updated 13 January 2020, and the SSD-7348 (MOD 6) Bushfire Hazard Assessment prepared by Blackash Bushfire Consulting, dated 12 November 2020; and
- (c) AS2419.1 – 2005 Fire Hydrant Installations for firefighting water supply.

TRANSGRID EASEMENT

- C13. The Applicant must consult with TransGrid, prior to lodging DAs for Stages 4 and 5 of the Development as shown on **Figure 2** in **Appendix 1**, and any other Stage or road infrastructure that may affect the TransGrid easement. The Applicant must design, construct and operate each Stage of the development in accordance with the reasonable requirements of TransGrid relating to their use of the TransGrid easement.
- C14. The Applicant must consult with TransGrid, prior to lodging DAs for buildings in Stage 5 adjacent to Ropes Creek, to identify and implement any required flood management measures within the transmission line easement.

ENDEAVOUR ENERGY

- C15. The Applicant must obtain relevant approvals from Endeavour Energy, prior to the construction of any utility works to service each Stage of the Development.

WATER NSW

- C16. The Applicant must consult with Water NSW, prior to lodging DAs for works on Lot 2A adjoining the water pipelines corridor, to identify and implement any requirements of Water NSW for protection of the water pipelines corridor.

WASTE

- C17. Future DAs shall include a Waste Management Plan prepared in accordance with the *NSW Waste Classification Guidelines* (DECCW, 2009).

CONSTRUCTION MANAGEMENT

- C18. A Construction Environmental Management Plan (CEMP) shall be submitted to the Consent Authority for each stage of the Concept Proposal prior to the commencement of construction of the relevant stage. The CEMP must:
 - (a) be prepared by a suitably qualified and experienced environmental consultant, or the Environmental Representative appointed for Stage 1 of the Development;
 - (b) be prepared in consultation with relevant Government agencies, infrastructure and utility providers, including but not limited to, TransGrid, Endeavour Energy, Water NSW and TfNSW, where relevant for each stage;
 - (c) detail the construction activities to be undertaken in the relevant Stage of the Development;
 - (d) include detailed procedures for managing the environmental impacts of construction, including stormwater, erosion and sediment controls, dust, noise and traffic management; and
 - (e) detail the roles and responsibilities for environmental management on the Site.

COMMUNITY COMMUNICATION STRATEGY

- C19. No later than one month before the commencement of construction of any stage of the Development, a Community Communication Strategy (CCS) must be prepared and submitted to the Planning Secretary for approval.

The CCS is to provide mechanisms to facilitate communication between the Applicant, Council and the community (including adjoining affected landowners, schools, businesses, and others directly impacted by Stage 1), during design, construction and operation. The CCS must:

- (a) assign a central contact person to keep the nearby sensitive receivers regularly informed throughout the Development;
- (b) detail the mechanisms for regularly consulting with the local community throughout the Development, such as holding regular meetings to inform the community of the progress of the development and report on environmental monitoring results;
- (c) detail a procedure for consulting with nearby sensitive receivers to schedule high noise generating works, vibration intensive activities or manage traffic disruptions;
- (d) include contact details for key community groups, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders; and
- (e) include a complaints procedure for recording, responding to and managing complaints, including:
 - (i) email, contact telephone number and postal addresses for receiving complaints;
 - (ii) advertising the contact details for complaints before and during operation, via the local newspaper and through onsite signage;
 - (iii) a complaints register to record the date, time and nature of the complaint, details of the complainant and any actions taken to address the complaint; and
 - (iv) procedures for the resolution of any disputes that may arise during the course of the Development.

C20. The Applicant must:

- (a) not commence construction of the relevant stage of the Concept Proposal until the CCS required under Condition C19 has been approved by the Planning Secretary; and
- (b) implement the CCS for each stage of the Concept Proposal and following the completion of operation of the Development.

SCHEDULE D CONDITIONS FOR STAGE 1 DA

PART 1 – GENERAL CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

- D1. In addition to meeting the specific performance measures and criteria in this consent, all reasonable and feasible measures must be implemented to prevent, and if prevention is not reasonable and feasible, minimise, any material harm to the environment that may result from the construction and operation of Stage 1 development, and any rehabilitation required under this consent.

TERMS OF CONSENT

- D2. Stage 1 of the Development may only be carried out:
- (a) in compliance with the conditions of this consent;
 - (b) in accordance with all written directions of the Planning Secretary;
 - (c) in accordance with the EIS and RTS;
 - (d) in accordance with the plans in **Appendix 2** and **Appendix 3**;
 - (e) in accordance with SSD 7348 MOD 1;
 - (f) in accordance with the Applicant's Management and Mitigation Measures in **Appendix 7**; and
 - (g) in accordance with modifications to this consent.
- D3. Consistent with the requirements in this consent, the Planning Secretary may make written directions to the Applicant in relation to:
- (a) the content of any strategy, study, system, plan, program, review, audit, notification, report or correspondence submitted under or otherwise made in relation to this consent, including those that are required to be, and have been, approved by the Planning Secretary; and
 - (b) the implementation of any actions or measures contained in any such document referred to in Condition D3(a).
- D4. The conditions of this consent and directions of the Planning Secretary prevail to the extent of any inconsistency, ambiguity or conflict between them and a document listed in Condition D2(c). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in Condition D2(c), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.

LIMITS OF CONSENT

- D5. This consent lapses five (5) years after the date from which it operates, unless Stage 1 has physically commenced on the land to which the consent applies before that date.
- D6. The following limits apply to Stage 1:
- (a) the maximum GLA for the land uses shall not exceed the limits in **Table 4**; and
 - (b) a minimum 60 m wide corridor along the northern Site boundary shall not be developed and shall be maintained and preserved for the future WSFL corridor, in accordance with the requirements of TfNSW.
 - (c) all construction traffic associated with the Stage 1 warehouse buildings (Buildings 1A, 1B and 1C) must use the West North South Link Road to access the site.

Table 4: GLA Maximum for Stage 1

Land Use	Maximum GLA (m ²)
Total Warehousing	81,286
Total Office	4,151

Other	4,004
Total GLA	89,440

Note: Other includes, but is not limited to, the skybridge, gatehouse, dangerous goods store and energy complex in Building 1A

- D7. The Applicant shall ensure Stage 1 is consistent with the development controls in **Table 2: Development Controls** in Condition B10.

NOTIFICATION OF COMMENCEMENT

- D8. The date of commencement of each of the following phases of Stage 1 must be notified to the Department in writing, at least one month before that date, or otherwise agreed with the Planning Secretary:
- (a) construction; and
 - (b) operation.
- D9. If the construction or operation of Stage 1 is to be delivered in sub-stages, the Department must be notified in writing at least one month before the commencement of each sub-stage, of the date of commencement and the works to be carried out in that sub-stage.

EVIDENCE OF CONSULTATION

- D10. Where conditions of this consent require consultation with an identified party, the Applicant must:
- (a) consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and
 - (b) provide details of the consultation undertaken including:
 - i. the outcome of that consultation, matters resolved and unresolved; and
 - ii. details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.

STAGING, COMBINING AND UPDATING STRATEGIES, PLANS OR PROGRAMS

- D11. With the approval of the Planning Secretary, the Applicant may:
- (a) prepare and submit any strategy, plan or program required by this consent on a staged basis (if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program);
 - (b) combine any strategy, plan or program required by this consent (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined); and
 - (c) update any strategy, plan or program required by this consent (to ensure the strategies, plans and programs required under this consent are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development).
- D12. If the Planning Secretary agrees, a strategy, plan or program may be staged or updated without consultation being undertaken with all parties required to be consulted in the relevant condition in this consent.
- D13. If approved by the Planning Secretary, updated strategies, plans or programs supersede the previous versions of them and must be implemented in accordance with the condition that requires the strategy, plan or program.

PROTECTION OF PUBLIC INFRASTRUCTURE

- D14. Before the commencement of construction of Stage 1, the Applicant must:

- (a) consult with the relevant owner and provider of services that are likely to be affected, to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure;
 - (b) prepare a dilapidation report identifying the condition of all public infrastructure in the vicinity of the Site (including roads, gutters and footpaths); and
 - (c) submit a copy of the dilapidation report to the Planning Secretary and Council.
- D15. Unless the Applicant and the applicable authority agree otherwise, the Applicant must:
- (a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by carrying out Stage 1; and
 - (b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of Stage 1.

PROTECTION OF WATER NSW INFRASTRUCTURE

- D16. Before the commencement of construction of Stage 1, the Applicant must:
- (a) prepare a dilapidation report identifying the condition of all infrastructure within the water pipelines corridor, in the vicinity of the WNSLR bridge crossing;
 - (b) implement all practical measures to protect this infrastructure, as required by Water NSW; and
 - (c) repair, or pay the full costs associated with repairing, any water supply infrastructure that is damaged by carrying out Stage 1.

DEMOLITION

- D17. All demolition must be carried out in accordance with *Australian Standard AS 2601-2001 The Demolition of Structures* (Standards Australia, 2001).

STRUCTURAL ADEQUACY

- D18. All new buildings and structures, and any alterations or additions to existing buildings and structures, that are part of the development, must be constructed in accordance with the relevant requirements of the National Construction Code (NCC).

Notes:

- *Under Part 6 of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.*

COMPLIANCE

- D19. The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of Stage 1.

DEVELOPER CONTRIBUTIONS

Planning Agreement

- D20. The Applicant shall provide all monetary contributions and/or works-in-kind contributions under Subdivision 2 of Division 7.1 of Part 7 of the EP&A Act, in accordance with the Planning Agreement entered into between the Minister for Planning, Goodman Property Services (Aust) Pty Ltd (the developer) and BGMG 11 Pty Limited as trustee for the BGMG 1 Oakdale West Trust (the landowner) executed on 5 August 2019 and as attached in **Appendix 4**.

OPERATION OF PLANT AND EQUIPMENT

- D21. All plant and equipment used on site, or to monitor the performance of Stage 1 must be:
- (a) maintained in a proper and efficient condition; and
 - (b) operated in a proper and efficient manner.

EASEMENTS

- D22. Within 12 months of commencing operation of Stage 1, or a timing otherwise agreed with Council, an easement under section 88A and/or restriction or public positive covenant under section 88E of the *Conveyancing Act 1919* (NSW) naming the Council as the prescribed authority, which can only be revoked, varied or modified with the consent of the Council, and provides for a drainage outlet swale from bio-retention basin 1, must be registered on title of Lot 19 DP 1250578.

EXTERNAL WALLS AND CLADDING

- D23. The external walls of all buildings including additions to existing buildings must comply with the relevant requirements of the NCC.
- D24. Before the issue of a Construction Certificate and an Occupation Certificate, the Applicant must provide the Certifying Authority with documented evidence that the products and systems proposed for use or used in the construction of external walls including finishes and claddings such as synthetic or aluminium composite panels comply with the requirements of the NCC.
- D25. The Applicant must provide a copy of the documentation given to the Certifying Authority to the Planning Secretary within seven days after the Certifying Authority accepts it.

UTILITIES AND SERVICES

- D26. Before the construction of any utility works associated with Stage 1, the Applicant must obtain relevant approvals from service providers.
- D27. Before the commencement of operation of Stage 1, the Applicant must obtain a Compliance Certificate for water and sewerage infrastructure servicing Stage 1, under section 73 of the *Sydney Water Act 1994* (NSW).
- D28. Before the issue of a Subdivision or Construction Certificate for Stage 1, the Applicant (whether or not a constitutional corporation) is to provide evidence, satisfactory to the Certifying Authority, that arrangements have been made for the provision of communication facilities to Stage 1.
- D29. The Applicant must demonstrate that the carrier has confirmed in writing they are satisfied that the fibre ready facilities are fit for purpose.

TRANSGRID EASEMENT

- D30. The Applicant must:
- (a) provide safe and unobstructed access for TransGrid plant and personnel to access the transmission towers, lines and easement on the Site, 24 hours a day, 7 days a week;
 - (b) comply with the requirements of TransGrid for any works in the TransGrid easement on the Site; and
 - (c) advise TransGrid of any proposed amended or modified encroachment into the easement.

WATER NSW

- D31. The Applicant must:
- (a) comply with the requirements of Water NSW for any works adjacent to, or over, the water pipelines corridor;
 - (b) consult with Water NSW during detailed design of Stage 1 works near the corridor including:
 - (i) design of drainage upgrade works within the corridor;
 - (ii) batters and access tracks;
 - (iii) final bridge design for the WNSLR;
 - (c) obtain from Water NSW, an access consent and construction licence to work within the water pipelines corridor, prior to the commencement of construction;

- (d) consult with Water NSW during preparation of the CEMP, in accordance with Condition D119, and attend a site visit with Water NSW personnel, prior to finalising the CEMP, to mark the exact works area for the WNSLR bridge crossing; and
- (e) notify any incidents that affect or could affect the water pipelines corridor to Water NSW on the 24-hour Incident Notification Number **1800 061 069**, as a matter of urgency.

WORKS-AS-EXECUTED PLANS

- D32. Before the issue of the final Occupation Certificate for Stage 1, works-as-executed drawings signed by a registered surveyor demonstrating that the stormwater drainage and finished ground levels have been constructed as approved, must be submitted to the PCA.

APPLICABILITY OF GUIDELINES

- D33. References in the conditions of this consent to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of this consent.
- D34. However, consistent with the conditions of this consent and without altering any limits or criteria in this consent, the Planning Secretary may, when issuing directions under this consent in respect of ongoing monitoring and management obligations, require compliance with an updated or revised version of such a guideline, protocol, Standard or policy, or a replacement of them.

ADVISORY NOTES

- AN1. All licences, permits, approvals and consents as required by law must be obtained and maintained as required for Stage 1. No condition of this consent removes any obligation to obtain, renew or comply with such licences, permits, approvals and consents.

PART 2 – ENVIRONMENTAL PERFORMANCE CONDITIONS

VISUAL AMENITY

Landscape Management Plan

- D35. Prior to the commencement of construction of Stage 1, the Applicant must prepare a Landscape Management Plan (LMP), to the satisfaction of the Planning Secretary. The plan must form part of the CEMP in accordance with Condition D119 and the OEMP in accordance with Condition D130 and must:
- (a) be prepared in consultation with Council;
 - (b) detail procedures for the retention of existing native vegetation in the north-western corner of the Site and protection of this vegetation from construction impacts;
 - (c) include visual impact mitigation measures for construction including but not limited to:
 - (i) the location of site sheds, compounds and machinery parking areas, avoiding the western and southern site boundaries, or other locations highly visible from adjacent residential properties;
 - (ii) ~~procedures for progressive grassing of exposed soil, as soon as reasonably practicable after disturbance, focusing on areas where building construction will occur at a later stage;~~ *The contractor shall employ the use of a dust suppressing polymer agent ideally with a green tint to reduce the visual impact of the exposed building pads & to assist in reducing the dust generated on site.*
 - (d) detail the works required to construct the landscape bund along the western boundary of the Site, as shown on Error! Reference source not found.4 in **Appendix 2**, including provision for the landscaping to incorporate mature trees (no less than 75 litre pot size);
 - (e) include a schedule of works which prioritises the construction of the landscape bund along the western boundary of the Site, as shown on **Figure 4** in **Appendix 2**.
 - (f) include a program for implementing the landscape bund as soon as reasonably practicable, and no later than prior to operation of Stage 1;
 - (g) describe the integration of landscaping with fixed elements, including retaining walls and noise walls;
 - (h) describe the monitoring and maintenance procedures to ensure the success of the landscaping works over the life of the Development; and
 - (i) *update the LEMP to include modifications to the western bund, bio-retention basin 2/3 and the noise wall approved under MOD 3.*
- D36. The Applicant must:
- (a) not commence construction of Stage 1 until the LMP is approved by the Planning Secretary.
 - (b) must implement the most recent version of the LMP approved by the Planning Secretary; and
 - (c) include the monitoring and maintenance procedures contained in the LMP within the OEMP required in accordance with Condition D130.

Landscaping

- D37. The Applicant must complete the landscape bund along the western boundary of the Site as shown on **Figure 4** in **Appendix 2** within six months of commencing any construction including bulk earthworks.
- D38. The Applicant must maintain all landscaping implemented as part of Stage 1, as shown on Error! Reference source not found.4 in **Appendix 2**, for the duration of the Development. If the monitoring carried out as part of Condition D35 indicates that any aspect of the landscaping has not been successful, the Applicant must undertake re-planting and rehabilitation works, as soon as reasonably practicable.

Setbacks

- D39. The Applicant must ensure building services including tanks are integrated into the building design and landscaped areas to reduce visibility from public areas, unless otherwise required by an authority or Australian Standard, to be located within the front boundary setback.

Lighting and Security Cameras

- D40. The Applicant must ensure the lighting associated with Stage 1:
- (a) complies with the latest version of AS 4282-1997 - *Control of the obtrusive effects of outdoor lighting* (Standards Australia, 1997); and
 - (b) is mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network.
- D41. The Applicant must ensure any security cameras installed as part of Stage 1 are directed away from adjacent private properties.

Reflectivity

- D42. The visible light reflectivity from building materials used in the facades and roofs of the warehouses and offices must be designed to minimise glare. A report demonstrating compliance with these requirements is to be submitted to the satisfaction of the Certifying Authority prior to the issue of the relevant Construction Certificate.

Signage and Fencing

- D43. All signage and fencing must be erected in accordance with the plans in the RtS.

Note: *This condition does not apply to temporary construction and safety related signage and fencing.*

D43A. Prior to construction of any signage for Stage 1, the Applicant must consult with Council on the final signage strategy.

- D44. All fencing along building frontages must be located behind the landscape setbacks and not along the front boundary. The fencing must be a maximum height of 2.1 metre and be an open style.

- D45. The Applicant must:

- (a) remove existing rural fencing along the water pipelines corridor adjacent the site and dispose to an appropriate waste facility licensed to accept the waste;
- (b) install and maintain temporary security fencing along the water pipelines corridor adjacent the site, for the duration of construction, or until a permanent fence is installed;
- (c) install permanent 2.4-metre-high fencing along the water pipelines corridor adjacent the site, including the approaches to the WNSLR bridge over the water pipelines corridor and above retaining walls, unless otherwise agreed with Water NSW;
- (d) install concrete barriers or barrier guard rails (including barriers leading up to bridge structure) to the WNSLR where there is potential for large vehicles to drive over retaining walls and into the water pipelines corridor. Barriers must be rated to withstand impact from B-Double size vehicles; and
- (e) install cranked throw screens on both sides of the WNSLR bridge crossing the Water NSW water pipeline corridor.

D45A. Prior to construction of Building 1A, the Applicant must submit a final architectural design for Building 1A detailing building articulation, colour schemes and signage. The Applicant must not commence construction of Building 1A until the final architectural design is approved by the Planning Secretary.

WESTERN NORTH-SOUTH LINK ROAD (WNSLR)

General Requirements

- D46. The Applicant must design and construct the WNSLR in accordance with the requirements of:
- (a) Council, the PCA and any approval issued under section 138 of the *Roads Act 1993* including the Works Authorisation Deed (WAD);

- (b) TfNSW for the bridge crossing of the future WSFL; and
 - (c) Water NSW for the bridge crossing of the water pipelines corridor.
- D47. The Applicant must design and construct the intersections of the WNSLR with Estate Road 1 and Lockwood Road to the satisfaction of the relevant roads authority.
- D47A. Prior to the commencement of construction of car park access for Lot 9, DP1157476 (57-87 Lockwood Road, Erskine Park NSW 2759), the Applicant must submit a Section 138 Application (including payment of fees together with any applicable bonds) to Penrith City Council for obtaining a *Roads Act 1993* approval. The Section 138 Application may include but is not limited to the following works:
- vehicular crossings (including kerb reinstatement of redundant vehicular crossings);
 - road opening for utilities and stormwater (including stormwater connection to Council infrastructure); and
 - road occupancy or road closures.
- All works shall be carried out in accordance with the *Roads Act 1993* approval, the development consent including the stamped approved plans, and Penrith City Council's specifications.

Note: contact Penrith City Council's City Works Department on (02) 4732 7777 for further information regarding the application process.

Works at Lenore Drive/Grady Crescent/WNSLR Intersection

- D48. Prior to the commencement of construction of the Lenore Drive/Grady Crescent/WNSLR intersection (the intersection), the Applicant must finalise the detailed design, including a Traffic Signal Plan, for the intersection works. The detailed design must:
- (a) cut back the median further with a taper in Grady Crescent to accommodate the dual B-Double swept paths turning from WNSLR onto Lenore Drive; and
 - (b) include an angled pedestrian crossing on the south-eastern corner of the intersection so that pedestrians are not confused by the pedestrian lantern on the opposite side of the intersection.
- D49. The Applicant must enter into a WAD for works at the intersection with TfNSW (former RMS). The WAD must be executed prior to the submission of the detailed design required under condition D48 to TfNSW for approval.
- D50. The Applicant must design the proposed traffic control light at the intersection in accordance with Austroads guidelines, RMS Signal Design Manual and Australian Codes of Practice. The traffic control light design must be endorsed by a suitably qualified practitioner whose qualification has been approved by TfNSW (former RMS).
- D51. The Applicant must submit the certified copies of the traffic signal design plans to TfNSW (former RMS) for approval prior to the issue of a Construction Certificate.
- D52. The Applicant must submit a request to TfNSW (former RMS) Network Operations Team to obtain relevant approvals to remove the signalised pedestrian crossing on the eastern leg of the intersection.
- D53. The Applicant must carry out all public utility adjustment/relocation works necessary for the intersection works as required by relevant public utility authorities and/or their agents.
- D54. The Applicant must make a ten (10) year maintenance contribution for the intersection to TfNSW (former RMS).
- D55. The intersection works must be carried out at no cost to TfNSW (former RMS).

Pre-Construction

- D56. Prior to the commencement of construction of the WNSLR, the Applicant must:
- (a) obtain the written consent of the Minister for Planning and Public Spaces under the Biodiversity Covenant, to construct the WNSLR over the Erskine Park Biodiversity Corridor; and

- (b) provide evidence to the satisfaction of the Planning Secretary, demonstrating the design of the WNSLR and bridge crossings have been agreed with the relevant roads authority, Council, TfNSW and Water NSW.

Consultation

- D57. The Applicant must develop a schedule for consultation with and approval by TfNSW for the construction of the bridge foundations over the future WSFL, including geotechnical and structural certification as required by TfNSW. The schedule must form part of the CEMP required by Condition D119.
- D58. The Applicant must develop a schedule for consultation with and approval by Water NSW for the construction of the bridge over the water pipelines corridor. This schedule must form part of the CEMP required by Condition D119.

Pre-Operation

- D59. Prior to operation of any Stage of the Development, the Applicant must complete construction of the WNSLR to the satisfaction of the relevant roads authority and the PCA.
- D60. Prior to the commencement of operation of the WNSLR, the Applicant must provide works-as-executed drawings to Water NSW for the WNSLR bridge. The drawings must clearly show any changes to the bridge design or the works adjacent to the water pipelines corridor.
- D61. Prior to the commencement of operation of the WNSLR, the Applicant must design and construct a stormwater management system for the WNSLR. The system must:
 - (a) be designed by a suitably qualified and experienced person(s);
 - (b) be generally in accordance with the conceptual design in the RtS;
 - (c) ensure that the system capacity has been designed in accordance with AUSTROADS guidelines;
 - (d) achieve the pollutant reduction targets specified in RMS's *Water Sensitive Urban Design (WSUD) Guidelines* (March 2016) and Council's *Water Sensitive Urban Design (WSUD) Policy* (December 2013); and
 - (e) ensure the outlet structures are designed in accordance with NRAR's *Guidelines for Controlled Activities on Waterfront Land* (May 2018).

Dedication of Infrastructure and Land

- D62. Prior to the completion of construction of the WNSLR, the Applicant must consult with Water NSW regarding land subdivision and stratum arrangements for the acquisition and dedication of Water NSW land to Council for the WNSLR bridge.
- D63. Following completion of construction of the WNSLR to the satisfaction of the relevant roads authority, the Applicant must dedicate the WNSLR and its associated land owned by Water NSW and BGMG 11 Pty Limited as trustee for the BGMG 1 Oakdale West Trust, to the relevant roads authority in accordance with the requirements of the Planning Agreement.
- D64. The Applicant shall retain care, control and ownership of bio-retention basin no. 1 associated with the WNSLR.

TRANSPORT, ACCESS AND PARKING

Construction Traffic Management Plan

- D65. Prior to the commencement of construction of Stage 1, the Applicant must prepare a Construction Traffic Management Plan (CTMP) to the satisfaction of the Planning Secretary. The CTMP must form part of the CEMP required by Condition D119 and must:
 - (a) be prepared by a suitably qualified and experienced person(s);
 - (b) be prepared in consultation with Council, Mamre Anglican School, Emmaus Catholic College, Emmaus Catholic Care Village and Trinity Catholic Primary School;
 - (c) detail specific measures to manage construction traffic to avoid school drop off and pick up times (Monday to Friday 8 am – 9.30 am and 2.30 pm – 4 pm) and Higher School

- Certificate exam periods, including any temporary infrastructure arrangements and traffic safety measures;
- (d) detail the measures to be implemented to ensure road safety and network efficiency during construction, including scheduling deliveries of heavy plant and equipment outside of peak periods, or during school holidays where possible;
 - (e) detail heavy vehicle routes, access and parking arrangements;
 - (f) include a Driver Code of Conduct to:
 - i. minimise the impacts of construction on the local and regional road network;
 - ii. minimise conflicts with other road users including the students, staff, visitors and residents of the neighbouring schools and aged care village;
 - iii. minimise road traffic noise, both on Bakers Lane and from construction vehicles on Site; and
 - iv. ensure truck drivers use specified routes and adhere to the speed restrictions on Bakers Lane;
 - (g) include a program to monitor the effectiveness of these measures;
 - (h) detail procedures for early notification to residents and the community (including local schools), of any potential disruptions to routes; and
 - (i) [update the CTMP to include modifications to construction traffic management approved under MOD 2 and MOD 3.](#)

D66. The Applicant must:

- (a) not commence construction of Stage 1 until the CTMP required by Condition D65 is approved by the Planning Secretary; and
- (b) implement the most recent version of the CTMP approved by the Planning Secretary for the duration of construction.

Estate Roads and Intersections

D67. The Applicant must design and construct the internal estate roads and intersections to accommodate the turning path of a B-Double, to the satisfaction of the Relevant Roads Authority.

D68. Following the issue of a Subdivision Certificate, the estate roads shall be dedicated to the Relevant Roads Authority. Prior to any dedication, the Applicant shall ensure construction of the estate roads has been completed to the satisfaction of the Relevant Roads Authority and measures (such as a performance bond) are in place for any prescribed maintenance period, to the satisfaction of the Relevant Roads Authority.

Operating Conditions

D69. The Applicant must ensure:

- (a) internal roads, driveways and parking (including grades, turn paths, sight distance requirements, aisle widths, aisle lengths and parking bay dimensions) are constructed and maintained in accordance with the latest version of *AS 2890.1:2004 Parking facilities Off-street car parking* (Standards Australia, 2004) and *AS 2890.2:2002 Parking facilities Off-street commercial vehicle facilities* (Standards Australia, 2002);
- (b) [parking for Stage 1 is provided in accordance with the EIS and RfS for MOD 5;](#)
- (c) the swept path of the longest vehicle entering and exiting the site, as well as manoeuvrability through the site, is in accordance with the relevant Austroads guidelines;
- (d) Stage 1 does not result in any vehicles queuing on the public road network;
- (e) heavy vehicles associated with Stage 1 are not parked on local roads or footpaths in the vicinity of the Site;
- (f) all vehicles are wholly contained on site before being required to stop;

- (g) all loading and unloading of materials are carried out on Site;
- (h) all trucks entering or leaving the Site with loads have their loads covered and do not track dirt onto the public road network; and
- (i) the proposed turning areas in the car parks are kept clear of any obstacles, including parked cars, at all times.

Operational Traffic Management Plan

D69A The Applicant must prepare an Operational Traffic Management Plan (OTMP) for Stage 1. The OTMP must form part of the OEMP required by condition D130 and must:

- (a) be prepared by a suitably qualified and experienced expert, in consultation with Council and TfNSW;
- (b) detail the numbers and frequency of truck movements, sizes of trucks, vehicle routes and hours of operation;
- (c) include measures to maintain road safety and network efficiency;
- (d) detail measures to minimise traffic noise, including procedures for receiving and addressing complaints from the community about Stage 1 related traffic and noise;
- (e) include a Driver's Code of Conduct that addresses:
 - (i) travelling speeds and adherence to site-specific speed limits;
 - (ii) procedures to ensure drivers adhere to designated heavy vehicle routes; and
 - (iii) procedures to ensure drivers implement safe driving practices.

D69B The Applicant must:

- (a) not commence operation of Stage 1 until the OTMP required by condition D69A is approved by the Planning Secretary; and
- (b) implement the most recent version of the OTMP approved by the Planning Secretary for the duration of operation.

NOISE

Hours of Work

D70. The Applicant must comply with the hours detailed in **Table 5**, unless otherwise agreed in writing by the Planning Secretary.

Table 5: Hours of Work

Activity	Day	Time
Construction	Monday – Friday	7 am to 6 pm
	Saturday	8 am to 1 pm
Operation	Monday – Sunday (including public holidays)	24 hours

D71. Works outside of the hours identified in Condition D70 may be undertaken in the following circumstances:

- (a) works that are inaudible at the nearest sensitive receivers;
- (b) works agreed to in writing by the Planning Secretary;
- (c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or
- (d) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.

Construction Noise Limits

- D72. Stage 1 must be constructed with the aim of achieving the construction noise management levels detailed in the *Interim Construction Noise Guideline* (DECC, 2009) (as may be updated or replaced from time to time). All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the Construction Noise and Vibration Management Plan required by Condition D73.

Construction Noise and Vibration Management Plan

- D73. The Applicant must prepare a Construction Noise and Vibration Management Plan (CNVMP) for Stage 1, to the satisfaction of the Planning Secretary. The CNVMP must form part of a CEMP in accordance with Condition D119 and must:
- (a) be prepared by a suitably qualified and experienced noise expert;
 - (b) describe procedures for achieving the noise management levels in EPA's *Interim Construction Noise Guideline* (DECC, 2009) (as may be updated or replaced from time to time);
 - (c) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;
 - (d) include strategies to minimise impacts to sensitive receivers, including, where practicable, starting noisy equipment away from sensitive receivers and implementing respite periods;
 - (e) include strategies that have been developed with the sensitive receivers identified in **Appendix 5** for managing high noise generating works;
 - (f) describe the community consultation undertaken to develop the strategies in Condition D73(e);
 - (g) include a monitoring program that:
 - (i) includes a protocol for determining exceedances of the relevant conditions in this approval;
 - (ii) evaluates and reports on the effectiveness of the noise and vibration management measures;
 - (iii) include procedures to relocate, modify, mitigate or stop work to ensure compliance with relevant criteria; and
 - (h) include a complaints management system that would be implemented for the duration of Stage 1.
- D74. The Applicant must:
- (a) not commence construction of Stage 1 until the CNVMP required by Condition D73 is approved by the Planning Secretary; and
 - (b) implement the most recent version of the CNVMP approved by the Planning Secretary for the duration of construction.

Operational Noise Limits

- D75. The Applicant shall undertake operation of Stage 1 in a manner that ensures the Development complies with the noise limits for the Concept Proposal in Condition **Error! Reference source not found.** of this consent.

Noise Barrier

- D75A The Applicant must install the noise barriers located on the western boundary, as shown on **Figure 6** in **Appendix 5**, to the satisfaction of the Planning Secretary. The noise barriers must be completed no later than 30 November 2020, unless otherwise agreed by the Planning Secretary.

Noise Verification

D75(b) Within three months of commencing operation of any buildings on the site, the Applicant must prepare a noise verification report, to the satisfaction of the Planning Secretary. The noise verification report must:

- (i) be prepared by an appropriately qualified and experienced noise expert;
- (ii) describe the noise monitoring undertaken to verify the effectiveness of the noise barrier;
- (iii) demonstrate compliance with the noise limits in Condition B18; and
- (iv) if required, recommend, prioritise and implement measures to improve noise controls to ensure the development meets the noise limits in Condition B18.

VIBRATION

Vibration Criteria

D76. Vibration caused by construction works on the site, as measured at any residence or structure outside the site, must be limited to:

- (a) for structural damage, the latest version of *DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures* (German Institute for Standardisation, 1999); and
- (b) for human exposure, the acceptable vibration values set out in the *Environmental Noise Management Assessing Vibration: a technical guideline* (DEC, 2006) (as may be updated or replaced from time to time).

D77. Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in Condition D76.

D78. The limits in Conditions D76 and D77 apply unless otherwise outlined in a CNVMP, approved as part of the CEMP required by Condition D119 of this consent.

SOILS & WATER

Imported Soil

D79. The Applicant must prepare a Fill Importation Protocol for Stage 1. The protocol must form part of the CEMP required by Condition D119 and must detail the measures to:

- (a) ensure only VENM, ENM, or other material approved in writing by EPA is brought onto the site;
- (b) keep accurate records of the volume and type of fill to be used; and
- (c) make these records available to the Department upon request.

Erosion and Sediment Control

D80. The Applicant must prepare an Erosion and Sediment Control Plan for Stage 1, including the WNSLR, to the satisfaction of the Planning Secretary. The Plan must form part of a CEMP in accordance with Condition D119 and must:

- (a) be prepared by a suitably qualified and experienced person(s);
- (b) be generally consistent with the Erosion and Sediment Control Plans in the RTS and those prepared by the contractor for each sequence of the works, as approved by the PCA;
- (c) include detailed erosion and sediment controls developed in accordance with the relevant requirements of *Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book* (Landcom, 2004) guideline; and
- (d) include procedures for maintaining erosion and sediment controls in efficient working order for the duration of construction, to ensure Stage 1 complies with Condition D82.

D81. Prior to the commencement of bulk earthworks as part of Stage 1, the Applicant must implement erosion and sediment controls identified by Condition D80 and maintain those controls throughout bulk earthworks and construction, to ensure stormwater flows do not

increase in any downstream areas. The Environmental Representative, appointed in accordance with Condition D123, shall make a written statement to the Planning Secretary confirming the erosion and sediment controls are operational, prior to the commencement of bulk earthworks and other construction activities required for Stage 1.

Discharge Limits

D82. Stage 1 must comply with section 120 of the POEO Act, which prohibits the pollution of waters.

Stormwater Management System

D83. The Applicant must design, construct and operate a stormwater management system for Stage 1 that:

- (a) is designed by a suitably qualified and experienced person(s);
- (b) is generally in accordance with the conceptual design in the RtS;
- (c) is in accordance with applicable Australian Standards;
- (d) ensures the system capacity is designed in accordance with *Australian Rainfall and Runoff* (Engineers Australia, 2016), *Managing Urban Stormwater: Council Handbook* (EPA, 1997) and *Stormwater Drainage Specifications for Building Development* (Penrith Council, May 2018);
- (e) ensures peak stormwater flows from the Site do not exceed pre-development flows in any downstream areas for all rainfall events up to and including the 1 in 100-year average recurrence interval (ARI);
- (f) ensures peak stormwater flows from the Site do not exceed existing flows in the Water NSW drainage lines and water pipelines corridor; and
- (g) achieves the pollutant reduction targets specified in Council's *Water Sensitive Urban Design (WSUD) Policy*, (December 2013).

D84. All stormwater drainage infrastructure on the Site, including bio-retention basins, shall remain under the care, control and ownership of the registered proprietor of the lots.

D85. The Applicant shall create a drainage easement for the outlet swales from the bio-retention basins on the site, in accordance with the requirements of Council and Condition D22.

Groundwater

D86. If groundwater is intersected during construction of Stage 1, the Applicant must:

- (a) obtain the necessary water licences or approvals from NRAR; and
- (b) develop a Groundwater Management Plan (GMP) for the testing, dewatering, storage, movement and treatment of groundwater, to the satisfaction of NRAR.

Waterfront Land

D87. The Applicant must carry out all works on or adjacent to waterfront land in accordance with the Department of Industry *Guidelines for Controlled Activities on Waterfront Lands 2012*.

BIODIVERSITY

Flora and Fauna Management Plan

D88. The Applicant must prepare a **Terrestrial and Aquatic** Flora and Fauna Management Plan (FFMP) for Stage 1, to the satisfaction of the Planning Secretary. The Plan must form part of a CEMP in accordance with Condition D119 and must:

- (a) be prepared by a suitably qualified and experienced person(s);
- (b) describe procedures to manage impacts on biodiversity values during earthworks, clearing and dam decommissioning;
- (c) include procedures for clearing marking and protecting the areas of vegetation to be retained on the Site, including the mature vegetation in the north-western corner and the ~~Biodiversity Offset Area, established in accordance with Condition D91 adjacent to~~

~~Ropes Creek; and Riparian Corridor adjacent to Ropes Creek in accordance with the Vegetation Management Plan (VMP) prepared under Condition D91;~~

- (d) detail the specific erosion and sediment controls to protect the retained vegetation.

D89. The Applicant must:

- (a) not commence bulk earthworks until the FFMP required by Condition D88 is approved by the Planning Secretary; and
- (b) implement the most recent version of the FFMP approved by the Planning Secretary for the duration of bulk earthworks and construction.

Offsets for Stage 1

D90. Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must retire ~~472~~ 173 ecosystem credits to offset the removal of ~~4.41~~ 4.36 hectares of native vegetation on the Site.

Note: *If the Applicant seeks a variation to the offset rules, the Applicant must demonstrate that reasonable steps have been taken to find like-for-like offsets in accordance with Section 10.5.4.2 of the FBA and Appendix A of the OEH's NSW Biodiversity Offsets Policy for Major Projects 2014.*

In accordance with Principle 3 of the OEH's NSW Biodiversity Offsets Policy for Major Projects 2014, the Policy does not allow variations to the offset rules to be applied to 'threatened species and ecological communities that are considered nationally significant (listed under the Environmental Protection and Biodiversity Conservation Act 1999)'. These must be offset in a like for like manner.

~~D91. The Applicant shall establish a Biodiversity Offset Area on the Site, consistent with the area described in the RtS, in accordance with a Biodiversity Stewardship Agreement with the Biodiversity Conservation Trust.~~

Vegetation Management Plan

D91. Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must prepare and implement a Vegetation Management Plan (VMP) for the restoration and rehabilitation of 4.2 ha of Riparian Corridor adjacent to Ropes Creek to meet the objectives of the *Water Management Act 2000*.

Biodiversity Management Action Plan

~~D92. The Applicant must maintain the Biodiversity Offset Area on the Site in accordance with a Biodiversity Management Action Plan approved by the Biodiversity Conservation Trust.~~

Offsets for the WNSLR

D93. Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must:

- (a) offset 0.42 ha of vegetation lost in the Erskine Park Biodiversity Corridor as a result of the WNSLR by carrying out planting within the area shown in green edging on **Figure** in **Appendix 6**; and
- (b) plant the area shown in green edging on **Figure** of **Appendix 6** with species similar to those identified for zone 4a, on the south-eastern side of Ropes Creek, in the Biodiversity Management Plan Erskine Park Employment Area (HLA-Envirosciences, 2 May 2006).

D94. The Applicant shall monitor and maintain the planting for a period of six months to ensure a minimum 85% survival rate of the planting.

D95. The Applicant must notify the Planning Ministerial Corporation at least one month before the completion of planting to enable the Planning Ministerial Corporation to arrange ongoing maintenance.

Snake Management Measures

- D96. Prior to construction of Stage 1, the Applicant must implement snake management measures to limit, to the extent practicable, movement of snakes from the Site into the adjacent school and retirement village on the western boundary of the Site. The measures shall be detailed in the CEMP required by Condition D119 and shall include, but not be limited to, provision of alternative snake habitat on Site, fencing along the western boundary and installation of snake deterrents.

BUSHFIRE PROTECTION

- D97. The Applicant shall ensure Stage 1 complies with:

- (a) the relevant provisions of *Planning for Bushfire Protection 2019*;
- (b) the construction standards and asset protection zone requirements recommended in the Oakdale Industrial Estate - West Bushfire Protection Assessment, prepared by Australian Bushfire Protection Planners Pty Ltd, dated September 2016, and updated 13 January 2020, and the SSD-7348 (MOD 6) Bushfire Hazard Assessment prepared by Blackash Bushfire Consulting, dated 12 November 2020; and
- (c) AS2419.1 – 2005 Fire Hydrant Installations for firefighting water supply.

AIR QUALITY

Dust Minimisation

- D98. The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.
- D99. During construction of Stage 1, the Applicant must ensure that:
- (a) exposed surfaces and stockpiles are suppressed by regular watering;
 - (b) all trucks entering or leaving the Site with loads have their loads covered;
 - (c) trucks associated with Stage 1 do not track dirt onto the public road network;
 - (d) public roads used by these trucks are kept clean; and
 - (e) land stabilisation works are carried out progressively on site to minimise exposed surfaces.

Construction Air Quality Management Plan

- D100. Prior to the commencement of construction of Stage 1, the Applicant must prepare a Construction Air Quality Management Plan (CAQMP) to the satisfaction of the Planning Secretary. The CAQMP must form part of the CEMP required by Condition D119 and must:
- (a) be prepared by a suitably qualified and experienced person(s);
 - (b) detail and rank all emissions from all construction activities, including particulate emissions;
 - (c) describe a program that is capable of evaluating the performance of the construction and determining compliance with key performance indicators;
 - (d) identify the control measures that will be implemented for each emission source; and
 - (e) nominate the following for each of the proposed controls:
 - (i) key performance indicator;
 - (ii) monitoring method;
 - (iii) location, frequency and duration of monitoring;
 - (iv) record keeping;
 - (v) complaints register;
 - (vi) response procedures; and
 - (vii) compliance monitoring.

D101. The Applicant must:

- (a) not commence construction of Stage 1 until the CAQMP required by Condition D100 is approved by the Planning Secretary; and
- (b) implement the most recent version of the CAQMP approved by the Planning Secretary for the duration of construction.

Odour Management

D102. The Applicant must ensure Stage 1 does not cause or permit the emission of any offensive odour, as defined in the POEO Act.

ABORIGINAL HERITAGE

Statutory Requirements

D103. Prior to the commencement of construction of Stage 1, the Applicant must register identified Aboriginal items or objects on the OEH's Aboriginal Heritage Information Management System (AHIMS) Aboriginal Sites Register.

Archaeological Test Excavation

D104. Prior to the commencement of construction of Stage 1, the Applicant must undertake archaeological test excavation in the identified area of archaeological sensitivity adjacent to Ropes Creek and the ridgeline immediately to the west, that would be impacted by Stage 1. The test excavation must:

- (a) be undertaken in accordance with a methodology developed in consultation with registered Aboriginal parties;
- (b) be undertaken in accordance with the requirements of the Heritage and Community Engagement, Department of Premier and Cabinet (former NSW OEH Heritage Division); and
- (c) include a report detailing any further work, including archaeological salvage and monitoring, conducted in the presence of Aboriginal stakeholders.

D105. The Applicant must not commence construction of Stage 1 until the Archaeological Test Excavation Report is provided to the Heritage and Community Engagement, Department of Premier and Cabinet (former NSW OEH Heritage Division) and the Planning Secretary.

Unexpected Finds Protocol

D106. If any item or object of Aboriginal heritage significance is identified on Site:

- (a) all work in the immediate vicinity of the suspected Aboriginal item or object must cease immediately;
- (b) a 10 m wide buffer area around the suspected item or object must be cordoned off; and
- (c) the Biodiversity and Conservation Division of the Department must be contacted immediately.

D107. Work in the immediate vicinity of the Aboriginal item or object may only recommence in accordance with the provisions of Part 6 of the *National Parks and Wildlife Act 1974* (NSW).

HISTORIC HERITAGE

Unexpected Finds Protocol

D108. If any archaeological relics are uncovered during construction of Stage 1, then all works in the immediate vicinity of the relic must cease immediately. Unexpected finds must be evaluated and recorded in accordance the requirements of Department of Premier and Cabinet, Heritage (former NSW OEH Heritage Division).

HAZARDS AND RISK

Dangerous Goods

D109. The storage of dangerous goods in Building 1A must not exceed the quantities provided in Table 6.

Table 6: *Maximum storage quantities of dangerous goods*

Class	Description	Packing Group	Quantity (kg)
1.4	Explosives	n/a	20,000
2.1	Flammable gas (LPG)	n/a	4125 (7,500 L)
2.1	Flammable gas (LPG) – kitchen	n/a	247.5 (450 L)
2.1	Flammable gas (aerosols)	n/a	70,000
2.2	Non-flammable, non-toxic gas (aerosols)	n/a	25,000
3	Flammable liquids	II & III	300,000
4.1	Flammable solids	III	24,000
5.1	Oxidising agents	III	25,000
6.1	Toxic substances	III	45,000
8	Corrosive substances	II & III	60,000
9	Miscellaneous Dangerous Goods	III	105,000

D109A

Pre-Construction

- (a) The Applicant must prepare the studies set out under section (b) and (c) below (the pre-construction studies). Construction, other than of preliminary works that are outside the scope of the hazard studies, must not commence until study recommendations have been considered and, where appropriate, acted upon. The Applicant must submit the studies to the Planning Secretary no later than one month prior to the commencement of construction of Building 1A (other than preliminary works), or within such further period as the Planning Secretary may agree.
- (b) A Fire Safety Study for Building 1A. This study must cover the relevant aspects of the Department of Planning's Hazardous Industry Planning Advisory Paper No. 2, 'Fire Safety Study Guidelines' and the New South Wales Government's 'Best Practice Guidelines for Contaminated Water Retention and Treatment Systems'. The study must meet the requirements of Fire and Rescue NSW.
- (c) A Final Hazard Analysis (FHA) of Building 1A, consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis'. The FHA must report:
 - layout of dangerous goods storage area for specific dangerous goods classes; firewall and fire safety requirement between the dangerous goods storage and Energy Complex 2;
 - implementation of all recommendations of the Preliminary Hazard Analysis prepared by RiskCon Engineering dated 24 October 2019
 - compliance with all relevant standards.

Pre-Commissioning

- (a) Prior to commissioning Building 1A, the Applicant must develop and implement the plans and systems set out under subsection (b) to (c) below. The Applicant must submit to the Planning Secretary documentation describing the plans and systems no later than two months prior to the commencement of commissioning of Building 1A, or within such further period as the Planning Secretary may agree.
- (b) A comprehensive Emergency Plan and detailed emergency procedures for Building 1A. This plan must include detailed procedures for the safety of all people outside of the project who may be at risk from the project. The plan must be consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 1, 'Emergency Planning'.
- (c) A document setting out a comprehensive Safety Management System, covering all on-site operations and associated transport activities involving hazardous materials. The document must clearly specify all safety related procedures, responsibilities and policies, along with details of mechanisms for ensuring adherence to the procedures. The Safety Management System must be consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 9, 'Safety Management'. Records must be kept on-site and shall be available for inspection by the Planning Secretary upon request.

Pre-startup

Hazard Audit

- (a) Twelve months after the commencement of operation of Building 1A and every five years thereafter, or at such intervals as the Planning Secretary may agree, the Applicant must carry out a comprehensive Hazard Audit of Building 1A and within one month of each audit submit a report to the Planning Secretary.

The audits must be carried out at the Applicant's expense by a qualified person or team, independent of the development, and must be consistent with the Department of Planning's Hazardous Industry Planning Advisory Paper No. 5, 'Hazard Audit Guidelines'.

D109B The Applicant must not store more than 1.1 million kilograms of combustible liquid commodities at warehouse Building 1A.

Bunding

D110. The Applicant must store all chemicals, fuels and oils used on Site in appropriately banded areas in accordance with the requirements of all relevant Australian Standards, and/or EPA's *Storing and Handling of Liquids: Environmental Protection – Participants Manual* (Department of Environment and Climate Change, 2007).

WASTE MANAGEMENT

Waste Storage

D111. Waste must be secured and maintained within designated waste storage areas at all times and must not leave the Site onto neighbouring public or private properties.

Waste Management Plan

D112. The Applicant must implement the Waste Management Plan (WMP) in the EIS for the duration of construction and operation of Stage 1.

Statutory Requirements

D113. The Applicant must assess and classify all liquid and non-liquid wastes to be taken off Site in accordance with the latest version of EPA's *Waste Classification Guidelines Part 1: Classifying Waste* (EPA, 2014) and dispose of all wastes to a facility that may lawfully accept the waste.

D114. Waste generated outside the Site must not be received at the Site for storage, treatment, processing, reprocessing, or disposal.

Pests, Vermin and Noxious Weed Management

D115. The Applicant must:

- (a) implement suitable measures to manage pests, vermin and declared noxious weeds on the Site; and
- (b) inspect the Site on a regular basis to ensure that these measures are working effectively, and that pests, vermin or noxious weeds are not present on Site in sufficient numbers to pose an environmental hazard or cause the loss of amenity in the surrounding area.

Note: For the purposes of this condition, noxious weeds are those species subject to an order declared under the Biosecurity Act 2015 (NSW).

CONTAMINATION

D116. Prior to the commencement of construction of Stage 1, the Applicant must prepare an unexpected finds protocol to ensure that potentially contaminated material is appropriately managed. The procedure must form part of the CEMP in accordance with Condition D119 and must ensure any material identified as contaminated is disposed offsite, with the disposal location and results of testing submitted to the Planning Secretary, prior to its removal from the Site.

COMMUNITY ENGAGEMENT

D117. The Applicant must consult with the community regularly throughout Stage 1, including consultation with the nearby sensitive receivers identified in **Appendix 5**, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. Community engagement shall be undertaken in accordance with the Community Communication Strategy approved in accordance with Condition C19.

PART 3 – ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

MANAGEMENT PLAN REQUIREMENTS

D118. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:

- (a) details of:
 - (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);
 - (ii) any relevant limits or performance measures and criteria; and
 - (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, Stage 1 or any management measures;
- (b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;
- (c) a program to monitor and report on the:
 - (i) impacts and environmental performance of Stage 1; and
 - (ii) effectiveness of the management measures set out pursuant to paragraph (b) above;
- (d) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
- (e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time;
- (f) a protocol for managing and reporting any:
 - (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);
 - (ii) complaint;
 - (iii) failure to comply with statutory requirements; and
- (g) a protocol for periodic review of the plan.

Note: *The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.*

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

D119. The Applicant must prepare a Construction Environmental Management Plan (CEMP) for Stage 1, including the WNSLR, in accordance with the requirements of Condition D118 and to the satisfaction of the Planning Secretary. The Applicant may prepare separate CEMPs for the Stage 1 works and the WNSLR, addressing all relevant requirements of this consent.

D120. Prior to finalising the CEMP, the Applicant must consult with TfNSW (including the former RMS), Council and Water NSW. The Applicant must also attend a site visit with Water NSW personnel to mark the exact works area for the WNSLR bridge crossing.

D121. As part of the CEMP required under Condition D119 of this consent, the Applicant must include:

- (a) detailed procedures for managing bulk earthworks to avoid adverse water quality impacts on Ropes Creek, including, but not limited to:
 - (i) any staging of earthworks to minimise disturbed areas;
 - (ii) limits on the areal extent of earthworks;
 - (iii) progressive grassing of exposed areas, as soon as reasonably practicable, focusing on areas where building construction will occur at a later stage;

- (b) Landscape Management Plan (LMP) (see Condition D35);
- (c) Construction Traffic Management Plan (CTMP) (see Condition D65);
- (d) Consultation Schedule for TfNSW and Water NSW (see Conditions D57 and D58);
- (e) Construction Noise and Vibration Management Plan (CNVMP) (see Condition D73);
- (f) Fill Importation Protocol (see Condition D79) and Erosion and Sediment Control Plan (see Condition D80);
- (g) Flora and Fauna Management Plan (FFMP) (see Condition D88);
- (h) Snake Management Measures (see Condition D96);
- (i) Construction Air Quality Management Plan (CAQMP) (see Condition D100);
- (j) Unexpected Finds Protocol (see Conditions D106 and D108);
- (k) Unexpected Contamination Protocol (see Condition D116); and
- (l) a Community Consultation and Complaints Handling Procedure.

D122. The Applicant must:

- (a) not commence construction of Stage 1 until the CEMP is approved by the Planning Secretary; and
- (b) carry out the construction of Stage 1 in accordance with the CEMP approved by the Planning Secretary and as revised and approved by the Planning Secretary from time to time.

ENVIRONMENTAL REPRESENTATIVE

D123. The Applicant must engage an Environmental Representative (ER) to oversee construction of Stage 1. Construction of Stage 1 must not commence until an ER has been approved by the Planning Secretary and engaged by the Applicant.

D124. The Planning Secretary's approval of an ER must be sought no later than one month before the commencement of construction of Stage 1, or within another timeframe agreed with the Planning Secretary.

D125. The proposed ER must be a suitably qualified and experienced person who was not involved in the preparation of the EIS or RtS and is independent from the design and construction personnel for Stage 1.

D126. The Applicant may engage more than one ER for Stage 1, in which case the functions to be exercised by an ER under the terms of this approval may be carried out by any ER that is approved by the Planning Secretary for the purposes of Stage 1.

D127. For the duration of construction of Stage 1, or as agreed with the Planning Secretary, the approved ER must:

- (a) receive and respond to communication from the Planning Secretary in relation to the environmental performance of Stage 1;
- (b) consider and inform the Planning Secretary on matters specified in the terms of this consent;
- (c) consider and recommend to the Applicant any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community;
- (d) review the CEMP identified in Condition D119 and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this consent, and if so:
 - (i) make a written statement to this effect before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary); or
 - (ii) make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Planning Secretary).

Secretary/Department for information or are not required to be submitted to the Planning Secretary/Department);

- (e) regularly monitor the implementation of the CEMP, and any other documents identified by the Planning Secretary, to ensure implementation is being carried out in accordance with the document and the terms of this consent;
- (f) as may be requested by the Planning Secretary, help plan, attend or undertake audits of Stage 1 commissioned by the Department including scoping audits, programming audits, briefings, and site visits;
- (g) as may be requested by the Planning Secretary, assist the Department in the resolution of community complaints;
- (h) prepare and submit to the Planning Secretary and other relevant regulatory agencies, for information, an **Environmental Representative Monthly Report** providing the information set out in the Environmental Representative Protocol under the heading "Environmental Representative Monthly Reports." The **Environmental Representative Monthly Report** must be submitted within seven calendar days following the end of each month for the duration of the ER's engagement, or as otherwise agreed with the Planning Secretary.

D128. The Applicant must provide the ER with all documentation requested by the ER in order for the ER to perform their functions specified in Condition D127 (including preparation of the ER monthly report), as well as:

- (a) the complaints register; and
- (b) a copy of any assessment carried out by the Applicant of whether proposed work is consistent with the consent (which must be provided to the ER before the commencement of the subject work).

D129. The Planning Secretary may at any time commission an audit of an ER's exercise of its functions under Condition D142. The Applicant must:

- (a) facilitate and assist the Planning Secretary in any such audit; and
- (b) make it a term of their engagement of an ER that the ER facilitate and assist the Planning Secretary in any such audit.

OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

D130. The Applicant must prepare an Operational Environmental Management Plan (OEMP) in accordance with the requirements of Condition D118 and to the satisfaction of the Planning Secretary.

D131. As part of the OEMP required under Condition D130 of this consent, the Applicant must include the following:

- (a) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of operation of Stage 1;
- (b) describe the procedures that would be implemented to:
 - (i) keep the local community and relevant agencies informed about the operation and environmental performance of Stage 1;
 - (ii) receive, handle, respond to, and record complaints;
 - (iii) resolve any disputes that may arise;
 - (iv) respond to any non-compliance;
 - (v) respond to emergencies; and
- (c) include the following environmental management plans:
 - (i) Landscape Management Plan (LMP) (see Condition D35);
 - (ii) Flora and Fauna Management Plan (FFMP) (see Condition D88);
 - (iii) Waste Management Plan (WMP) (see Condition D112).

D132. The Applicant must:

- (a) not commence operation until the OEMP is approved by the Planning Secretary; and
- (b) operate Stage 1 in accordance with the OEMP approved by the Planning Secretary (and as revised and approved by the Planning Secretary from time to time).

REVISION OF STRATEGIES, PLANS AND PROGRAMS

D133. Within three months of:

- (a) the submission of a Compliance Report under Condition D141;
- (b) the submission of an Environmental Representative Monthly Report under Condition D127;
- (c) the submission of an incident report under Condition D135;
- (d) the approval of any modification of the conditions of this consent; or
- (e) the issue of a direction of the Planning Secretary under Condition D2(b) which requires a review,

the strategies, plans and programs required under this consent must be reviewed.

D134. If necessary, to either improve the environmental performance of Stage 1, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary. Where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review.

Note: *This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of Stage 1.*

REPORTING AND AUDITING

Incident Notification, Reporting and Response

D135. The Department must be notified in writing to compliance@planning.nsw.gov.au immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident. Subsequent notification requirements must be given, and reports submitted in accordance with the requirements set out in **Appendix 8**.

Non-Compliance Notification

D136. The Department must be notified in writing to compliance@planning.nsw.gov.au within seven (7) days after the Applicant becomes aware of any non-compliance.

D137. A non-compliance notification must identify the development and the application number for it, set out the condition of consent that the development is non-compliant with, the way in which it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

D138. A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

Compliance Reporting

D139. No later than 6 weeks before the date notified for the commencement of construction, a Compliance Monitoring and Reporting Program prepared in accordance with the Compliance Reporting Post Approval Requirements (Department 2018) must be submitted to the Department.

D140. Compliance Reports of the Development must be carried out in accordance with the Compliance Reporting Post Approval Requirements (Department 2018).

D141. The Applicant must make each Compliance Report publicly available no later than 60 days after submitting it to the Department and notify the Department in writing at least 7 days before this is done.

Monitoring and Environmental Audits

D142. Any condition of this consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance reporting and independent auditing.

Note: *For the purposes of this condition, as set out in the EP&A Act, “monitoring” is monitoring of the development to provide data on compliance with the consent or on the environmental impact of the development, and an “environmental audit” is a periodic or particular documented evaluation of the development to provide information on compliance with the consent or the environmental management or impact of the development.*

ACCESS TO INFORMATION

D143. At least 48 hours before the commencement of construction until the completion of all works under this consent, the Applicant must:

- (a) make the following information and documents (as they are obtained or approved) publicly available on its website:
 - (i) the documents referred to in Condition D2 of this consent;
 - (ii) all current statutory approvals for the Development;
 - (iii) all approved strategies, plans and programs required under the conditions of this consent;
 - (iv) the proposed staging plans for the Development if the construction, operation or decommissioning of the Development is to be staged;
 - (v) regular reporting on the environmental performance of the Development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent;
 - (vi) a comprehensive summary of the monitoring results of the Development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
 - (vii) a summary of the current stage and progress of the Development;
 - (viii) contact details to enquire about the Development or to make a complaint;
 - (ix) a complaints register, updated monthly;
 - (x) the Compliance Report of the Development;
 - (xi) audit reports prepared as part of any monitoring or environmental audit of the Development and the Applicant’s response to the recommendations in any audit report;
 - (xii) any other matter required by the Planning Secretary; and
- (b) keep such information up to date, to the satisfaction of the Planning Secretary.

APPENDIX 1 CONCEPT PROPOSAL

Table 7: Schedule of Approved Plans – Concept Proposal

Architectural Plans prepared by SBA Architects			
Drawing	Title	Issue	Date
OAK MP 02	Estate Masterplan	D	29 January 2021
OAK MP 03	Western North South Link Road	B	30 July 2020
OAK MP 05	Precinct 1 Plan	F	30 July 2020
OAK MP 06	Precinct Plan	C	24 November 2020
OAK MP 07	Indicative Ultimate Lot Layout	B	18 November 2020
OAK MP 08	Site Analysis Plan	B	30 July 2020
OAK MP 11	Building Staging Plan (Indicative)	A	24 November 2020
OAK MP 12	Signage Precinct 1 Plan	B	30 July 2020
OAK MP 13	Fire Protection Plan	F	25 November 2020
OAK MP 14	Biodiversity Management Plan	B	9 November 2020

Landscape Plans prepared by Scape Design Landscape Architecture			
Drawing	Title	Revision	Date
L.SK.000	Cover Sheet	B	8/01/21
L.SK.100	Landscape Master Plan – OWE MOD 6	B	8/01/21
L.SK.101	Street Trees & Planting Masterplan	B	8/01/21
L.SK.102	Planting Schedule – OWE MOD 5	B	8/01/21
L.SK.200	Landscape Sections – OWE MOD 5	A	26/10/20

Civil Plans prepared by AT&L			
Drawing	Title	Issue	Date
15-272-C0000	Cover Sheet	A9	20-10-20
15-272-C0001	General Arrangement Master Plan	A13	20-10-20
15-272-C0002	Existing Site Plan	A12	20-10-20
15-272-C0003	Precinct Plan	A13	20-10-20
15-272-C0004	Stage 1 SSD Approval Extents Sheet 1 of 2	A16	20-10-20
15-272-C0005	Stage 1 SSD Approval Extents Sheet 2 of 2	A11	20-10-20
15-272-C0006	Cut/Fill Plan	A11	20-10-20
15-272-C0007	Stormwater Drainage Catchment Plan (Pre-Developed)	A9	20-10-20
15-272-C0008	Stormwater Drainage Catchment Plan (Developed)	A9	20-10-20
15-272-C0009	Erosion and Sediment Control Master Plan	A12	20-10-20
15-272-C0010	Typical Sections Sheet 1	A11	20-10-20
15-272-C0011	Typical Sections Sheet 2	A9	20-10-20

15-272-C0012	Typical Sections Sheet 3	A10	20-10-20
15-272-C0013	Typical Sections Sheet 4	A8	20-10-20
15-272-C0020	Western North-South Link Road General Arrangement Plan	A10	20-10-20
15-272-C0021	Western North-South Link Road Stormwater Drainage Catchment Plan (Pre-Developed)	A9	20-10-20
15-272-C0022	Western North-South Link Road Stormwater Drainage Catchment Plan (Developed)	A9	20-10-20
15-272-C0023	Western North-South Link Road Proposed Land Acquisition Plan	A13	20-10-20
15-272-C1003	Precinct General Arrangement Plan	A15	20-07-20
15-272-C1004	Typical Site Sections Sheet 1 of 6	A11	20-07-20
15-272-C1005	Typical Site Sections Sheet 2 of 6	A10	20-07-20

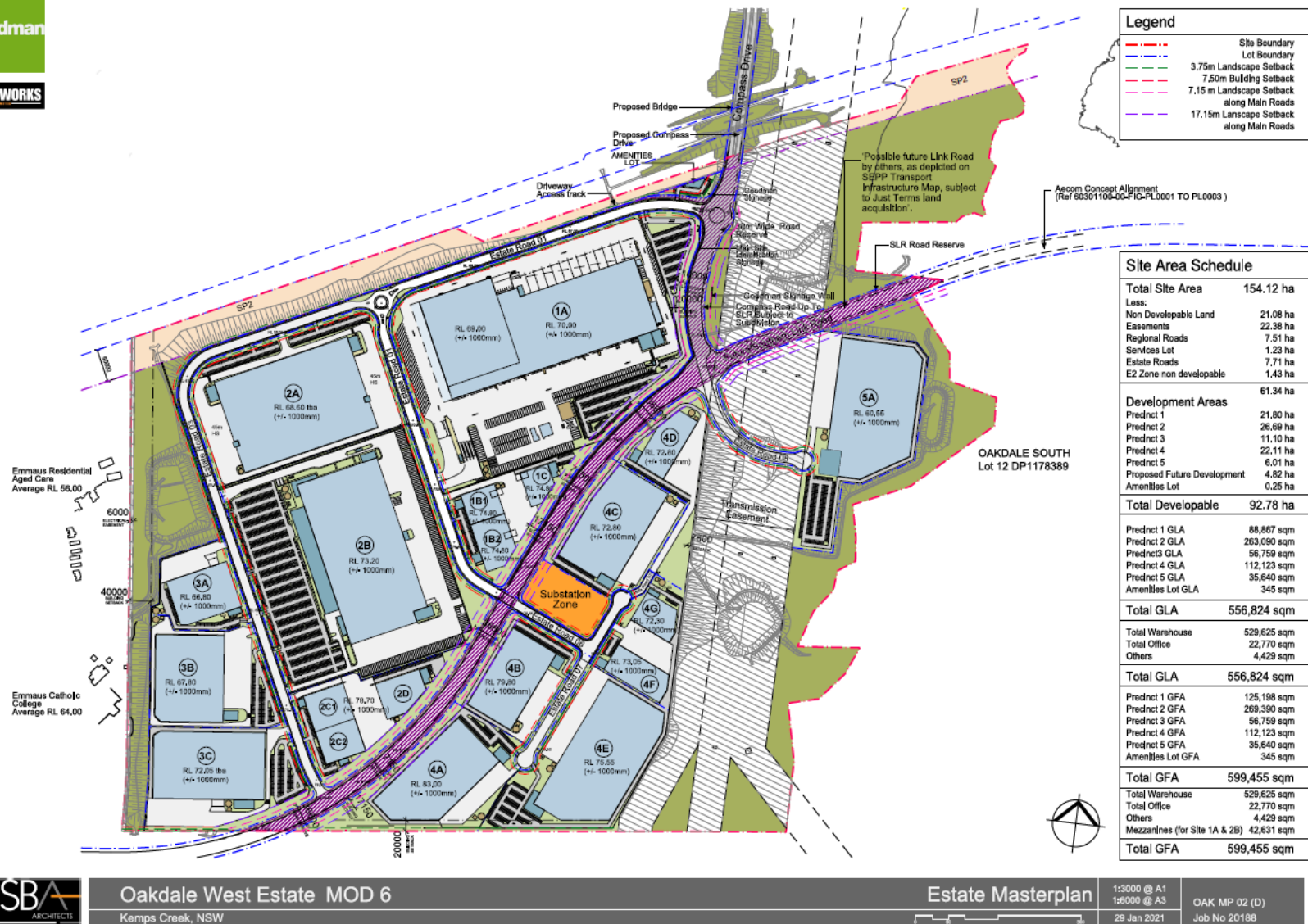


Figure 1: Concept Proposal Layout (MOD 6)

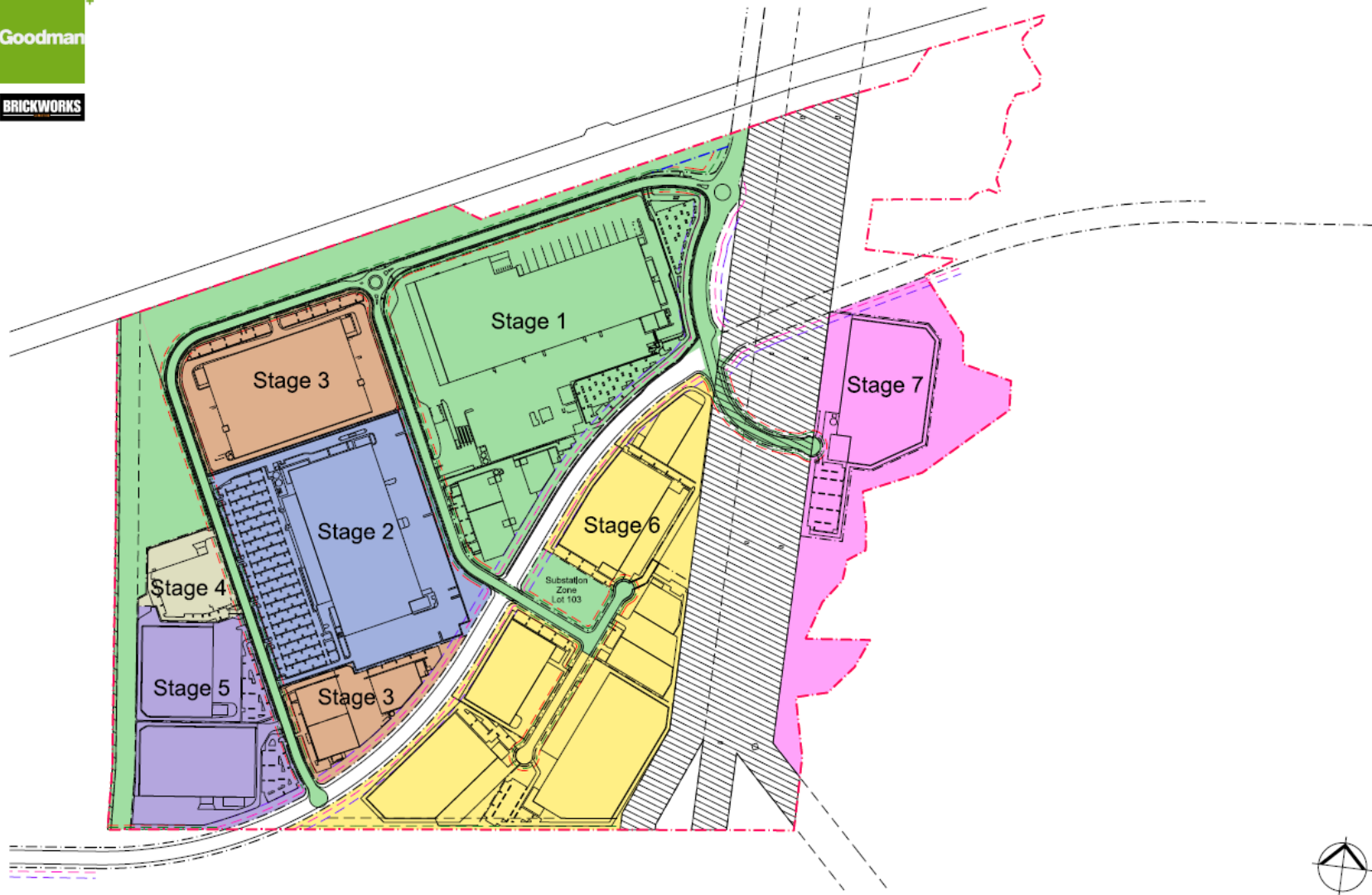


Figure 2: Staging Plan (MOD 6)

APPENDIX 2 STAGE 1 DA PLANS

Table 8: Schedule of Approved Plans – Stage 1 DA

Architectural Plans prepared by SBA Architects		
Drawing	Title	Date
OAK MP 04 (Z)	SSDA Stage 1 Development—Precinct 1	21 Sept 2018
OAK MP 05 (Z)	Precinct 1 Plan	21 Sept 2018
OAK MP 12 (12)	Signage Precinct 1 Plan	21 Sept 2018
Building 1A plans prepared by SBA Architects		
OAK 1A DA 10 (H)	Site Plan/Floor Plan	04 May 2018
OAK 1A DA 11 (C)	Roof Plan	03 April 2017
OAK 1A DA 12 (C)	Office Plan—Ground Floor	06 Sept 2016
OAK 1A DA 13 (C)	Office Plan—First Floor	06 Sept 2016
OAK 1A DA 14 (C)	Elevations Office	06 Sept 2016
OAK 1A DA 15 (C)	Elevations 1A	03 April 2017
OAK 1A DA 16 (D)	Sections	4 May 2018
Building 1B plans prepared by SBA Architects		
OAK 1B DA 20 (F)	Site Plan/Floor Plan	17 April 2018
OAK 1B DA 21 (C)	Roof Plan	06 Sept 2016
OAK 1B DA 22 (B)	Office Plan	06 Sept 2016
OAK 1B DA 24 (B)	Elevations Office	06 Sept 2016
OAK 1B DA 25 (B)	Elevations 1B	06 Sept 2016
OAK 1B DA 26 (B)	Sections	06 Sept 2016
Building 1C plans prepared by SBA Architects		
OAK 1C DA 30 (H)	Site Plan/Floor Plan	17 April 2018
OAK 1C DA 31 (C)	Roof Plan	03 April 2017
OAK 1C DA 32 (B)	Office Plan—Ground Floor	06 Sept 2016
OAK 1C DA 33 (B)	Office Plan—First Floor	06 Sept 2016
OAK 1C DA 34 (B)	Elevations Office	06 Sept 2016
OAK 1C DA 35 (C)	Elevations Sheet 1	03 April 2017
OAK 1C DA 36 (C)	Elevations Sheet 2	03 Sept 2017
OAK 1C DA 37 (C)	Sections	03 April 2017

Landscape Plans prepared by Site Image Landscape Architects			
Drawing	Title	Issue	Date
ELW-101	-	G	11.10.2018
ELW-102	-	G	11.10.2018
ELW-103	-	G	11.10.2018
ELW-104	-	G	11.10.2018
ELW-105	-	G	11.10.2018
ELW-106	-	G	11.10.2018
ELW-107	-	G	11.10.2018
ELW-108	-	G	11.10.2018
ELW-109	-	G	11.10.2018
ELW-110	-	G	11.10.2018
ELW-111	-	G	11.10.2018
ELW-112	-	G	11.10.2018
ELW-113	-	G	11.10.2018
ELW-114	-	G	11.10.2018
WNSLR-101	-	G	11.10.2018
WNSLR-102	-	G	11.10.2018
ELW-502	Plant Schedule	G	11.10.2018
OLW-001	Precinct 1 Landscape Plan	G	11.10.2018
OLW-501	Planting Palette	G	11-10-2018

Civil Plans prepared by AT&L			
Drawing	Title	Issue	Date
15-272-C0004	Stage 1 SSD Approval Extents Sheet 1 of 2	A5 A7	11-10-18 24-07-19
15-272-C0005	Stage 1 SSD Approval Extents Sheet 2 of 2	A4 A6	21-09-18 24-07-19
15-272-C0020	Western North-South Link Road General Arrangement Plan	A3 A5	21-09-18 24-07-19
15-272-C0021	Western North-South Link Road Stormwater Drainage Catchment Plan (Pre-Developed)	A5	24-07-19
15-272-C0022	Western North-South Link Road Stormwater Drainage Catchment Plan (Developed)	A3 A5	21-09-18 19-07-19
15-272-C0023	Western North-South Link Road Proposed Land Acquisition Plan	A8	24-07-19
15-272-C1000	Cover Sheet	A6	24-07-19
15-272-C1001	Drawing List	A6	24-07-19
15-272-C1002	General Notes	A6	24-07-19
15-272-C1003	Precinct General Arrangement Plan	A8	24-07-19
15-272-C1004	Typical Site Sections Sheet 1 of 6	A4 A8	21-09-18 20-03-20
15-272-C1005	Typical Site Sections Sheet 2 of 6	A4 A6	21-09-18 24-07-19
15-272-C1006	Typical Site Sections Sheet 3 of 6	A4 A8	21-09-18 20-03-20
15-272-C1007	Typical Site Sections Sheet 4 of 6	A3 A5	21-09-18 24-07-19
15-272-C1008	Typical Site Sections Sheet 5 of 6	A3 A6	11-10-18 20-03-20
15-272-C1009	Typical Site Sections Sheet 6 of 6	A4 A6	28-09-18 20-03-20
15-272-C1010	Typical Road Sections	A3 A5	21-09-18 24-07-19
15-272-C1011	Contour Plan	A5	20-03-20
15-272-C1014	Bulk Earthworks Cut/Fill Plan	A6	20-03-20
15-272-C1015	Earthworks and Stormwater Drainage Plan Sheet 1 of 20	A3 A5	21-09-18 24-07-19
15-272-C1016	Earthworks and Stormwater Drainage Plan Sheet 2 of 20	A3 A5	21-09-18 24-07-19
15-272-C1017	Earthworks and Stormwater Drainage Plan Sheet 3 of 20	A3 A5	21-09-18 24-07-19
15-272-C1018	Earthworks and Stormwater Drainage Plan Sheet 4 of 20	A3 A5	21-09-18 24-07-19
15-272-C1019	Earthworks and Stormwater Drainage Plan Sheet 5 of 20	A3 A5	21-09-18 24-07-19
15-272-C1020	Earthworks and Stormwater Drainage Plan Sheet 6 of 20	A3 A5	21-09-18 24-07-19
15-272-C1021	Earthworks and Stormwater Drainage Plan Sheet 7 of 20	A3 A5	21-09-18 24-07-19
15-272-C1022	Earthworks and Stormwater Drainage Plan Sheet 8 of 20	A3 A5	21-09-18 24-07-19
15-272-C1023	Earthworks and Stormwater Drainage Plan Sheet 9 of 20	A3 A5	21-09-18 24-07-19
15-272-C1024	Earthworks and Stormwater Drainage Plan Sheet 10 of 20	A3 A5	21-09-18 24-07-19
15-272-C1025	Earthworks and Stormwater Drainage Plan Sheet 11 of 20	A3 A5	21-09-18 24-07-19
15-272-C1026	Earthworks and Stormwater Drainage Plan Sheet 12 of 20	A3 A5	21-09-18 24-07-19

15-272-C1027	Earthworks and Stormwater Drainage Plan Sheet 13 of 20	A3 A5	21-09-18 24-07-19
15-272-C1028	Earthworks and Stormwater Drainage Plan Sheet 14 of 20	A3 A5	21-09-18 24-07-19
15-272-C1029	Earthworks and Stormwater Drainage Plan Sheet 15 of 20	A4 A6	04-10-18 24-07-19
15-272-C1030	Earthworks and Stormwater Drainage Plan Sheet 16 of 20	A3 A5	21-09-18 24-07-19
15-272-C1031	Earthworks and Stormwater Drainage Plan Sheet 17 of 20	A3 A5	21-09-18 24-07-19
15-272-C1032	Earthworks and Stormwater Drainage Plan Sheet 18 of 20	A3 A5	21-09-18 24-07-19
15-272-C1033	Earthworks and Stormwater Drainage Plan Sheet 19 of 20	A3 A5	21-09-18 24-07-19
15-272-C1034	Earthworks and Stormwater Drainage Plan Sheet 20 of 20	A3 A5	21-09-18 24-07-19
15-272-C1040	Roadworks and Stormwater Drainage Plan Sheet 1 of 10	A3 A5	21-09-18 24-07-19
15-272-C1041	Roadworks and Stormwater Drainage Plan Sheet 2 of 10	A3 A5	21-09-18 24-07-19
15-272-C1042	Roadworks and Stormwater Drainage Plan Sheet 3 of 10	A3 A5	21-09-18 24-07-19
15-272-C1043	Roadworks and Stormwater Drainage Plan Sheet 4 of 10	A3 A5	21-09-18 24-07-19
15-272-C1044	Roadworks and Stormwater Drainage Plan Sheet 5 of 10	A3 A5	21-09-18 24-07-19
15-272-C1045	Roadworks and Stormwater Drainage Plan Sheet 6 of 10	A3 A5	21-09-18 24-07-19
15-272-C1046	Roadworks and Stormwater Drainage Plan Sheet 7 of 10	A3 A5	21-09-18 24-07-19
15-272-C1047	Roadworks and Stormwater Drainage Plan Sheet 8 of 10	A3 A5	21-09-18 24-07-19
15-272-C1048	Roadworks and Stormwater Drainage Plan Sheet 9 of 10	A2 A4	21-09-18 24-07-19
15-272-C1049	Roadworks and Stormwater Drainage Plan Sheet 10 of 10	A2 A4	21-09-18 24-07-19
15-272-C1050	Road and Longitudinal Sections Sheet 1 of 5	A3 A5	21-09-18 24-07-19
15-272-C1051	Road and Longitudinal Sections Sheet 2 of 5	A3 A5	21-09-18 24-07-19
15-272-C1052	Road and Longitudinal Sections Sheet 3 of 5	A3 A5	21-09-18 24-07-19
15-272-C1053	Road and Longitudinal Sections Sheet 4 of 5	A3 A5	21-09-18 24-07-19
15-272-C1054	Road and Longitudinal Sections Sheet 5 of 5	A3 A5	21-09-18 24-07-19
15-272-C1058	Western Boundary Layout and Sections	A4	24-07-19
15-272-C1059	Southern Boundary Layout and Sections	A4	24-07-19
15-272-C1062	Bio-Retention Basin No. 3 Detail Plan Sheet 1 of 2 Bio-Retention Basin 2 and 3 Detail Plan Sheet 1 of 2	A3 A5	21-09-18 24-07-19
15-272-C1063	Bio-Retention Basin No. 3 Detail Plan Sheet 2 of 2 Bio-Retention Basin 2 and 3 Detail Plan Sheet 2 of 2	A2 A4	21-09-18 24-07-19
15-272-C1064	Bio-Retention Basin No. 5 Detail Plan Sheet 1 of 2 Bio-Retention Basin 4 Detail Plan Sheet 1 of 2	A1 A3	21-09-18 24-07-19
15-272-C1065	Bio-Retention Basin No. 5 Detail Plan Sheet 2 of 2 Bio-Retention Basin 4 Detail Plan Sheet 2 of 2	A3 A5	21-09-18 24-07-19
15-272-C1066	Bio-Retention Basin No. 6 Detail Plan Bio-Retention Basin 5 Detail Plan	A3 A5	21-09-18 24-07-19

15-272-C1068	Stormwater Drainage Catchment Plan (Pre-developed)	A4	24-07-19
15-272-C1069	Stormwater Drainage Catchment Plan (Post-developed)	A4	24-07-19
15-272-C1070	Retaining Wall General Arrangement Plan	A4 A6	11-10-18 24-07-19
15-272-C1071	Retaining Wall Profiles Sheet 1 of 7	A3 A5	21-09-18 24-07-19
15-272-C1072	Retaining Wall Profiles Sheet 2 of 7	A3 A5	21-09-18 24-07-19
15-272-C1073	Retaining Wall Profiles Sheet 3 of 7	A3 A5	21-09-18 24-07-19
15-272-C1074	Retaining Wall Profiles Sheet 4 of 7	A3 A5	21-09-18 24-07-19
15-272-C1075	Retaining Wall Profiles Sheet 5 of 7	A3 A5	21-09-18 24-07-19
15-272-C1076	Retaining Wall Profiles Sheet 6 of 7	A3 A5	21-09-18 24-07-19
15-272-C1077	Retaining Wall Profiles Sheet 7 of 7	A2 A4	21-09-18 24-07-19
12-272-C1080	Stage 1 Services and Utilities Coordination Plan Sheet 1 of 6	A3 A5	21-09-18 24-07-19
12-272-C1081	Stage 1 Services and Utilities Coordination Plan Sheet 2 of 6	A3 A5	21-09-18 24-07-19
12-272-C1082	Stage 1 Services and Utilities Coordination Plan Sheet 3 of 6	A3 A5	21-09-18 24-07-19
12-272-C1083	Stage 1 Services and Utilities Coordination Plan Sheet 4 of 6	A3 A5	21-09-18 24-07-19
12-272-C1084	Stage 1 Services and Utilities Coordination Plan Sheet 5 of 6	A3 A5	21-09-18 24-07-19
12-272-C1085	Stage 1 Services and Utilities Coordination Plan Sheet 6 of 6	A3 A5	21-09-18 24-07-19
12-272-C1086	Existing Transgrid Overhead Electrical Cables Plan	A5	24-07-19
12-272-C1087	Existing Transgrid Overhead Electrical Cables and Longitudinal Sections	A5	24-07-19
12-272-C1088	Existing Transgrid Overhead Electrical Cables Typical Sections Sheet 1 of 2	A5	24-07-19
12-272-C1089	Existing Transgrid Overhead Electrical Cables Typical Sections Sheet 2 of 2	A5	24-07-19
12-272-C1090	Erosion and Sediment Control Plan Sheet 1 of 7	A3 A5	21-09-18 24-07-19
12-272-C1091	Erosion and Sediment Control Plan Sheet 2 of 7	A3 A5	21-09-18 24-07-19
12-272-C1092	Erosion and Sediment Control Plan Sheet 3 of 7	A3 A5	21-09-18 24-07-19
12-272-C1093	Erosion and Sediment Control Plan Sheet 4 of 7	A3 A5	21-09-18 24-07-19
12-272-C1094	Erosion and Sediment Control Plan Sheet 5 of 7	A3 A5	21-09-18 24-07-19
12-272-C1095	Erosion and Sediment Control Plan Sheet 6 of 7	A3 A5	21-09-18 24-07-19
12-272-C1096	Erosion and Sediment Control Plan Sheet 7 of 7	A3 A5	21-09-18 24-07-19
12-272-C1097	Erosion and Sediment Control Details	A1 A4	21-09-18 24-07-19
15-272-C2003	General Arrangement Plan	A3	21-09-18
15-272-C2010	Siteworks and Stormwater Drainage Plan Sheet 1 of 15	A3	21-09-18
15-272-C2011	Siteworks and Stormwater Drainage Plan Sheet 2 of 15	A3	21-09-18
15-272-C2012	Siteworks and Stormwater Drainage Plan Sheet 3 of 15	A3	21-09-18
15-272-C2013	Siteworks and Stormwater Drainage Plan Sheet 4 of 15	A3	21-09-18
15-272-C2014	Siteworks and Stormwater Drainage Plan Sheet 5 of 15	A3	21-09-18

15-272-C2015	Siteworks and Stormwater Drainage Plan Sheet 6 of 15	A3	21-09-18
15-272-C2016	Siteworks and Stormwater Drainage Plan Sheet 7 of 15	A3	21-09-18
15-272-C2017	Siteworks and Stormwater Drainage Plan Sheet 8 of 15	A3	21-09-18
15-272-C2018	Siteworks and Stormwater Drainage Plan Sheet 9 of 15	A3	21-09-18
15-272-C2019	Siteworks and Stormwater Drainage Plan Sheet 10 of 15	A3	21-09-18
15-272-C2020	Siteworks and Stormwater Drainage Plan Sheet 11 of 15	A3	21-09-18
15-272-C2021	Siteworks and Stormwater Drainage Plan Sheet 12 of 15	A3	21-09-18
15-272-C2022	Siteworks and Stormwater Drainage Plan Sheet 13 of 15	A3	21-09-18
15-272-C2023	Siteworks and Stormwater Drainage Plan Sheet 14 of 15	A3	21-09-18
15-272-C2024	Siteworks and Stormwater Drainage Plan Sheet 15 of 15	A3	21-09-18
15-272-C2030	Pavement Plan	A3	21-09-18
15-272-C3003	General Arrangement Plan	A3	21-09-18
15-272-C3010	Typical Road Sections	A3	21-09-18
15-272-C3020	Roadworks Plan and Longitudinal Section Sheet 1 of 5	A3	21-09-18
15-272-C3021	Roadworks Plan and Longitudinal Section Sheet 2 of 5	A3	21-09-18
15-272-C3022	Roadworks Plan and Longitudinal Section Sheet 3 of 5	A3	21-09-18
15-272-C3023	Roadworks Plan and Longitudinal Section Sheet 4 of 5	A3	21-09-18
15-272-C3024	Roadworks Plan and Longitudinal Section Sheet 5 of 5	A3	21-09-18
15-272-C3030	Road Longitudinal Sections	A3	21-09-18
15-272-C3040	Bridge Elevation and Typical Section	A4	04-10-18
15-272-C3050	Stormwater Drainage Plan Sheet 1 of 5	A3	21-09-18
15-272-C3051	Stormwater Drainage Plan Sheet 2 of 5	A3	21-09-18
15-272-C3052	Stormwater Drainage Plan Sheet 3 of 5	A3	21-09-18
15-272-C3053	Stormwater Drainage Plan Sheet 4 of 5	A3	21-09-18
15-272-C3054	Stormwater Drainage Plan Sheet 5 of 5	A3	21-09-18
15-272-C3058	Stormwater Drainage Catchment Plan (Post-Developed)	A2	21-09-18
15-272-C3060	Bio-Retention Basin NO. 1 Detail Plan	A3	21-09-18
15-272-C3070	Pavement Plan Sheet 1 of 5	A3	21-09-18
15-272-C3071	Pavement Plan Sheet 2 of 5	A3	21-09-18
15-272-C3072	Pavement Plan Sheet 3 of 5	A3	21-09-18
15-272-C3073	Pavement Plan Sheet 4 of 5	A3	21-09-18
15-272-C3074	Pavement Plan Sheet 5 of 5	A2	21-09-18
15-272-C3080	Retaining Wall Plan and Elevation	A1	21-09-18
15-272-C3081	Retaining Wall Sections Sheet 1 of 4	A1	21-09-18
15-272-C3082	Retaining Wall Sections Sheet 2 of 4	A1	21-09-18
15-272-C3083	Retaining Wall Sections Sheet 3 of 4	A1	21-09-18
15-272-C3084	Retaining Wall Sections Sheet 4 of 4	A1	21-09-18

Civil Plans prepared by AT&L			
Drawing	Title	Issue	Date
15-272-C5006	Typical Road Sections Sheet 1	3	31-01-20
15-272-C5018	Bulk Earthworks Cut/Fill Plan Sheet 1	2	31-01-20
15-272-C5021	Roadworks Plan Sheet 1	4	06-02-20
15-272-C5022	Roadworks Plan Sheet 2	4	31-01-20
15-272-C5033	Carpark Adjustment Siteworks Plans	4	31-01-20
15-272-C5057	Stormwater Drainage Plan Sheet 1	2	31-01-20
15-272-C5063	Subsurface Drainage Plan Sheet 1	2	31-01-20
15-272-C5101	Pavement Plan Sheet 1	3	31-01-20
15-272-C5121	Services and Utilities Coordination Plan Sheet 1	3	06-02-20
15-272-C5122	Services and Utilities Coordination Plan Sheet 2	4	06-02-20
15-272-C5131	Road Furniture Plan Sheet 1	3	31-01-20

Landscape Plans prepared by Scape Design Landscape Architecture			
Drawing	Title	Issue	Date
L.CD.101	Western North South Link Road Landscape Plan Sheet 1	S	14/2/20

L.CD.301	Western North South Link Road Planting & Revegetation Schedule	Q	31/1/20
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Table 8A: Schedule of Approved Plans – Stage 1 Development

Architectural Plans prepared by SBA Architects			
Drawing	Title	Issue	Date
OAK-1A-DA-10	Proposed Industrial Facility – Building 1A Site Plan	E	29 July 2020
OAK-1A-DA-11	Proposed Industrial Facility – Building 1A Roof Plan	A	13 July 2020
OAK-1A-DA-18	Proposed Industrial Facility – Building 1A Warehouse Plan	B	28 July 2020
OAK-1A-DA-18A	Proposed Industrial Facility – Building 1A Mezzanine Plan – 1	B	28 July 2020
OAK-1A-DA-18B	Proposed Industrial Facility – Building 1A Mezzanine Plan – 2	B	28 July 2020
OAK-1A-DA-18C	Proposed Industrial Facility – Building 1A Mezzanine Plan – 3	B	28 July 2020
OAK-1A-DA-18D	Proposed Industrial Facility – Building 1A Mezzanine Plan – 4	B	28 July 2020
OAK-1A-DA-18E	Proposed Industrial Facility – Building 1A Mezzanine Plan – 5	B	28 July 2020
OAK-1A-DA-18F	Proposed Industrial Facility – Building 1A Mezzanine Plan – 6	B	28 July 2020
OAK-1A-DA-25	Proposed Industrial Facility – Building 1A Energy Complex – 1	A	13 July 2020
OAK-1A-DA-28	Proposed Industrial Facility – Building 1A Stage 2 – Site Plan	E	29 July 2020
OAK-DA-DA00 B	Proposed Industrial Facility - Building 1B/1C - Cover page	B	4 November 2020
OAK-DA-DA01 B	Proposed Industrial Facility - Building 1B/1C – Perspectives – 1B1/1B2	B	4 November 2020
OAK-DA-DA02 B	Proposed Industrial Facility - Building 1B/1C – Perspectives – Office 1C	B	4 November 2020
OAK-DA-DA30 E	Proposed Industrial Facility - Building 1B/1C – Site Plan	E	29 January 2021
OAK-DA-DA31 E	Proposed Industrial Facility - Building 1B/1C – Roof Plan	E	5 November 2021
OAK-DA-DA32 D	Proposed Industrial Facility - Building 1B/1C – Office Plans 1B1	D	4 November 2020
OAK-DA-DA33 E	Proposed Industrial Facility - Building 1B/1C – Office Plans 1B2	E	29 January 2021
OAK-DA-DA33A E	Proposed Industrial Facility - Building 1B/1C – Office Plans 1C	E	5 November 2020
OAK-DA-DA34 D	Proposed Industrial Facility - Building 1B/1C – Elevations – Office 1B	D	4 November 2020
OAK-DA-D34A D	Proposed Industrial Facility - Building 1B/1C – Elevations – Office 1C	D	4 November 2020
OAK-DA-DA35 D	Proposed Industrial Facility - Building 1B/1C – Elevations – Warehouse 1B	D	4 November 2020
OAK-DA-DA36 D	Proposed Industrial Facility - Building 1B/1C – Elevations – Warehouse 1C	D	4 November 2020
OAK-DA-DA37 D	Proposed Industrial Facility - Building 1B/1C – Sections - Warehouse	D	4 November 2020
OAK 1B1C DA 40	Proposed Industrial Facility – Proposed 1B & 1C – Signage Plan	A	9 November 2020

Landscape Plans prepared by Scape Design Landscape Architecture			
Drawing	Title	Revision	Date
L.SK.00	Cover Sheet	S	17/7/20
L.SK.01	Landscape Master Plan	P	17/7/20
L.SK.02	Planting Plan	M	17/7/20
L.SK.03	Planting Schedule	M	8/7/20
L.SK.04	Character & Materials	N	8/7/20
L.SK.100	Landscape – Plan – Sheet 1	N	17/7/20
L.SK.101	Landscape – Plan – Sheet 2	N	17/7/20
L.SK.102	Landscape – Plan – Sheet 3	O	17/7/20
L.SK.103	Landscape – Plan – Sheet 4	O	17/7/20
L.SK.104	Landscape – Plan – Sheet 5	O	17/7/20
L.SK.105	Landscape – Detailed Plan – Sheet 1	M	17/7/20
L.SK.106	Landscape – Detailed Plan – Sheet 2	M	17/7/20
L.SK.200	Landscape – Sections – Sheet 1	K	8/7/20
L.SK.201	Landscape – Sections – Sheet 2	K	8/7/20
L.SK.202	Landscape – Sections – Sheet 3	K	17/7/20
L.SK.203	Landscape – Sections – Sheet 4	L	17/7/20
L.SK.204	Carpark Details	H	17/7/20

Civil Plans prepared by AT&L			
Drawing	Title	Revision	Date
15-272-C1000	Cover Sheet	A10	20-10-20
15-272-C1001	Drawing List	A10	20-10-20
15-272-C1002	General Notes	A10	20-10-20
15-272-C1003	Precinct General Arrangement Plan	A16	20-10-20
15-272-C1004	Typical Site Sections Sheet 1 of 6	A12	20-10-20
15-272-C1005	Typical Site Sections Sheet 2 of 6	A11	20-10-20
15-272-C1006	Typical Site Sections Sheet 3 of 6	A11	20-10-20
15-272-C1007	Typical Site Sections Sheet 4 of 6	A9	20-10-20
15-272-C1008	Typical Site Sections Sheet 5 of 6	A9	20-10-20
15-272-C1009	Typical Site Sections Sheet 6 of 6	A11	20-10-20
15-272-C1010	Typical Road Sections	A9	20-10-20
15-272-C1011	Contour Plan	A12	20-10-20
15-272-C1014	Bulk Earthworks Cut/Fill Plan	A13	20-10-20
15-272-C1015	Earthworks and Stormwater Drainage Plan Sheet 1 of 20	A10	20-10-20
15-272-C1016	Earthworks and Stormwater Drainage Plan Sheet 2 of 20	A10	20-10-20
15-272-C1017	Earthworks and Stormwater Drainage Plan Sheet 3 of 20	A10	20-10-20
15-272-C1018	Earthworks and Stormwater Drainage Plan Sheet 4 of 20	A10	20-10-20
15-272-C1019	Earthworks and Stormwater Drainage Plan Sheet 5 of 20	A10	20-10-20
15-272-C1020	Earthworks and Stormwater Drainage Plan Sheet 6 of 20	A10	20-10-20
15-272-C1021	Earthworks and Stormwater Drainage Plan Sheet 7 of 20	A10	20-10-20
15-272-C1022	Earthworks and Stormwater Drainage Plan Sheet 8 of 20	A10	20-10-20
15-272-C1023	Earthworks and Stormwater Drainage Plan Sheet 9 of 20	A12	20-10-20
15-272-C1024	Earthworks and Stormwater Drainage Plan Sheet 10 of 20	A12	20-10-20
15-272-C1025	Earthworks and Stormwater Drainage Plan Sheet 11 of 20	A10	20-10-20
15-272-C1026	Earthworks and Stormwater Drainage Plan Sheet 12 of 20	A10	20-10-20
15-272-C1027	Earthworks and Stormwater Drainage Plan Sheet 13 of 20	A10	20-10-20
15-272-C1028	Earthworks and Stormwater Drainage Plan Sheet 14 of 20	A10	20-10-20
15-272-C1029	Earthworks and Stormwater Drainage Plan Sheet 15 of 20	A12	20-10-20
15-272-C1030	Earthworks and Stormwater Drainage Plan Sheet 16 of 20	A12	20-10-20
15-272-C1031	Earthworks and Stormwater Drainage Plan Sheet 17 of 20	A10	20-10-20
15-272-C1032	Earthworks and Stormwater Drainage Plan Sheet 18 of 20	A10	20-10-20
15-272-C1033	Earthworks and Stormwater Drainage Plan Sheet 19 of 20	A10	20-10-20

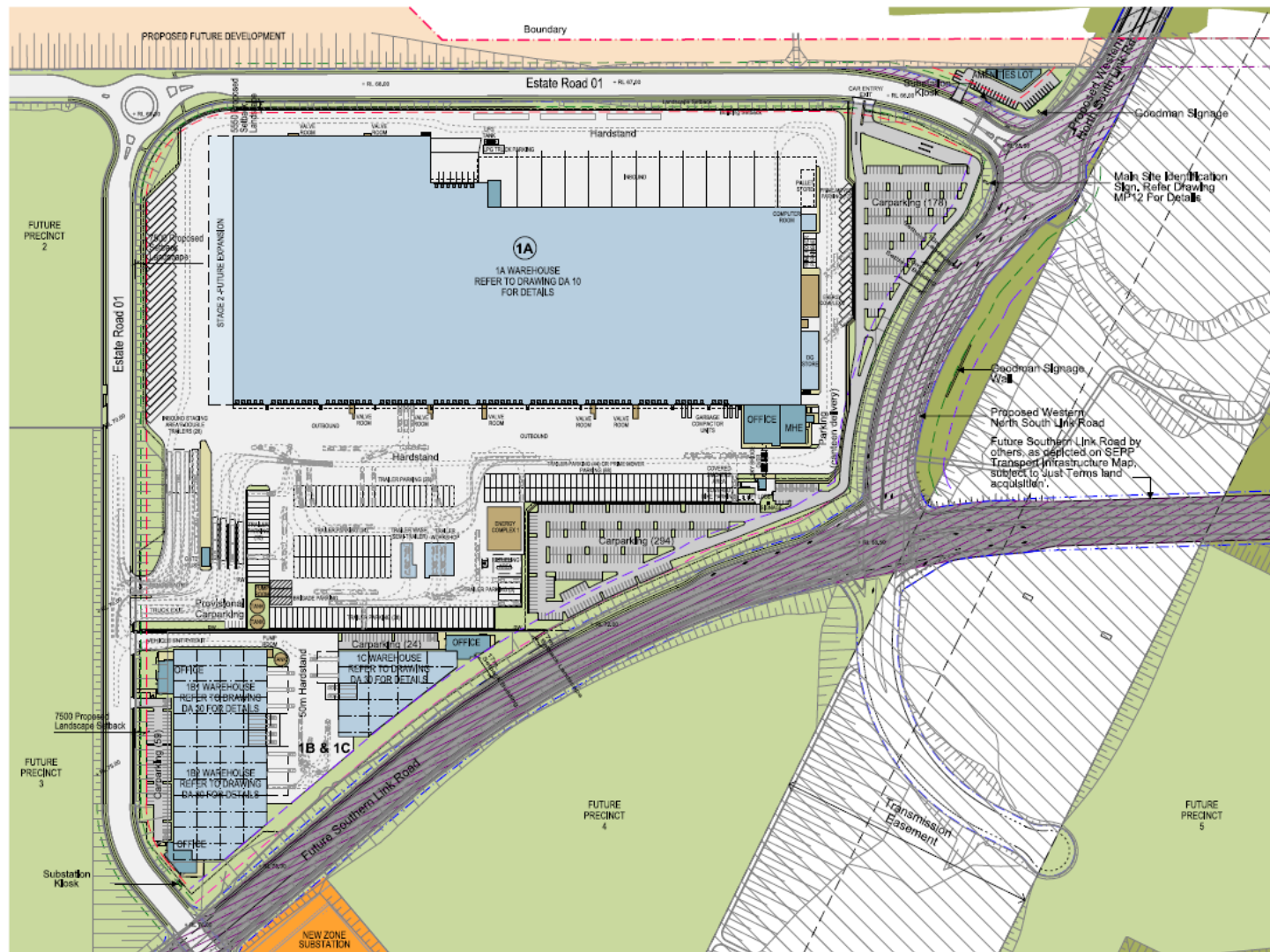
15-272-C1034	Earthworks and Stormwater Drainage Plan Sheet 20 of 20	A10	20-10-20
15-272-C1040	Roadworks and Stormwater Drainage Plan Sheet 1 of 18	A11	20-10-20
15-272-C1041	Roadworks and Stormwater Drainage Plan Sheet 2 of 18	A12	20-10-20
15-272-C1042	Roadworks and Stormwater Drainage Plan Sheet 3 of 18	A11	20-10-20
15-272-C1043	Roadworks and Stormwater Drainage Plan Sheet 4 of 18	A10	20-10-20
15-272-C1044	Roadworks and Stormwater Drainage Plan Sheet 5 of 18	A10	20-10-20
15-272-C1045	Roadworks and Stormwater Drainage Plan Sheet 6 of 18	A10	20-10-20
15-272-C1046	Roadworks and Stormwater Drainage Plan Sheet 7 of 18	A10	20-10-20
15-272-C1047	Roadworks and Stormwater Drainage Plan Sheet 8 of 18	A10	20-10-20
15-272-C1048	Roadworks and Stormwater Drainage Plan Sheet 9 of 18	A9	20-10-20
15-272-C1049	Roadworks and Stormwater Drainage Plan Sheet 10 of 18	A4	20-10-20
15-272-C1050	Roadworks and Stormwater Drainage Plan Sheet 11 of 18	A4	20-10-20
15-272-C1051	Roadworks and Stormwater Drainage Plan Sheet 12 of 18	A4	20-10-20
15-272-C1052	Roadworks and Stormwater Drainage Plan Sheet 13 of 18	A4	20-10-20
15-272-C1053	Roadworks and Stormwater Drainage Plan Sheet 14 of 18	A4	20-10-20
15-272-C1054	Roadworks and Stormwater Drainage Plan Sheet 15 of 18	A4	20-10-20
15-272-C1055	Roadworks and Stormwater Drainage Plan Sheet 16 of 18	A4	20-10-20
15-272-C1056	Roadworks and Stormwater Drainage Plan Sheet 17 of 18	A1	20-10-20
15-272-C1057	Roadworks and Stormwater Drainage Plan Sheet 18 of 18	A1	20-10-20
15-272-C1060	Road Longitudinal Sections Sheet 1 of 7	A10	20-10-20
15-272-C1061	Road Longitudinal Sections Sheet 2 of 7	A10	20-10-20
15-272-C1062	Road Longitudinal Sections Sheet 3 of 7	A10	20-10-20
15-272-C1063	Road Longitudinal Sections Sheet 4 of 7	A10	20-10-20
15-272-C1064	Road Longitudinal Sections Sheet 5 of 7	A10	20-10-20
15-272-C1065	Road Longitudinal Sections Sheet 6 of 7	A4	20-10-20
15-272-C1066	Road Longitudinal Sections Sheet 7 of 7	A1	20-10-20
15-272-C1070	Western Boundary Layout and Sections	A11	20-10-20
15-272-C1071	Southern Boundary Layout and Sections	A9	20-10-20
15-272-C1080	Bio-Retention Basin 2 and 3 Detail Plan Sheet 1 of 2	A10	20-10-20
15-272-C1081	Bio-Retention Basin 2 and 3 Detail Plan Sheet 2 of 2	A9	20-10-20
15-272-C1082	Bio-Retention Basin 4 Detail Plan Sheet 1 of 2	A8	20-10-20
15-272-C1083	Bio-Retention Basin 4 Detail Plan Sheet 2 of 2	A10	20-10-20
15-272-C1084	Bio-Retention Basin 5 Detail Plan	A10	20-10-20
15-272-C1086	Stormwater Drainage Catchment Plan (Pre-developed)	A9	20-10-20
15-272-C1087	Stormwater Drainage Catchment Plan (Post-developed)	A9	20-10-20
15-272-C1090	Retaining Wall General Arrangement Plan	A13	20-10-20
15-272-C1091	Retaining Wall Profiles Sheet 1 of 9	A11	20-10-20
15-272-C1092	Retaining Wall Profiles Sheet 2 of 9	A10	20-10-20
15-272-C1093	Retaining Wall Profiles Sheet 3 of 9	A10	20-10-20
15-272-C1094	Retaining Wall Profiles Sheet 4 of 9	A10	20-10-20
15-272-C1095	Retaining Wall Profiles Sheet 5 of 9	A12	20-10-20
15-272-C1096	Retaining Wall Profiles Sheet 6 of 9	A11	20-10-20
15-272-C1097	Retaining Wall Profiles Sheet 7 of 9	A9	20-10-20
15-272-C1098	Retaining Wall Profiles Sheet 8 of 9	A9	20-10-20
15-272-C1099	Retaining Wall Profiles Sheet 9 of 9	A1	20-10-20
15-272-C1110	Stage 1 Services and Utilities Coordination Plan Sheet 1 of 6	A9	20-10-20
15-272-C1111	Stage 1 Services and Utilities Coordination Plan Sheet 2 of 6	A10	20-10-20
15-272-C1112	Stage 1 Services and Utilities Coordination Plan Sheet 3 of 6	A10	20-10-20
15-272-C1113	Stage 1 Services and Utilities Coordination Plan Sheet 4 of 6	A12	20-10-20
15-272-C1114	Stage 1 Services and Utilities Coordination Plan Sheet 5 of 6	A10	20-10-20
15-272-C1115	Stage 1 Services and Utilities Coordination Plan Sheet 6 of 6	A9	20-10-20
15-272-C1120	Existing Transgrid Overhead Electrical Cables Plan	A10	20-10-20

15-272-C1121	Existing Transgrid Overhead Electrical Cables and Longitudinal Sections	A9	20-10-20
15-272-C1122	Existing Transgrid Overhead Electrical Cables Typical Sections Sheet 1 of 2	A9	20-10-20
15-272-C1123	Existing Transgrid Overhead Electrical Cables Typical Sections Sheet 2 of 2	A9	20-10-20
15-272-C1130	Erosion and Sediment Control Plan Sheet 1 of 7	A10	20-10-20
15-272-C1131	Erosion and Sediment Control Plan Sheet 2 of 7	A10	20-10-20
15-272-C1132	Erosion and Sediment Control Plan Sheet 3 of 7	A10	20-10-20
15-272-C1133	Erosion and Sediment Control Plan Sheet 4 of 7	A11	20-10-20
15-272-C1134	Erosion and Sediment Control Plan Sheet 5 of 7	A10	20-10-20
15-272-C1135	Erosion and Sediment Control Plan Sheet 6 of 7	A9	20-10-20
15-272-C1136	Erosion and Sediment Control Plan Sheet 7 of 7	A9	20-10-20
15-272-C1137	Erosion and Sediment Control Details	A7	20-10-20
15-272-C2000	Cover Sheet	A9	20-07-20
15-272-C2001	Drawing List	A9	20-07-20
15-272-C2002	General Notes	A9	20-07-20
15-272-C2003	General Arrangement Plan	A14	05-01-21
15-272-C2010	Siteworks and Stormwater Drainage Plan Sheet 1 of 14	A10	20-07-20
15-272-C2011	Siteworks and Stormwater Drainage Plan Sheet 2 of 14	A10	20-07-20
15-272-C2012	Siteworks and Stormwater Drainage Plan Sheet 3 of 14	A11	20-07-20
15-272-C2013	Siteworks and Stormwater Drainage Plan Sheet 4 of 14	A11	20-07-20
15-272-C2014	Siteworks and Stormwater Drainage Plan Sheet 5 of 14	A10	20-07-20
15-272-C2015	Siteworks and Stormwater Drainage Plan Sheet 6 of 14	A10	20-07-20
15-272-C2016	Siteworks and Stormwater Drainage Plan Sheet 7 of 14	A11	20-07-20
15-272-C2017	Siteworks and Stormwater Drainage Plan Sheet 8 of 14	A11	20-07-20
15-272-C2018	Siteworks and Stormwater Drainage Plan Sheet 9 of 14	A11	20-07-20
15-272-C2019	Siteworks and Stormwater Drainage Plan Sheet 10 of 14	A11	20-07-20
15-272-C2020	Siteworks and Stormwater Drainage Plan Sheet 11 of 14	A12	20-07-20
15-272-C2021	Siteworks and Stormwater Drainage Plan Sheet 12 of 14	A13	05-01-21
15-272-C2022	Siteworks and Stormwater Drainage Plan Sheet 13 of 14	A13	05-01-21
15-272-C2023	Siteworks and Stormwater Drainage Plan Sheet 14 of 14	A12	04-11-20
15-272-C2030	Pavement Plan	A14	05-01-21



BRICKWORKS

Development Area Schedule	
Total Site Area	218,050 sqm
Total Warehouse	81,286 sqm
Total Office	4,151 sqm
Others (incl. car)	4,004 sqm
Mezzanines (incl. car)	36,331 sqm
Total GFA	125,772 sqm
(incl. car)	
Total GLA	89,440 sqm
(incl. car)	
Carparking (total)	555
Lot 1A	
Site Area	187,010 sqm
Warehouse	68,160 sqm
(incl. car)	
Office (3 level)	2,646 sqm
Others	4,004 sqm
(incl. car)	
Mezzanines	36,331 sqm
(incl. car)	
Total GFA	111,141 sqm
(incl. car)	
Total GLA	74,810 sqm
(incl. car)	
Averaging	8,820 sqm
Site Cover (exc. paving)	59 %
Floor Space Ratio	0.59 :1
Handstand Area	84,500 sqm
Light Duty Area	16,425 sqm
Prime Mover Parking	111
Trailer Parking	121
Carparking	472
Carparking (motorcycles)	8
Lot 1B & 1C	
Site Area	31,038 sqm
Warehouse 1B1	3,854 sqm
Warehouse 1B2	5,686 sqm
Warehouse 1C	3,686 sqm
Office 1B1 (2 level)	500 sqm
Office 1B2 (2 level)	500 sqm
Office 1C (1 level)	436 sqm
Total GFA	14,631 sqm
Averaging	1,400 sqm
Site Cover (exc. paving)	47 %
Floor Space Ratio	0.47 :1
Handstand Area	6,445 sqm
Light Duty Area	2,365 sqm
Carparking	83



Oakdale West Estate MOD 5

Horsley Park

Precinct 1 Plan

1:1250 @ A1
1:2500 @ A3

30 July 2020

OAK MP 05 (F)
Job No 20172

Figure 3: Stage 1 DA Layout



APPENDIX 3 WNSLR PLANS

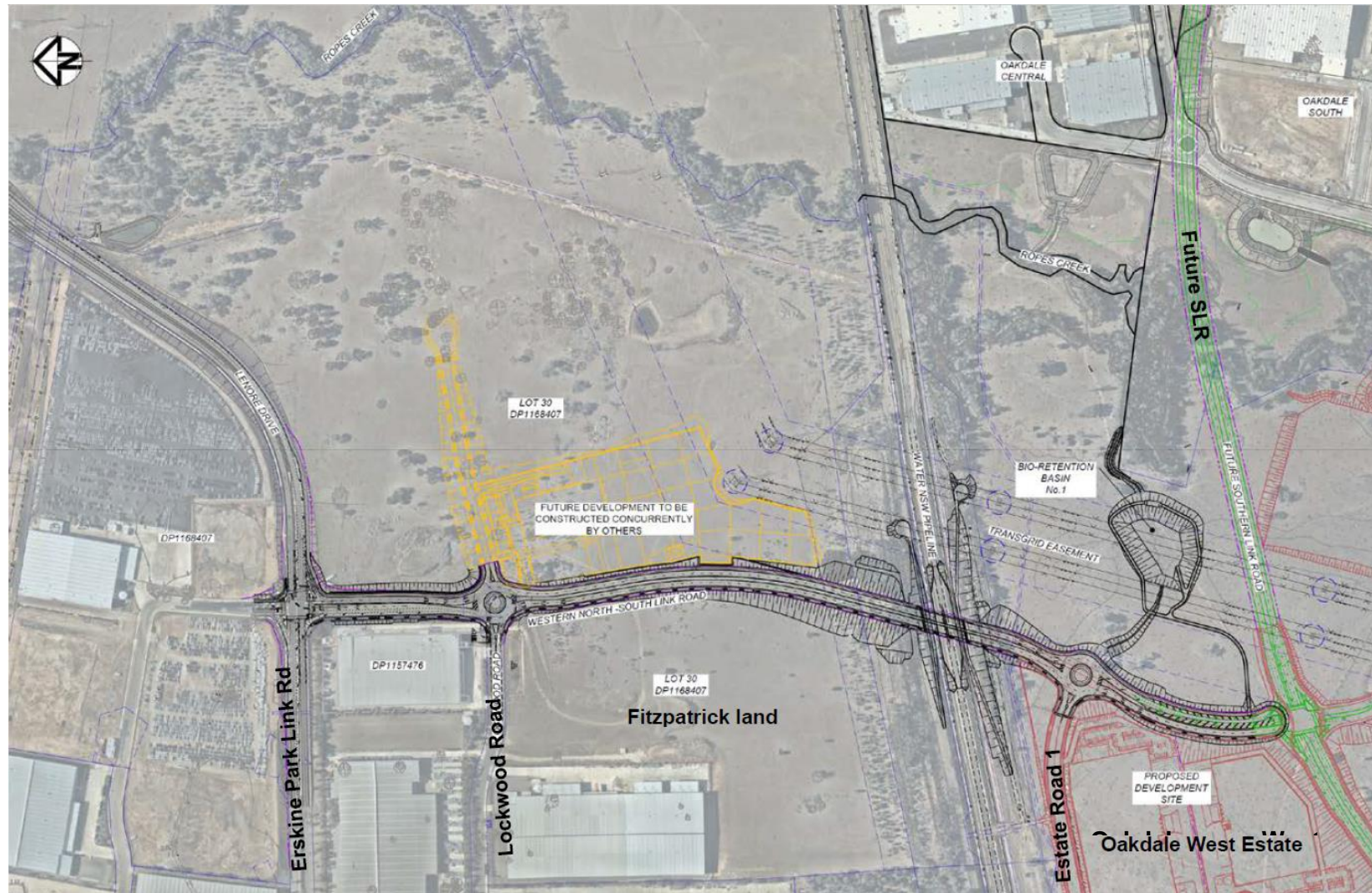


Figure 5: WNSLR

APPENDIX 4 PLANNING AGREEMENT

APPENDIX 5 NOISE RECEIVER LOCATIONS

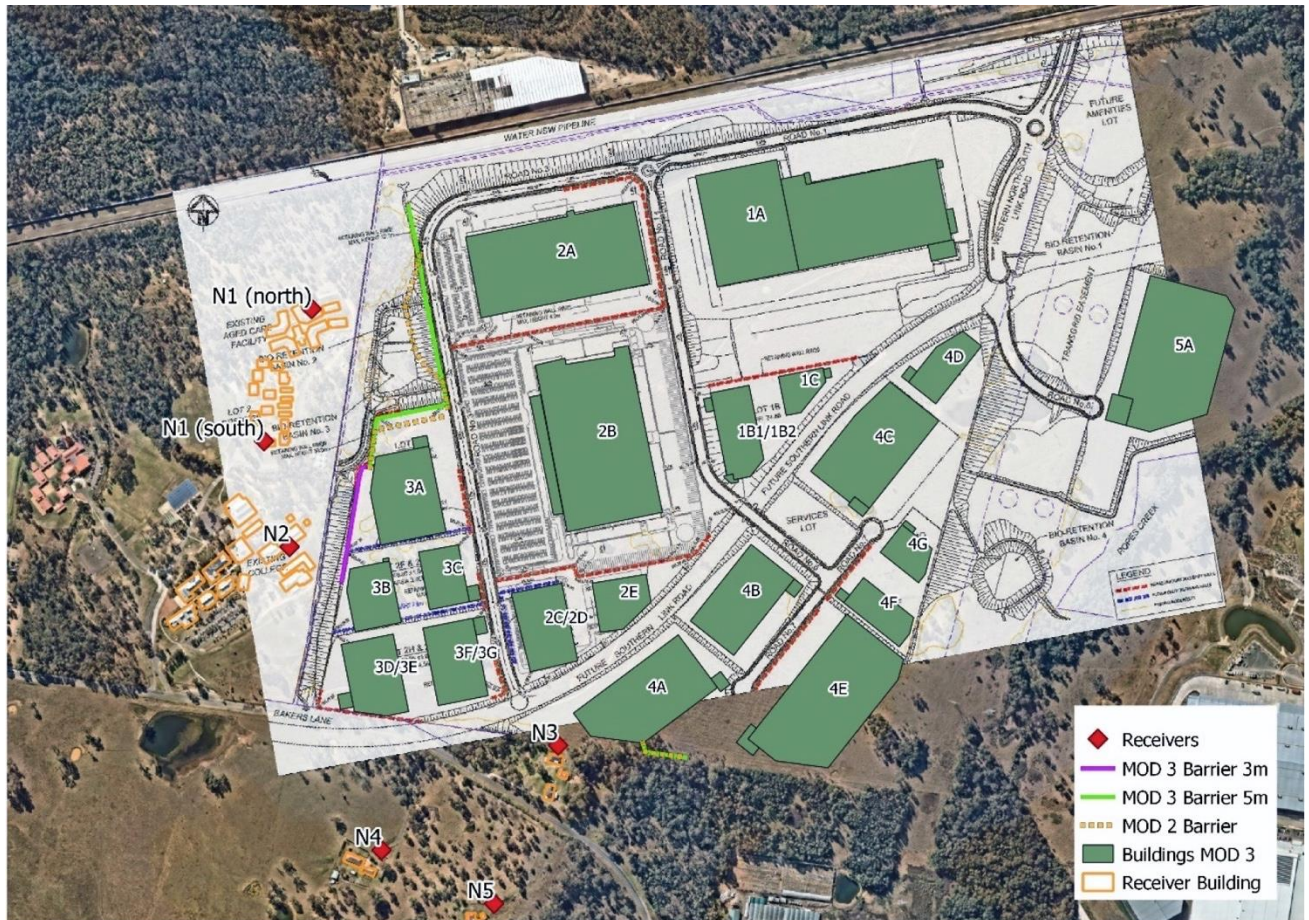


Figure 6: Sensitive Noise Receivers and Noise Wall Locations

APPENDIX 6 BIODIVERSITY

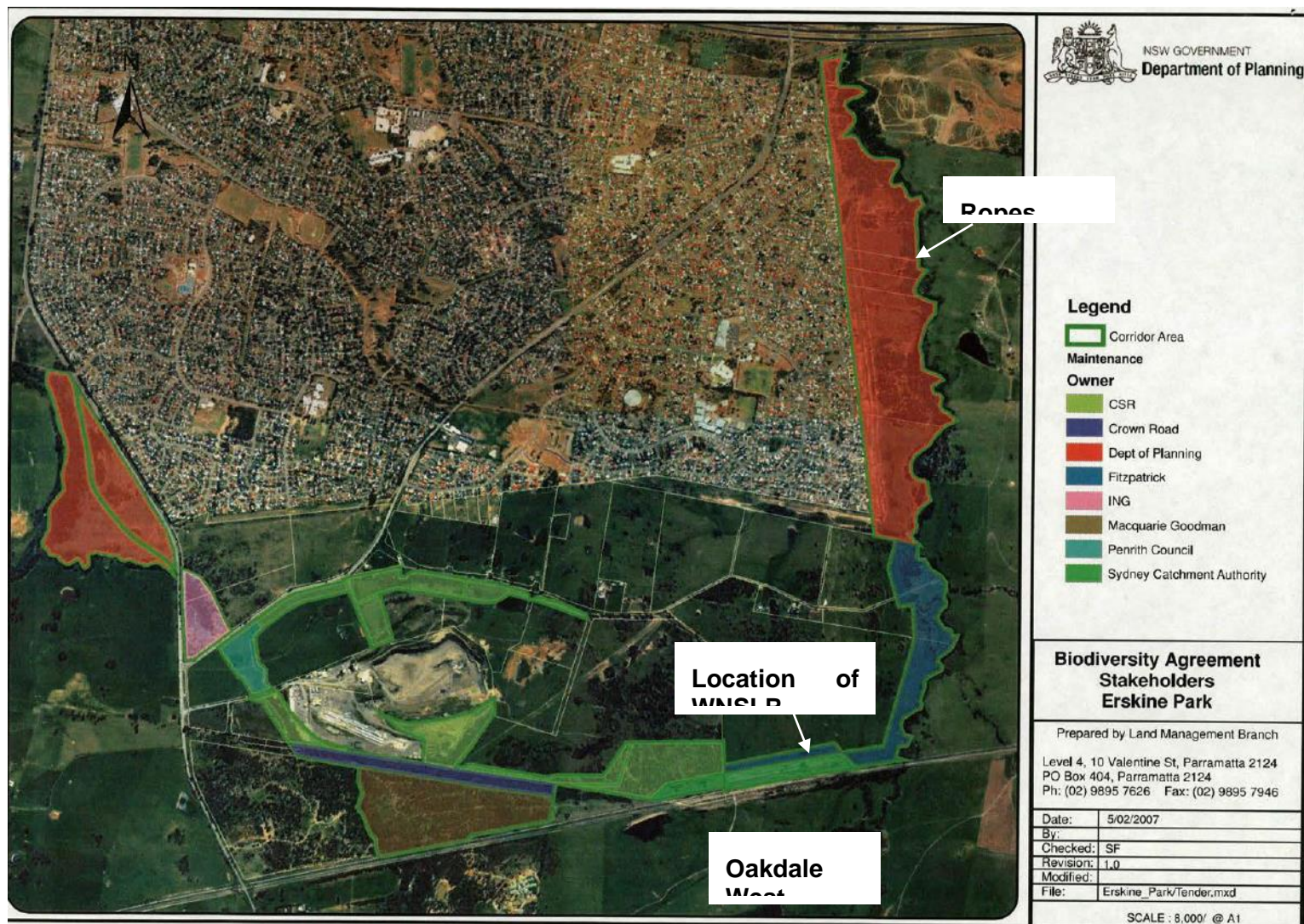


Figure 7: Erskine Park Biodiversity Corridor Land

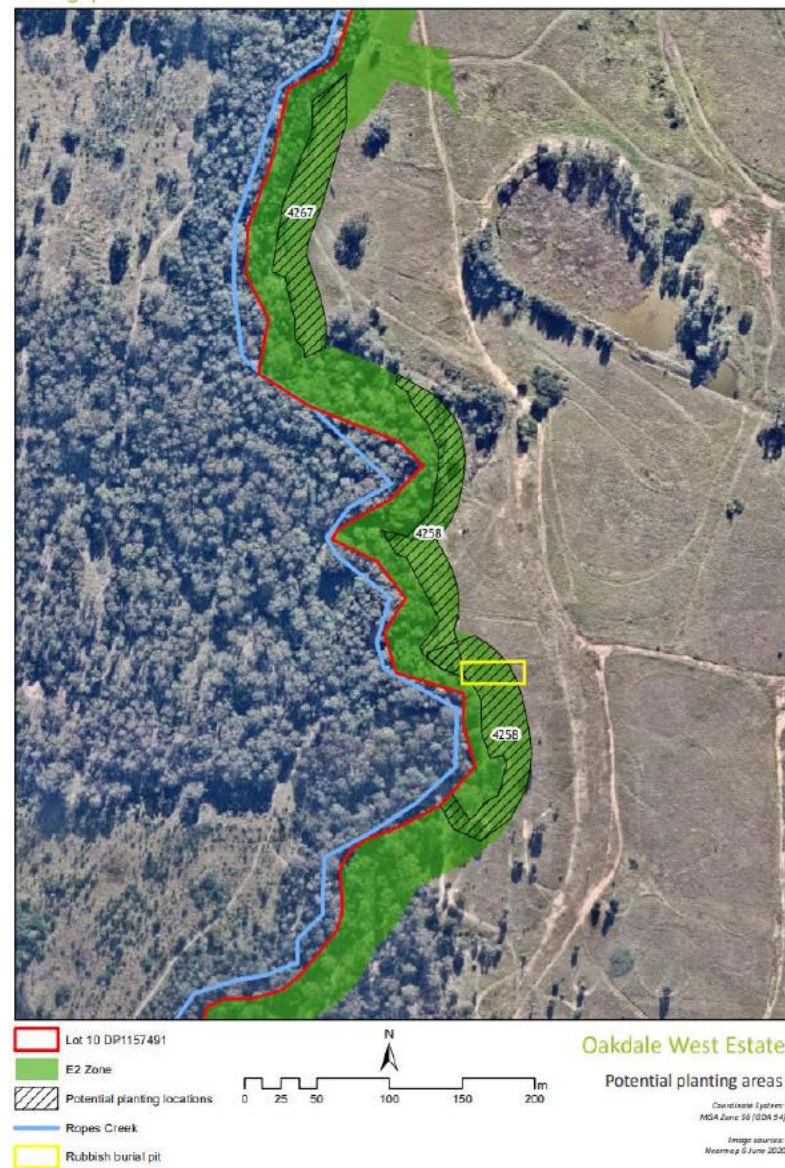


Figure 8: Offsets for WNSLR – Planting Area



Figure 50: Offsets for Stage 1 - Biodiversity Offset Area (MOD 6)

SUMMARY OF MITIGATION MEASURES

The collective measures required to mitigate the impacts associated with the proposed works are detailed in the table below.

Table 6: Applicant's Mitigation Measures

Issue	SSDA Component	Mitigation and Management
Construction Management		
General Construction Management	Stage 1 Development	<ul style="list-style-type: none"> A CEMP to be prepared for the OWE Stage 1 Development capturing standard and specific management and mitigation measures as described in the SSDA, EIS and supporting technical documents.
Operational Management		
General Operational Management	Concept Proposal Stage 1 Precinct Development	<ul style="list-style-type: none"> An OEMP to be prepared for the OWE capturing standard and specific operational management and mitigation measures as described in the SSDA, EIS and supporting technical documents.
Transport		
Construction Traffic	Stage 1 Development	<ul style="list-style-type: none"> Preparation of a CTMP to form part of the CEMP addressing issues such as: <ul style="list-style-type: none"> Truck haul routes, delivery schedules and curfews; Protocols for the management of construction traffic moving onto and off the site.
Urban Design and Visual		
Site Layout and Design	Concept Proposal	<ul style="list-style-type: none"> Future development of the OWE to proceed in accordance with the approved Development Concept Proposal and DCP.
Development Controls	Concept Proposal	<ul style="list-style-type: none"> Design and development controls to be established for the OWE in the form of a DCP to guide future development on the site.
Visual Impact	Concept Proposal/Stage 1 Development	<ul style="list-style-type: none"> Design and development controls to be established for the OWE in the form of a DCP to guide future development on the site. Landscaping of key interfaces including the western boundary to minimise visual impact.
Soils and Water		
Water Usage	Stage 1 Development	<ul style="list-style-type: none"> Rainwater tanks to be provided for each development site with size determined in accordance with Penrith Council DCP requirements. Irrigation and toilet flushing for development to be plumbed to rainwater tanks. Consideration to be given to other possible rainwater reuse opportunities such as for truck washing. Measures and considerations for the minimisation of water use during construction and operation to

Issue	SSDA Component	Mitigation and Management
		be incorporated into CEMP and OEMP as relevant.
Soils	Stage 1 Development	<ul style="list-style-type: none"> • Mitigation measures inherent to the civil design of the proposal. • Sedimentation and erosion control measures are proposed as detailed in the Civil Design and Infrastructure Package and Traffic and Transport Impact Assessment.
Salinity	Stage 1 Development	<ul style="list-style-type: none"> • A Salinity Management Plan has been prepared for the proposed development. • Management measures described in the Salinity Management Plan to be adopted in the CEMP and OEMP as relevant.
Contamination	Stage 1 Development	<ul style="list-style-type: none"> • Identified areas of potential contamination to be subject to further investigation prior to the development of affected land.
Earthworks	Stage 1 Development	<ul style="list-style-type: none"> • Civil design achieves appropriate site levels with minimal impact upon hydrology. • Import of fill to be managed in accordance with CEMP. • Erosion and sediment controls included in the SSDA package.
Mineral Resources	Concept Proposal	<ul style="list-style-type: none"> • No mitigation required provided that mining activities under the existing mining lease applying to land to the east of the site (ref. ML1636) would not be constrained by the OWE development.
Surface Water	Stage 1 Development	<ul style="list-style-type: none"> • Stormwater issues addressed through design measures incorporated into proposed development. • Stormwater management system designed to meet the requirements of Penrith Council's Engineering Works and WSUD guidelines and relevant NOW guidelines. • Detailed on-lot stormwater for future stages of the OWE to be designed and assessed under future applications.
Groundwater	Stage 1 Development	<ul style="list-style-type: none"> • Methods and management of any required dewatering required during construction works to be detailed in the CEMP.
Flooding	Stage 1 Development	<ul style="list-style-type: none"> • OSD designed to ensure that development does not increase stormwater peak flows in downstream areas for events up to and including 1:100-year ARI. • OSD designed to mitigate post-development flows to pre-development flows for peak ARI events. • Finished floor levels to have minimum 500mm freeboard to 100-year overland flows. • Flood impacts on TransGrid easement would be mitigated through minor compensatory earthworks on the floodplain to convey locally diverted flows. These works are detailed in the civil drawings included in the SSDA package.
Water Quality	Stage 1 Development	<ul style="list-style-type: none"> • Erosion and sediment controls as detailed in SSDA

Issue	SSDA Component	Mitigation and Management
		<p>package to be implemented through CEMP.</p> <ul style="list-style-type: none"> • Stormwater to be treated to compliant levels prior to discharge. • Gross Pollutant Trap (GPT) to be installed within each development site on the final downstream stormwater pit prior to discharge. • WSUD measures adopted to achieve target reductions for the OWE: <ul style="list-style-type: none"> <input type="checkbox"/> 85% Total Suspended Solids <input type="checkbox"/> 60% Total Phosphorus <input type="checkbox"/> 45% Total Nitrogen <input type="checkbox"/> 90% Gross Pollutants
Infrastructure		
Capacity and Upgrades	Concept Proposal	<ul style="list-style-type: none"> • Management of issues in respect of infrastructure capacity and upgrades is in the form of design responses described in Section 4.0 of the EIS.
Delivery and Staging	Concept Proposal/Stage 1 Development	<ul style="list-style-type: none"> • Management of issues in respect of infrastructure capacity and upgrades is in the form of design responses described in Section 4.0 of the EIS. • Staging of development of the OWE would be aligned with infrastructure and services delivery.
TransGrid Easement	Concept Proposal/Stage 1 Development	<ul style="list-style-type: none"> • Further consultation would be undertaken with TransGrid in relation to potential impacts and required mitigation.
Other Environmental Issues		
Flora and Fauna	Concept Proposal Stage 1 Development	<ul style="list-style-type: none"> • Preparation of a Flora and Fauna Management Plan for the site to inform the CEMP and OEMP as relevant to manage potential impacts to biodiversity during construction and operation. • Retained areas of native vegetation, including the Ropes Creek riparian corridor, will be rehabilitated and/or restored in accordance with the Vegetation Management Plan. • Other areas of the site including road batters, embankments and bio-retention basins will be planted with native plant species and turf species as specified in the Landscape Planting Schedule. • Ongoing maintenance and management of these areas in accordance with the provisions of both the Vegetation Management Plan and Landscape Management Plan.
Waterways and Riparian Lands		<ul style="list-style-type: none"> • Restoration and ongoing management of Ropes riparian corridor to be in accordance with the Vegetation Biodiversity Management Action Plan

APPENDIX 8 INCIDENT NOTIFICATION AND REPORTING REQUIREMENTS

WRITTEN INCIDENT NOTIFICATION REQUIREMENTS

1. A written incident notification addressing the requirements set out below must be emailed to the Department at the following address: compliance@planning.nsw.gov.au within seven days after the Applicant becomes aware of an incident. Notification is required to be given under this condition even if the Applicant fails to give the notification required under Condition D135 or, having given such notification, subsequently forms the view that an incident has not occurred.
2. Written notification of an incident must:
 - a. identify the development and application number;
 - b. provide details of the incident (date, time, location, a brief description of what occurred and why it is classified as an incident);
 - c. identify how the incident was detected;
 - d. identify when the Applicant became aware of the incident;
 - e. identify any actual or potential non-compliance with conditions of consent;
 - f. describe what immediate steps were taken in relation to the incident;
 - g. identify further action(s) that will be taken in relation to the incident; and
 - h. identify a project contact for further communication regarding the incident.

INCIDENT REPORT REQUIREMENTS

3. Within 30 days of the date on which the incident occurred or as otherwise agreed to by the Planning Secretary, the Applicant must provide the Planning Secretary and any relevant public authorities (as determined by the Planning Secretary) with a detailed report on the incident addressing all requirements below, and such further reports as may be requested.
4. The Incident Report must include:
 - a. a summary of the incident;
 - b. outcomes of an incident investigation, including identification of the cause of the incident;
 - c. details of the corrective and preventative actions that have been, or will be, implemented to address the incident and prevent recurrence; and
 - d. details of any communication with other stakeholders regarding the incident.

APPENDIX B

Development Approval DA21/0440

APPENDIX C

Consultation

APPENDIX D

Construction Noise and Vibration Management Plan

DRAFT

OAKDALE WEST INDUSTRIAL ESTATE - LOT 3B

Construction Noise and Vibration Management Plan

Prepared for:

Goodman Property Services (Aust) Pty Ltd
The Hayesbery
1-11 Hayes Road
Rosebery NSW 2018

SLR Ref: 630.30081-R02
Version No: -v1.0
October 2021



PREPARED BY

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goodman Property Services (Aust) Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.30081-R02-v1.0	12 October 2021	Joshua Ridgway	Antony Williams	Antony Williams

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APPENDICES

Appendix A	Acoustic Terminology
Appendix B	Author CV

1 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Goodman Property Services (Aust) Pty Limited (Goodman) to prepare a Construction Noise and Vibration Management Plan (CNVMP) for construction works associated with the development of Lot 3B of the Oakdale West Industrial Estate (Oakdale West) in Kemps Creek.

The CNVMP addresses the potential noise and vibration impacts associated with the construction of the development and details the mitigation and management procedures for dealing with potential impacts. Construction noise and vibration impacts were previously assessed for Oakdale West Lot 3B as part of the *Oakdale West Estate (OWE) – Building 3B Noise and Vibration Assessment* (Report No 2102730D Version A) prepared by RWDI in June 2021 (the NVA).

1.1 Development Overview

Oakdale West is a regional warehouse and distribution hub located at Kemps Creek within the Penrith local government area (LGA) and forms part of the broader Oakdale Industrial Precinct located within the Western Sydney Employment Area (WSEA) (see **Figure 1**).

Goodman obtained Development Consent SSD 7348 for the staged development of Oakdale West Industrial Estate (Oakdale West) comprising a warehousing and a distribution hub at Kemps Creek in Western Sydney. SSD 7348 and all associated Modifications incorporates the approval of a 'Concept Proposal' to guide the future development of the estate and consent for the 'Stage 1 Development' and all subsequent stages. The Stage 1 Development includes construction of the proposed Western North South Link Road (WNSLR), site-wide bulk earthworks, estate wide basins, and lead-in services. It also includes infrastructure and associated services, landscaping, and construction and use approval for Precinct 1.

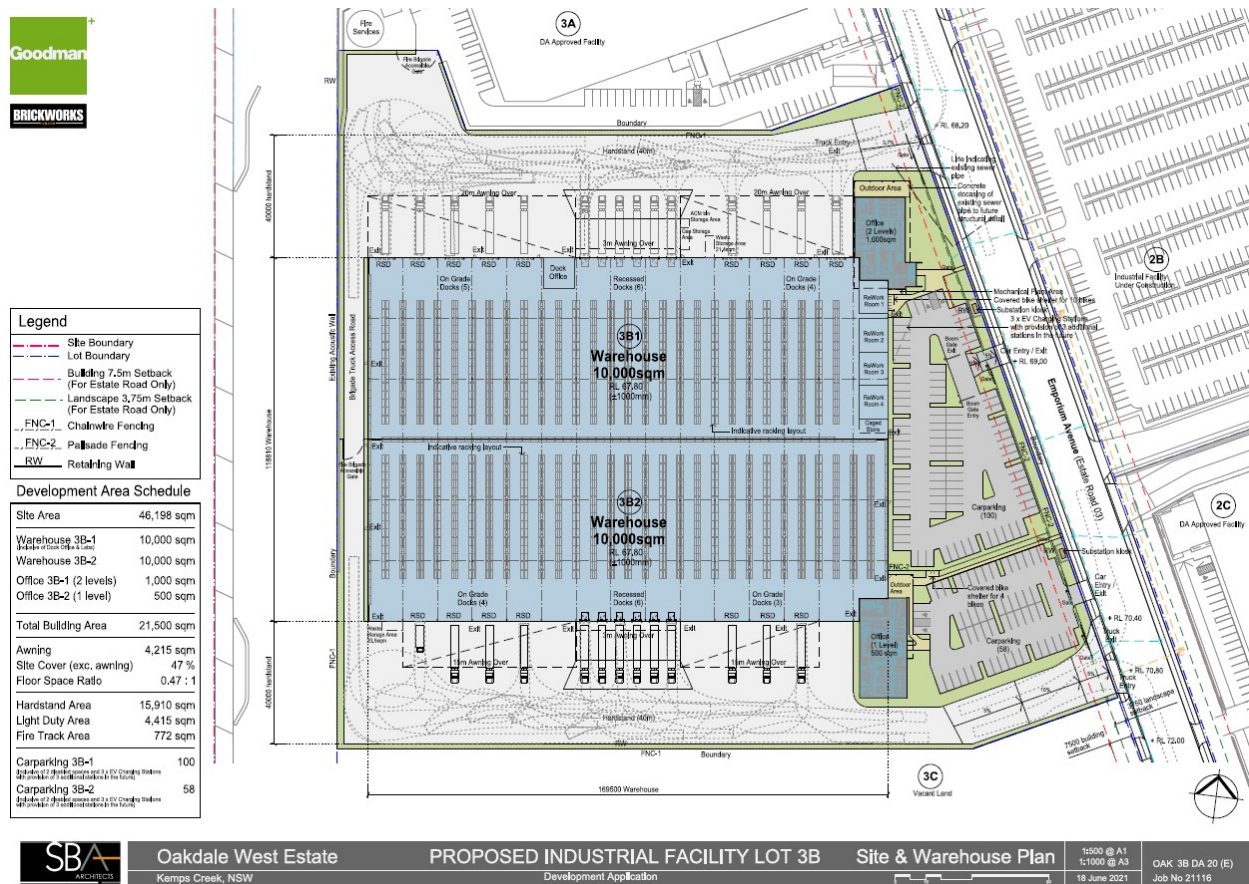
This CNVMP has been prepared to cover the construction at Lot 3B of Oakdale West (see **Figure 2**). Note: Where Goodman is nominated as having responsibility as the Applicant, this may be delegated to their specialist consultants.

The development of Lot 3B will proceed once approval is gained from the Department of Planning under SSD7348 MOD 7 and Penrith City Council under Development Application (DA) DA21/0440.

Figure 1 Oakdale West Masterplan



Figure 2 Lot 3B Plan



1.2 Objectives of the CNVMP

The objectives of this CNVMP are as follows:

- Document the statutory requirements applicable to construction noise and vibration emissions;
- Detail the mitigation and management measures required to achieve compliance with relevant noise and vibration criteria for surrounding sensitive receivers;
- Outline the roles and responsibilities in relation to the management of noise and vibration emissions during construction; and
- Promote environmental awareness among employees and subcontractors.

This CNVMP covers construction of Lot 3B at Oakdale West.

1.3 Terminology

Specific acoustic terminology is used in this report. An explanation of common acoustic terms is provided in **Appendix A**.

2 Statutory Requirements

This CNVMP has been prepared to accompany the Construction Environmental Management Plan (CEMP) for Lot 3B at Oakdale West. The conditions relevant to this CNVMP are outlined in the following sections.

2.1 Oakdale West Development Consent

Conditions for the Oakdale West Estate are specified in Department of Planning, Industry and Environment (DPIE) Development Consent SSD 7348, dated 13 September 2019, and subsequent modifications. The conditions relevant to this CNVMP are reproduced in **Table 1**.

Table 1 Oakdale West Development Consent Conditions

Development Consent Conditions		Section / Comment	
Operation of Plant and Equipment			
D21. All plant and equipment used on site, or to monitor the performance of Stage 1 must be: a) maintained in a proper and efficient condition; and b) operated in a proper and efficient manner.		Section 6 / Table 12	
Hours of Work			
D70. The Applicant must comply with the hours detailed in Table 5, unless otherwise agreed in writing by the Planning Secretary. Table 5: Hours of Works		Section 3.5	
Activity	Day		Time
Construction	Monday – Friday		7 am to 6 pm
	Saturday		8 am to 1 pm
Operation	Monday – Sunday (including public holidays)	24 hours	
D71. Works outside the hours identified in Condition D70 may be undertaken in the following circumstances: a) works that are inaudible at the nearest sensitive receivers; b) works agreed to in writing by the Planning Secretary; c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or d) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.		Section 3.5	
Construction Noise Limits			
D72. Stage 1 must be constructed with the aim of achieving the construction noise management levels detailed in the <i>Interim Construction Noise Guideline</i> (DECC, 2009) (as may be updated or replaced from time to time). All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the Construction Noise and Vibration Management Plan required by Condition D73.		Section 4.1, Section 5.1 and Section 6 / Table 12	

Development Consent Conditions	Section / Comment
Construction Noise and Vibration Management Plan	
D73. The Applicant must prepare a Construction Noise and Vibration Management Plan (CNVMP) for Stage 1, to the satisfaction of the Planning Secretary. The CNVMP must form part of a CEMP in accordance with Condition D119 and must:	This document
a) be prepared by a suitably qualified and experienced noise expert;	Prepared by SLR – Author CV in Appendix B
b) describe procedures for achieving the noise management levels in the EPA's <i>Interim Construction Noise Guideline</i> (DECC, 2009) (as may be updated or replaced from time to time);	Section 4.1, Section 5.1 and Section 6 / Table 12
c) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;	Section 6 / Table 12
d) include strategies to minimise impacts to sensitive receivers, including, where practicable, starting noisy equipment away from sensitive receivers and implementing respite periods;	Section 6 / Table 12 and Section 8
e) include strategies that have been developed with the sensitive receivers identified in Appendix 5 for managing high noise generating works;	Section 6 / Table 12 and Section 8
f) describe the community consultation undertaken to develop the strategies in Condition D73(e);	Section 6 / Table 12, Section 8 and the Community Communication Strategy (CCS)
g) include a monitoring program that: i) includes a protocol for determining exceedances of the relevant conditions in this approval; ii) evaluates and reports on the effectiveness of the noise and vibration management measures; iii) include procedures to relocate, modify, mitigate or stop work to ensure compliance with the relevant criteria; and	Section 6 / Table 12, Section 8, Section 9 and the Compliance Monitoring and Reporting Program (CMRP)
h) include a complaints management system that would be implemented for the duration Stage 1.	Section 7
D74. The Applicant must:	Section 3.4
a) not commence construction of Stage 1 until the CNVMP required by Condition D73 is approved by the Planning Secretary; and;	This document
b) implement the most recent version of the CNVMP approved by the Planning Secretary for the duration of construction.	
Vibration Criteria	
D76. Vibration caused by construction works on the site, as measured at any residence or structure outside the site, must be limited to:	Section 4.2, Section 5.2 and Section 6 / Table 12
a) for structural damage, the latest version of <i>DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures</i> (German Institute for Standardisation, 1999); and	
b) for human exposure, the acceptable vibration values set out in the <i>Environmental Noise Management Assessing Vibration: a technical guideline</i> (DEC, 2006) (as may be updated or replaced from time to time).	
D77. Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in Condition D76.	Section 4.2.3, Section 5.2 and Section 6 / Table 12

Development Consent Conditions	Section / Comment
D78. The limits in Conditions D76 and D77 apply unless otherwise outlined in a CNVMP, approved as part of the CEMP required by Condition D119 of this consent.	Noted – D76 and D77 apply
Management Plan Requirements	
D118. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	Noted
a) details of: <ul style="list-style-type: none"> i) the relevant statutory requirements (including any relevant approval, licence or lease conditions); ii) any relevant limits or performance measures and criteria; and iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, Stage 1 or any management measures; 	<ul style="list-style-type: none"> i) Section 2 ii) Section 4 iii) Section 4, Section 6 / Table 12 and Section 8
b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 5 and Section 6 / Table 12
c) a program to monitor and report on the: <ul style="list-style-type: none"> i) impacts and environmental performance of Stage 1; and ii) effectiveness of the management measures set out pursuant to paragraph (b) above; 	Section 8
d) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 6 and Section 9
e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time;	Section 11, and Section 6 of the CEMP
f) a protocol for managing and reporting any: <ul style="list-style-type: none"> i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); ii) complaint; iii) failure to comply with statutory requirements; and 	<ul style="list-style-type: none"> i) Section 9 ii) Section 7 iii) Section 9
g) a protocol for periodic review of the plan.	Section 11, and Section 6 of the CEMP

2.2 Penrith City Council Conditions of Consent

Conditions of consent specific to Lot 3B are specified in Penrith City Council Notice of Determination DA21/0440. The conditions relevant to this CNVMP are reproduced in **Table 2**.

Table 2 Development Consent Conditions

Development Consent Conditions	Section / Comment
<p>29. Construction works that are carried out in accordance with an approved consent that involve the use of heavy vehicles, heavy machinery and other equipment likely to cause offence to adjoining properties shall be restricted to the following hours in accordance with the NSW Environment Protection Authority Noise Control Guidelines:</p> <ul style="list-style-type: none"> Monday to Fridays, 7am to 6pm Saturdays, 7am to 1pm if inaudible on neighbouring residential properties, otherwise 8am to 1pm No work is permitted on Sundays and Public Holidays. <p>Other construction works carried out inside a building/tenancy that do not involve the use of equipment that emits noise are not restricted to the construction hours stated above.</p> <p>The provisions of the Protection of the Environment Operations Act, 1997 in regulating offensive noise also apply to all construction works.</p>	Section 3.5

2.3 Relevant Guidelines

The guidelines used to assess the construction impacts from the development are listed in **Table 3**. The guidelines aim to protect the community and environment from excessive noise and vibration impacts that may result from construction of the development.

Table 3 Construction Noise and Vibration Guidelines

Guideline/Policy Name	Where Used
Environment Protection Authority (EPA) (2009) <i>Interim Construction Noise Guideline</i> (ICNG)	Assessment of noise impacts on sensitive receivers.
Roads and Maritime Services (2016) <i>Construction Noise and Vibration Guideline</i> (CNVG)	Assessment and management protocols for noise and vibration impacts.
Environment Protection Authority (EPA) (2006) <i>Assessing Vibration: a technical guideline</i>	Assessment of vibration impacts on sensitive receivers.
British Standard Institution (BSI) (1993) <i>BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2</i> (BS 7385)	Assessment of vibration impacts (structural damage) to sensitive structures.
German Institute for Standardisation (Deutsches Institut für Normung) (1999) <i>DIN 4150 – Structural vibration - Effects of vibration on structures</i> (DIN 4150)	Assessment of vibration impacts (structural damage) to sensitive structures.

3 Project Overview

3.1 Description

The Oakdale West site is bound to the north by the WaterNSW Pipeline and to the east by the Ropes Creek riparian corridor. Land along the eastern boundary of the site is also affected by a transmission easement associated with Transgrid infrastructure. To the east of the site is Goodman's Oakdale South Estate. Emmaus Catholic College and Emmaus Retirement Village are located to the west of the site. Other boundaries interface with adjoining rural lands used for a mix of rural-residential and agricultural.

Lot 3B is located in Precinct 3 of Oakdale West (see **Figure 1**).

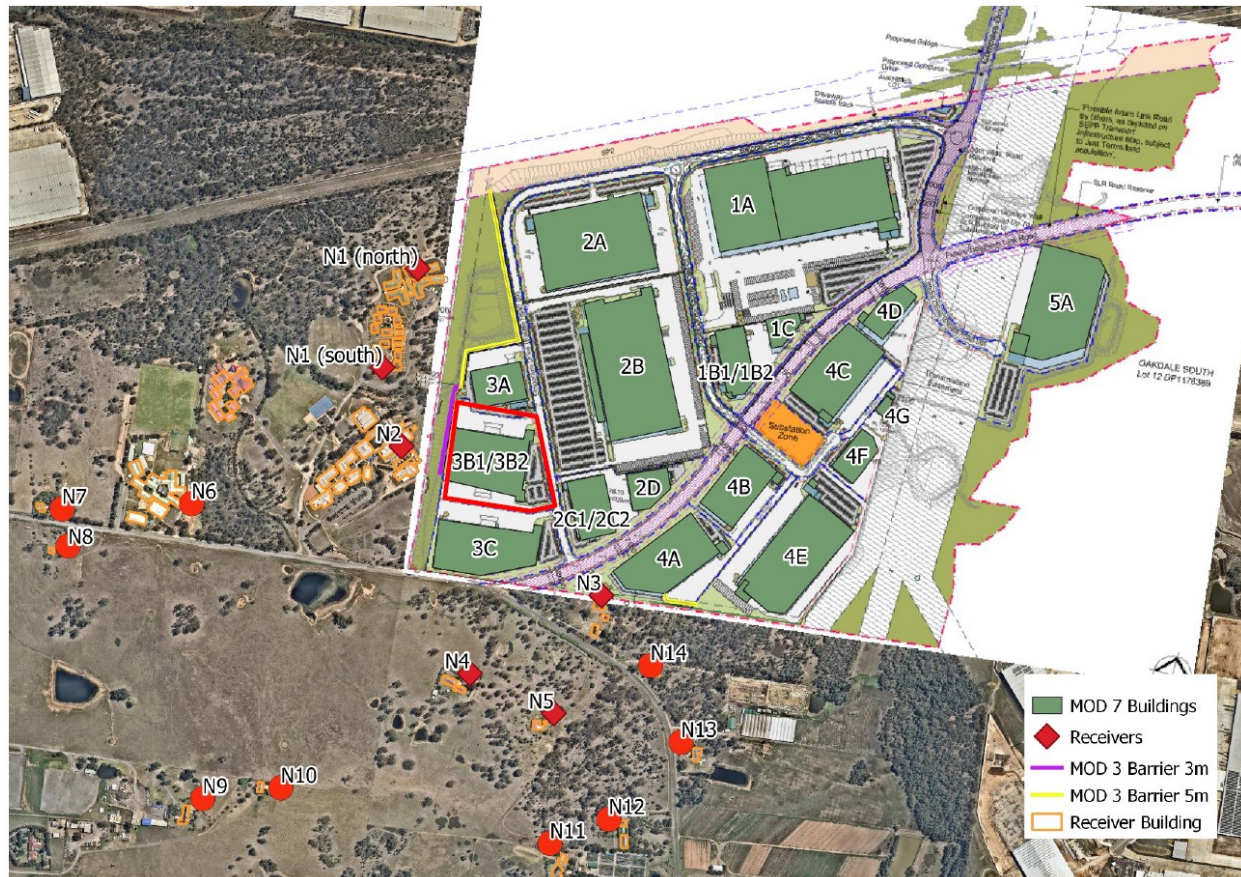
3.2 Location

Located in the Penrith local government area (LGA) at the far south western extent of the WSEA, Oakdale West is made up of the land parcel legally described as Lot 26 DP 1269741, owned by Goodman.

3.3 Surrounding Land Uses

The noise and vibration assessment locations representative of the nearest sensitive receivers surrounding Oakdale West were identified in the NVA for the project and are shown in **Figure 3**.

Figure 3 Receiver Locations



Note 1: Figure extracted from *Oakdale West Estate (OWE) – Building 3B Noise and Vibration Assessment* (Report No 2102730D Version A) prepared by RWDI in June 2021 (the NVA).

3.4 Construction Timing and Activities

Construction at Lot 3B is proposed to commence in October 2021 and be completed in June 2022. In accordance with Condition D74(a) construction must not commence until this CNVMP is approved by the Planning Secretary.

Construction activities will include:

- Minor earthworks to accommodate the building and external levels;
- Pouring of concrete slabs;
- Construction of the warehouse and office including wall and roof cladding;
- Internal fit-outs (office area and warehouse racking);
- Construction of loading bays
- Construction of truck and car parking areas; and
- Site landscaping.

3.5 Construction Hours

Construction hours will be in accordance with Conditions D70 and D71 of Development Consent SSD 7348, which are reproduced below:

D70. The Applicant must comply with the hours detailed in Table 5, unless otherwise agreed in writing by the Planning Secretary.

Table 5: Hours of Work

Activity	Day	Time
Construction	Monday – Friday	7 am to 6 pm
	Saturday	8 am to 1 pm

D71. Works outside of the hours identified in Condition D70 may be undertaken in the following circumstances:

- a) works that are inaudible at the nearest sensitive receivers;*
- b) works agreed to in writing by the Planning Secretary;*
- c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or*
- d) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.*

Condition D71(a) of Development Consent SSD 7348 notes that works may be undertaken outside of standard construction hours where the works are inaudible at the nearest sensitive receivers. Out of hours works can be undertaken without requiring approval from the Planning Secretary where it can be demonstrated that works will not be audible at any sensitive receivers.

The potential for audible impacts can be assessed by calculating predicted noise levels with a construction noise model, or by undertaking test measurements during a period with similar background noise levels to the proposed works period (noting that audibility is subjective and dependent on the background noise level at the time of the works). The predictions/measurements must be confirmed at the commencement of works with attended noise monitoring at the nearest sensitive receivers. These predictions and measurements will be undertaken by a suitably qualified acoustic consultant.

In accordance with Condition D71(b) of Development Consent SSD 7348, where works are required out of hours and noise is predicted to be audible at the nearest receivers, then written approval from the Planning Secretary must be received prior to commencement of works, except where the works fall under Conditions D71(c) or D71(d).

3.6 Construction Site Access

Access to Lot 3B will be via Compass Drive (the WNSLR) and Estate Roads 01 and 03 (refer to **Figure 1**).

4 Construction Noise and Vibration Criteria and Guidelines

4.1 Construction Noise Criteria

In accordance with Condition D72 of the Development Consent SSD 7348, Oakdale West must be constructed with the aim of achieving the construction noise management levels (NMLs) detailed in the NSW *Interim Construction Noise Guideline* (ICNG). Explanation of what constitutes feasible and reasonable is outlined in Section 1.4 of the ICNG.

The ICNG process to determine NMLs is detailed in **Section 4.1.1**. The project specific noise criteria is summarised in **Section 4.1.2**.

4.1.1 Interim Construction Noise Guideline

The ICNG requires project specific NMLs to be established for noise affected receivers. The NMLs are not mandatory limits, however in the event construction noise levels are predicted to be above the NMLs, feasible and reasonable work practices are to be investigated to minimise noise emissions.

The ICNG provides an approach for determining NMLs at residential receivers based on Rating Background Level (RBL) for the area, as described in **Table 4**.

Table 4 Determination of NMLs for Residential Receivers

Time of Day	NML LAeq(15minute)	How to Apply
ICNG Standard construction hours Monday to Friday 7:00 am to 6:00 pm Saturday 8:00 am to 1:00 pm No work on Sundays or public holidays	RBL + 10 dBA	<ul style="list-style-type: none"> The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured LAeq(15minute) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practises to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly Noise Affected 75 dBA	<ul style="list-style-type: none"> The Highly Noise Affected (HNA) level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restructuring the hours that the very noisy activities can occur, taking into account: <ul style="list-style-type: none"> Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools or mid-morning or mid-afternoon for works near residences. If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.

Time of Day	NML LAeq(15minute)	How to Apply
Outside recommended standard construction hours	RBL + 5 dBA	<ul style="list-style-type: none"> A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practises have been applied and noise is more than 5 dBA above the noise affected level, the proponent should negotiate with the community.

Note 1 The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours). The term RBL is described in detail in the NSW *Noise Policy for Industry*.

Works are recommended to be completed during Standard Construction Hours where possible. More stringent requirements are placed on works that are required to be completed outside of Standard Construction Hours (ie during the evening or night-time) which reflects the greater sensitivity of communities to noise impacts during these periods.

The ICNG also recognises other kinds of noise sensitive receivers and provides recommended NMLs for them. Those specific receivers and their recommended noise levels are presented in **Table 5**.

Table 5 Construction Noise Management Levels at Other Sensitive Land Uses

Land use	NML LAeq(15minute)
Classrooms at schools and other educational institutions	Internal noise level 45 dBA
Hospital wards and operating theatres	Internal noise level 45 dBA
Places of worship	Internal noise level 45 dBA
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	External noise level 65 dBA
Passive recreation areas (characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External noise level 60 dBA
Community centres	Depends on the intended use of the centre

The ICNG notes that due to the broad range of sensitivities that commercial or industrial land can have to noise from construction, the process of defining management levels is separated into three categories:

- Industrial premises: external 75 dBA LAeq(15minute)
- Offices, retail outlets: external 70 dBA LAeq(15minute)
- For other businesses that may be very sensitive to noise, appropriate goals should be determined on a case by case basis with reference to Australian/New Zealand Standard *AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors* (AS2107).

4.1.2 Project Specific NML Summary

The NVA defined the airborne NMLs for the various surrounding receivers. The NMLs applicable for the receivers surrounding Oakdale West are outlined in **Table 6**.

Table 6 Project Specific Noise Management Levels

Receiver	Period	LAeq,15min Construction NMLs (dBA)	
		Standard Hours	Highly Noise Affected
N1, N7 & N8	Day	49	75
N9 – N14	Day	44	75
N2 & N6	Day	55 ¹	n/a

Note 1: Noise level of LAeq 55 dBA has been adopted, with consideration to the generally accepted 10 dB noise reduction typically achieved through a partially open window.

It is understood that a Noise Agreement between the applicant and receiver N3, N4 and N5 has been made. As such, no criteria are applicable at receivers N3, N4 and N5.

As noted in **Table 4**, where the predicted or measured LAeq(15minute) construction noise levels exceed the NMLs in **Table 6**, all feasible and reasonable work practises will be applied with the aim of meeting the NMLs.

Where the predicted or measured construction noise levels are above the highly noise affected criteria (i.e. 75 dBA), respite periods may be required by restructuring the hours that the noisy activities can occur.

Predicted construction noise levels are discussed in **Section 5.1**.

4.2 Construction Vibration Criteria

In accordance with Condition D76 of the Development Consent SSD 7348, vibration from construction works on the site, as measured at any residence or sensitive structure, must be limited to the criteria outlined in:

- For structural damage – German Standard *DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures* (DIN 4150); and
- For human exposure, the EPA's *Assessing Vibration: a technical guideline*.

British Standard *BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2* (BS 7385) provides further guidance with regards to reducing the potential for structural damage.

Structural damage criteria is detailed in **Section 4.2.1** and human exposure criteria is detailed in **Section 4.2.2**.

Minimum working distances based on these criteria are summarised in **Section 4.2.3**.

4.2.1 Cosmetic Damage Vibration Thresholds

British Standard BS 7385

The recommended vibration limits from BS 7385 for transient vibration for minimal risk of cosmetic damage to residential and industrial buildings are shown in **Table 7**. These levels are judged to give a minimum risk of vibration-induced damage, where minimal risk is usually taken as a 95% probability of no effect.

Table 7 Transient Vibration Guide Values for Minimal Risk of Cosmetic Damage (BS 7385)

Line	Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15 Hz and above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	50 mm/s at 4 Hz and above
2	Unreinforced or light framed structures	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

German Standard DIN 4150-3

For continuous long-term vibration or repetitive vibration with the potential to cause fatigue effects, DIN 4150 provides the following Peak Particle Velocity (PPV) values as safe limits, below which even superficial cosmetic damage is not to be expected:

- 10 mm/s for commercial buildings and buildings of similar design.
- 5 mm/s for dwellings and buildings of similar design.
- 2.5 mm/s for buildings of great intrinsic value (eg heritage listed buildings).

For short-term vibration events (ie those unlikely to cause resonance or fatigue), DIN 4150 offers the criteria shown in **Table 8**. These are maximum levels measured in any direction at the foundation or in the horizontal axes in the plane of the uppermost floor.

Table 8 Guideline Values for Short-term Vibration on Structures (DIN 4150)

Group	Type of Structure	Guideline Values Vibration Velocity (mm/s)				
		Foundation, All Directions at a Frequency of			Topmost Floor, Horizontal	Floor Slabs, Vertical
		1 to 10 Hz	10 to 50 Hz	50 to 100 Hz	All frequencies	All frequencies
1	Buildings used for commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40	20
2	Residential buildings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20	15	20
3	Structures that, because of their particular sensitivity to vibration, cannot be classified as Group 1 or 2 and are of great intrinsic value (e.g. listed buildings)	3	3 to 8	8 to 10	8	20 ¹

Note 1: It may be necessary to lower the relevant guideline value markedly to prevent minor damage.

The “safe limits” given in DIN 4150 are the levels up to which no damage due to vibration effects has been observed for the particular class of building. “Damage” is defined by DIN 4150 to include even minor non-structural effects such as superficial cracking in cement render, the enlargement of cracks already present, and the separation of partitions or intermediate walls from load bearing walls.

4.2.1.1 WaterNSW Pipelines

WaterNSW pipelines are located adjacent to the northern boundary of the Oakdale West site, over 600 m from the closest point of the Lot 3B works. This separation distance is sufficient to mitigate vibration from the Lot 3B site to the pipelines. As such, no further assessment has been undertaken.

4.2.2 Human Exposure Vibration Thresholds

The EPA’s *Assessing Vibration: a technical guideline* provides guideline values for continuous, transient and intermittent events that are based on a Vibration Dose Value (VDV) rather than a continuous vibration level. The VDV is dependent upon the level and duration of the short-term vibration event, as well as the number of events occurring during the daytime or night-time period.

The VDV’s recommended in the document for vibration of an intermittent nature (i.e. construction works where more than three distinct vibration events occur) are presented in **Table 9**.

Table 9 Acceptable Vibration Dose Values for Intermittent Vibration ($\text{m/s}^{1.75}$) (*Assessing Vibration: a technical guideline*)

Location	Daytime ¹		Night-time ¹	
	Preferred Value	Maximum Value	Preferred Value	Maximum Value
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.80	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

Note 1: Daytime is 7:00 am to 10:00 pm and night-time is 10:00 pm to 7:00 am.

4.2.3 Minimum Working Distances

Recommended minimum working distances for vibration intensive construction plant based on the BS 7385, DIN 4150 and *Assessing Vibration: a technical guideline* are referenced from the Roads and Maritime *Construction Noise and Vibration Guideline* (CNVG). These minimum working distances are summarised in **Table 10**.

The minimum working distances are based on empirical data which suggests that where works are further from receivers than the quoted minimum distances then impacts are not considered likely.

The minimum working distances are indicative and will vary depending on the particular item of equipment and local geotechnical conditions. The distances apply to cosmetic damage of typical building under typical geotechnical conditions.

Table 10 Recommended Minimum Working Distances for Vibration Intensive Equipment

Plant Item	Rating / Description	Minimum Distance		
		Cosmetic Damage		Human Response (NSW EPA Guideline) ¹
		Residential and Light Commercial (BS 7385) ¹	Heritage Items (DIN 4150 Group 3) ²	
Vibratory Roller	< 50 kN (Typically 1-2t)	5 m	11 m	15 m to 20 m
	< 100 kN (Typically 2-4t)	6 m	13 m	20 m
	< 200 kN (Typically 4-6t)	12 m	15 m	40 m
	< 300 kN (Typically 7-13t)	15 m	31 m	100 m
	> 300 kN (Typically 13-18t)	20 m	40 m	100 m
	> 300 kN (Typically > 18t)	25 m	50 m	100 m
Small Hydraulic Hammer	300 kg – 5 to 12t excavator	2 m	5 m	7 m
Medium Hydraulic Hammer	900 kg – 12 to 18t excavator	7 m	15 m	23 m
Large Hydraulic Hammer	1600 kg – 18 to 34t excavator	22 m	44 m	73 m
Vibratory Pile Driver	Sheet piles	2 m to 20 m	5 m to 40 m	20 m
Pile Boring	≤ 800 mm	2 m (nominal)	5 m	4 m
Jackhammer	Hand held	1 m (nominal)	3 m	2 m

Note 1: Criteria reference from Roads and Maritime CNVG.

Note 2: Criteria reference from DIN 4150.

In addition to the above minimum working distances, Condition D77 of the Development Consent SSD 7348 specifies that vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in Condition D76.

5 Construction Noise and Vibration Impacts

5.1 Construction Noise Impacts

The NVA presented construction noise predictions from a number of construction scenarios likely to occur on site. These construction scenarios are representative of the activities which will be required during the construction of the site. These included:

- Earthworks
- Pad and hardstand works, including concrete pours
- Construction of warehouse and office structures

The predicted worst-case noise levels from the various construction works at Oakdale West Lot 3B are presented in **Table 11**.

Table 11 Predicted LAeq,15min Construction Noise Levels

Receiver	Period (weather)	LAeq,15min Noise Level (dBA)				
		CNML	Highly Affected NML	Predicted		
				Earthworks	Hardstand	Construction
N1 – Emmaus Village Residential	Day (Standard)	49	75	44	41	35
N2 – Emmaus Catholic College (School)	Day (Standard)	55	n/a	59	56	50
N6 – Mamre Anglican College	Day (Standard)	55	n/a	35	32	26
N7 – 21-42 Bakers Ln, Kemps Creek	Day (Standard)	49	75	37	34	28
N8 – 706-752 Mamre Rd, Kemps Creek	Day (Standard)	49	75	36	33	27
N9 – 754-770 Mamre Rd, Kemps Creek	Day (Standard)	44	75	22	19	<20
N10 – 784-786 Mamre Rd, Kemps Creek	Day (Standard)	44	75	35	32	26
N11 – 99-111 Aldington Rd, Kemps Creek	Day (Standard)	44	75	35	32	26
N12 – 53 Aldington Rd, Kemps Creek	Day (Standard)	44	75	19	16	<20
N13 – 54-72 Aldington Rd, Kemps Creek	Day (Standard)	44	75	22	19	<20
N14 – 74-88 Aldington Rd, Kemps Creek	Day (Standard)	44	75	25	22	<20

Note 1: **Bold** text indicates and exceedance of the ICNG CNML.

As detailed in the NVA and shown in **Table 11** above, the construction noise impacts are predicted to be within the daytime NMLs with the exception of noise impacts from earthworks and hardstand works at N2. The exceedance of the NMLs is minor (up to 4 dBA) and would generally be limited to when works are closest to the nearest receivers. Noise impacts would generally reduce in magnitude as construction works move away from the nearest receivers.

No exceedance of the standard construction hours NMLs are predicted at other receiver areas.

Best practise noise management measures will be undertaken for all construction works. Additional feasible and reasonable noise mitigation and management measures will be applied for works where an exceedance of the NMLs is identified, with the aim of achieving the applicable NMLs.

Mitigation and management measures are outlined in **Section 6**.

5.2 Construction Vibration Impacts

Vibration intensive items of plant proposed for use during the construction of the development would include plate compactors and vibratory rollers. These items of equipment are proposed to be used during various stages of works across the project.

During construction of Lot 3B at Oakdale West, vibratory rollers and plate compactors have the potential to be operated within the recommended minimum working distances of the nearest receiver N2, along with other buildings within Oakdale West build prior to construction of Lot 3B..

The separation distance from vibration intensive works to the nearest sensitive receivers will be maximised and all feasible and reasonable mitigation and management measures undertaken. Mitigation and management measures are outlined in **Section 6**.

Vibration at the nearest receivers may be perceptible during the works.

6 Mitigation and Management Measures

In order to minimise noise impacts during works, the construction contractor will take all reasonable and feasible measures to mitigate noise effects. Impacts from the works will be minimised and managed in accordance with the procedures detailed below in **Table 12**.

Note: **Table 12** is replicated as Table 9 and Table 12 in the CEMP.

Table 12 Environmental Management Controls for Construction Noise and Vibration

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Project Planning			
Less noise and vibration intensive construction techniques for rock breaking and concrete sawing will be used.	Construction Contractor	Ongoing	Best practice
Works will be completed during standard daytime construction hours outlined in Section 3.5 .			
Truck routes to site will be in accordance with the approved Construction Traffic Management Plan.			
Scheduling			
Respite offers will be considered where high-noise works are predicted to exceed 75 dBA for residential receivers. Respite offers will be considered for high-vibration works where the works are undertaken within the human comfort minimum working distances for all receiver types. Consultation with these receivers will be undertaken to determine appropriate respite periods, such as exam periods for schools.	Communications and Community Liaison Representative	Ongoing	SSD 7348 Condition D73
High-noise or vibration generating works will be carried out in continuous blocks no longer than three hours in length, with a minimum respite period of one hour between each block. 'Continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing these works. High-noise or vibration generating works conducted outside standard construction hours (where approved) will be limited to no more than two consecutive nights except where there is a Duration Respite (see below). For night-works these periods will be separated by no less than one week, and limited to six nights per month. Where possible, high-noise and vibration generating works will be completed before 11 pm.			
Duration Respite will be considered where it may be beneficial to the sensitive receivers to increase the duration of blocks of work or number of consecutive periods in order to complete the works more quickly. The project team will engage with the community where Duration Respite is considered in accordance with the CCS.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Notification detailing work activities, dates and hours, impacts and mitigation measures, indication of work schedule over the night time period, any operational noise benefits from the works (where applicable) and contact telephone numbers will be undertaken in accordance with the CCS.			
Site Layout			
Compounds and worksites will be designed to promote one-way traffic and minimise the need for vehicle reversing.	Construction Contractor	Ongoing	Best practice
Where practicable, work compounds, parking areas, and equipment and material stockpiles will be positioned away from noise-sensitive locations and take advantage of existing screening from local topography.			
Equipment that is noisy will be started away from sensitive receivers			
Training			
Training will be provided to all personnel on noise and vibration requirements for the project. Inductions and toolbox talks to be used to inform personnel of the location and sensitivity of surrounding receivers.	Construction Contractor	Ongoing	Best practice
Plant and Equipment Source Mitigation			
All construction plant and equipment used on Site must be, in addition to other requirements: a) regularly inspected and maintained in an efficient condition; b) operated in a proper and efficient manner.	Construction Contractor	Ongoing	SSD 7348 Condition D21
Where practicable, tonal reversing alarms (beepers) will be replaced with non-tonal alarms (squawkers) on all equipment in use (subject to occupational health and safety requirements).			Best practice
Noisy equipment will be sited behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or orienting the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise.			
Noise generating equipment will be regularly checked and effectively maintained, including checking of hatches/enclosures regularly to ensure that seals are in good condition and doors close properly against seals.			
Dropping materials from a height will be avoided.			
Loading and unloading will be carried out away from noise sensitive areas, where practicable.			

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Trucks will not queue outside residential properties. Truck drivers will avoid compression braking as far as practicable.			
Truck movements will be kept to a minimum, ie trucks are fully loaded on each trip.			
Community Consultation			
Notifications will be provided to the affected community where high impacts are anticipated or where out of hours works are required. Notification will be a minimum of 24 hours. Refer to the CCS.	Communications and Community Liaison Representative	Ongoing	Best practice
Where complaints are received, work practices will be reviewed and feasible and reasonable practices implemented to minimise any further impacts. Refer to Section 7.			
Monitoring			
Noise and/or vibration monitoring will be conducted (as appropriate) when noise/vibration intensive works are being undertaken in close proximity to sensitive receivers.	Construction Contractor	Ongoing	Best practice
Noise and/or vibration monitoring will be conducted (as appropriate) in response to any complaints received to verify that levels are not substantially above the predicted levels.			
Refer to Section 8 for full details of monitoring requirements.			
Vibration			
Where works are required within the minimum working distances, vibration monitoring will be undertaken to confirm that vibration is within acceptable levels.	Construction Contractor	Ongoing	Best practice SSD 7348 Condition D77
Where works are required within the cosmetic damage minimum working distances, building condition surveys will be completed before and after the works to ensure no cosmetic damage has occurred.			
Vibratory compactors will not be used closer than 30 m from residential and educational buildings unless vibration monitoring confirms compliance with the vibration criteria.			
Where there is a risk that vibration activities may cause damage to nearby structures and buildings or if these are located within the minimum working distance from the construction activity, a building condition inspection will be undertaken at least three weeks before the construction activity commences.		Before and after any vibration activities within minimum distances	Best practice

Measure	Person Responsible	Timing / Frequency	Reference / Notes
The Building Condition Inspection Reports will contain photographs of the inspected properties and include details of the inspectors' qualification and expertise, together with a list of any identified defects, where relevant. The reports will be submitted to the owner of each property and to Goodman before the commencement of any vibration intensive activities.			
A copy of the Building Condition Inspection Reports and CNVMP will be submitted to Goodman at least 10 working days prior to commencement of piling, excavation by hammering or ripping, compaction, demolition operations, or any activity which may cause damage through vibration.			
EIS Measures			
Construction hours will be limited to 7:00 am - 6:00 pm Monday to Friday and 8:00 am - 1:00 pm Saturdays (refer to Section 3.5).	Construction Contractor	Ongoing	EIS mitigation commitment
Where construction noise levels are predicted to be above the NMLs, all feasible and reasonable work practices will be investigated to minimise noise emissions, as detailed in this CNVMP.			
Construction works will be conducted during Standard Construction Hours, with out of hours work minimised as far as feasible and reasonable, and undertaken in accordance with Condition D71 (refer to Section 3.5).			
Locations for vibration intensive equipment will be reviewed during the planning of construction works adjacent to the most affected receivers.			

Initial consultation has been established with all potentially affected community groups and sensitive receivers (refer to the CCS). The mitigation and management measures detailed in **Table 12** are considered to be appropriate to minimise impacts on the potentially affected receivers.

These measures will be implemented and refined as informed by the results of monitoring and ongoing community consultation.

Specific consultation with the potentially affected receivers to determine suitable respite periods and management measures will be undertaken during the planning stage of high-noise generating works once specific details of the works have been identified, such as the location of the works, activities proposed to be undertaken and required equipment.

7 Complaints Handling and Response Procedure

All complaints will be handled in accordance with the sections below and the *Community Communication Strategy* (CCS) (SLR 2020a) (see Appendix G of the CEMP).

7.1 Performance Objective

To ensure that all environmental complaints in relation to the construction of Lot 3B at Oakdale West are promptly and effectively received, handled and addressed.

7.2 Responsibility

The Communications and Community Liaison Representative is responsible for ensuring that the appropriate management response and handling procedures are instigated and carried through in the event of an environmental complaint. The induction and toolbox talks outlined in Section 3.4 of the CEMP will be used to ensure all site employees are aware of and understand their obligations for complaints response.

All employees who take receipt of a complaint, either verbal or written, are to immediately notify the Contractor's Project Manager, who will then contact the Communications and Community Liaison Representative.

7.3 Complaints Handling Procedure

Upon becoming aware of a complaint, the protocol outlined below will be followed.

1. Record and Acknowledge

Any employee who takes receipt of a complaint, either verbal or written, are to immediately notify the Contractor's Project Manager who will then contact the Communications and Community Liaison Representative. The Contractor's Project Manager will be available 24 hours a day, seven days a week and have the authority to stop or direct works. All relevant contact details are available in Table 5 of the CEMP.

In the normal course of events, the first contact for complaints will usually be made in person or by telephone.

The complainant's name, address and contact details, along with the nature of the complaint, will be requested. If the complainant refuses to supply the requested information, a note will be made on the form and complainant advised of this.

2. Assess and Prioritise

The Communications and Community Liaison Representative will prioritise all complaints by considering the seriousness of the complaint including risk to health and safety and will attempt to provide an immediate response via phone or email. This will be undertaken in accordance with the CCS (SLR 2020a).

3. Investigate

A field investigation will be initiated in an attempt to confirm details relevant to the complaint and the cause of the problem. Any monitoring information and/or records at and around the time of the complaint will be reviewed for any abnormality or incident that may have resulted in the complaint.

If the complaint is due to an incident, the notification requirements and handling procedures outlined in Section 3.5.3 and 3.5.4 of the CEMP respectively will be followed.

4. Action or Rectify

Once the cause of the complaint has been established, every possible effort will be made to undertake appropriate action to rectify the cause of the complaint and mitigate any further impact. The Communications and Community Liaison Representative will assess whether the complaint is founded or unfounded and delegate the remediation of the issue to the Contractor's Project Manager for action, as required.

5. Respond to Complainant

The Communications and Community Liaison Representative will oversee the rectification of the issue and respond to the complainant once the issue has been resolved. The complainant will be provided with a follow up verbal response on what action is proposed within two hours during night-time works (between the hours of 6:00 pm and 10:00 pm) and 24 hours at other times. Where a complaint cannot be resolved by the initial or follow-up verbal response, a written response will be provided to the complainant within ten days.

6. Record

It is imperative that an assessment of the situation is carried out and documented in order to minimise the potential for similar complaints in the future. On this basis, every complaint received is to be recorded in Community Correspondence Register (Appendix H of the CEMP). A copy of the completed form will be maintained for at least five years. The complaint will also be recorded in the Complaints Register, as per Section 3.6.4 of the CEMP.

7. Preventative Action

Once the complaint has been suitably handled, appropriate measures will be identified and implemented to negate the possibility of re-occurrence. The Community Correspondence Register is not finalised until the preventative actions are completed and recorded on the form.

7.4 Complaints Register

A Complaints Register will be maintained during construction and will contain the following:

- A copy of the environmental complaint handling procedure contained in Section 3.6.3 of the CEMP;
- A separate reference sheet containing the contact details listed in Table 5 of the CEMP;
- Blank hard copies of the Community Correspondence Register (see Appendix H of the CEMP); and
- Copies of all completed Community Correspondence Register entries which are to be maintained for at least five years after the event to which they relate.

8 Monitoring

8.1 Construction Noise Monitoring

Attended noise measurements will be undertaken at the start of noise intensive works in the vicinity of sensitive receivers to verify the levels are as predicted and to check the effectiveness of mitigation and management measures used to minimise the impacts.

Attended monitoring will also be undertaken in response to any complaints regarding construction noise. The location and extent of monitoring would be determined in consultation with Goodman and an acoustic consultant and would be dependent on the activities taking place.

The monitoring will take place during the expected noisiest construction periods and be representative / indicative of any impact across all potentially affected sensitive receivers.

Monitoring reports will be produced following each monitoring survey and provided to Goodman for review. In the event that an exceedance of the applicable NMLs is measured (refer to **Section 4.1**), actions to be carried out are detailed in **Section 9**.

All items of acoustic instrumentation utilised will be designed to comply with applicable guidelines and carry current calibration certificates.

8.2 Construction Vibration Monitoring

8.2.1 Sensitive Receivers and Structures

Where vibration intensive works (such as vibratory rolling and plate compacting) are proposed to be undertaken within the minimum working distances of sensitive receivers or structures (refer to **Section 4.2.3**), vibration will be monitored continuously for the duration of works within the minimum working distances.

Attended vibration measurements will be undertaken at the commencement of vibration intensive works within the minimum working distances to confirm the levels of vibration are below the applicable vibration limits (refer to **Section 4.2**).

Geophones will be installed by an acoustic consultant at the closest points of the sensitive structure to the vibration intensive works to continuously monitor vibration for the duration of the works. Should the works location change, the geophones will be relocated to remain at the closest point of the structure to the works.

The vibration monitoring equipment will have visible and audible alarms installed where operators of equipment can see/hear them:

- A warning vibration level of 2/3 of the applicable vibration limit will set off the visual alarm if exceeded – the equipment operator must take care to limit vibration emissions when the warning level is exceeded.
- An exceedance vibration level equal to the applicable vibration limit will set off both the visual and audible alarms. Actions to be carried out if the exceedance alarm is set off are detailed in **Section 9**.

Monitoring data will be downloaded and reported monthly, at a minimum. Vibration monitoring reports will be prepared and provided to Goodman for review at the following stages:

- Monthly during works (at a minimum)

- Within one week of an exceedance of the vibration limit alarm level (15 mm/s PPV)
- Upon completion of construction.

All items of vibration instrumentation utilised will be designed to comply with applicable guidelines and carry current calibration certificates.

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9 Contingency Management Plan

The following contingency management plan, shown in **Table 13**, would be used to manage any unpredicted noise and vibration impacts and their consequences.

In the event of an incident, response will be carried out in accordance with the procedures detailed in Section 3.5 of the overarching CEMP. As detailed in Section 5.4 of the overarching CEMP, all Condition Amber and Condition Red occurrences will be recorded in the Environmental Representative Monthly Report and discussed during the toolbox talks.

The following events constitute an incident in terms of noise and vibration:

- Trigger of Condition Red for noise impacts during the standard construction hours detailed in **Section 3.5**.
- Any works occurring outside the standard construction hours, where those works do not meet the allowable circumstances defined in **Section 3.5**.
- Trigger of Condition Red for vibration impacts at sensitive receiver locations.

Table 13 Contingency Management Plan

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Noise impacts at sensitive receiver locations	Trigger	Noise levels do not exceed applicable NMLs	Noise levels exceed applicable NMLs	Noise levels exceed Highly Noise Affected criteria (75 dBA)
	Response	On-going best practice management measures to minimise noise emissions	Undertake all feasible and reasonable mitigation and management measures to minimise noise impacts (aiming to achieve NMLs)	Undertake all feasible and reasonable mitigation and management measures to ensure noise levels are below Highly Noise Affected criteria. If noise levels cannot be kept below Highly Noise Affected criteria then a different construction method or equipment must be utilised.
Vibration impacts at sensitive receiver locations	Trigger	Vibration intensive works undertaken outside minimum working distance for the specific equipment in use	Vibration intensive works undertaken within minimum working distance for the specific equipment in use	Vibration levels exceed applicable vibration limits
	Response	On-going best practice management measures to minimise vibration emissions	Undertake vibration monitoring for the duration of the works to confirm vibration levels.	Stop work. Undertake all feasible and reasonable mitigation and management measures to ensure vibration levels are below applicable limits. If vibration levels cannot be kept below applicable limits then a different construction method or equipment must be utilised.

10 Roles and Responsibilities

Overall roles and responsibilities relating to the project are outlined in Section 3.2 of the overarching CEMP.

The key responsibilities specifically for noise and vibration management are as follows:

10.1 Contractor's Project Manager

- Ensuring appropriate resources are available for the implementation of this CNVMP;
- Assessing data from inspections and providing project-wide advice to ensure consistent approach and outcomes are achieved;
- Providing necessary training for project personnel to cover noise and vibration management;
- Reviewing and update of this CNVMP;
- Commissioning a suitably qualified consultant to install and maintain noise and vibration monitors and ensuring that the environmental coordinator undertakes any attended noise and vibration measurements required by this Plan;
- Assessing and (as required) mitigating risks of elevated noise and vibration levels before commencing works each day and ensuring that the appropriate controls are implemented and effective;
- Reviewing weather forecasts and current observations of meteorological conditions (as recorded at Horsley Park AWS);
- Ceasing works in the event of excessive noise and vibration generation due to noise enhancing weather conditions or inadequately controlled construction activities (e.g. strong winds blowing from the noise source to nearby receivers, temperature inversions, etc.); and
- In the event that a noise or vibration complaint is received, the procedure in Section 3.6 of the CEMP will be implemented (see **Section 7**).

10.2 Environmental Coordinator

- Undertaking noise monitoring program;
- Review that control measures are working in accordance with the CNVMP; and
- Identifying and reporting noise and vibration emissions incidents.

10.3 All Workers on Site

- Observing any noise and vibration emission control instructions and procedures that apply to their work;
- Taking action to prevent or minimise noise and vibration emission incidents; and
- Identifying and reporting noise and vibration emission incidents.

11 Review and Improvement of the CNVMP

Details on review and improvement are outlined in Section 6 of the overarching CEMP.

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APPENDIX A

Acoustic Terminology

1. Sound Level or Noise Level

The terms 'sound' and 'noise' are almost interchangeable, except that 'noise' often refers to unwanted sound.

Sound (or noise) consists of minute fluctuations in atmospheric pressure. The human ear responds to changes in sound pressure over a very wide range with the loudest sound pressure to which the human ear can respond being ten million times greater than the softest. The decibel (abbreviated as dB) scale reduces this ratio to a more manageable size by the use of logarithms.

The symbols SPL, L or LP are commonly used to represent Sound Pressure Level. The symbol LA represents A-weighted Sound Pressure Level. The standard reference unit for Sound Pressure Levels expressed in decibels is 2×10^{-5} Pa.

2. 'A' Weighted Sound Pressure Level

The overall level of a sound is usually expressed in terms of dBA, which is measured using a sound level meter with an 'A-weighting' filter. This is an electronic filter having a frequency response corresponding approximately to that of human hearing.

People's hearing is most sensitive to sounds at mid frequencies (500 Hz to 4,000 Hz), and less sensitive at lower and higher frequencies. Different sources having the same dBA level generally sound about equally loud.

A change of 1 dB or 2 dB in the level of a sound is difficult for most people to detect, whilst a 3 dB to 5 dB change corresponds to a small but noticeable change in loudness. A 10 dB change corresponds to an approximate doubling or halving in loudness. The table below lists examples of typical noise levels.

Sound Pressure Level (dBA)	Typical Source	Subjective Evaluation
130	Threshold of pain	Intolerable
120	Heavy rock concert	Extremely noisy
110	Grinding on steel	
100	Loud car horn at 3 m	Very noisy
90	Construction site with pneumatic hammering	Loud
80	Kerbside of busy street	
70	Loud radio or television	
60	Department store	Moderate to quiet
50	General Office	
40	Inside private office	Quiet to very quiet
30	Inside bedroom	
20	Recording studio	Almost silent

Other weightings (eg B, C and D) are less commonly used than A-weighting. Sound Levels measured without any weighting are referred to as 'linear', and the units are expressed as dB(lin) or dB.

3. Sound Power Level

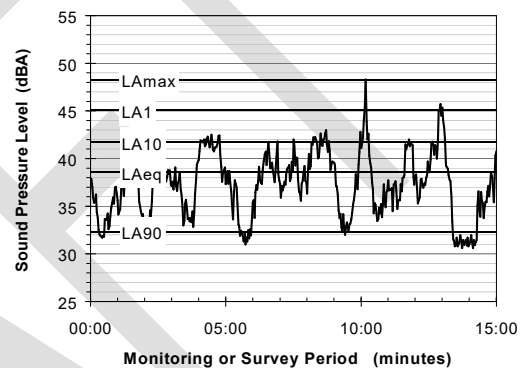
The Sound Power of a source is the rate at which it emits acoustic energy. As with Sound Pressure Levels, Sound Power Levels are expressed in decibel units (dB or dBA), but may be identified by the symbols SWL or LW, or by the reference unit 10^{-12} W.

The relationship between Sound Power and Sound Pressure is similar to the effect of an electric radiator, which is characterised by a power rating but has an effect on the surrounding environment that can be measured in terms of a different parameter, temperature.

4. Statistical Noise Levels

Sounds that vary in level over time, such as road traffic noise and most community noise, are commonly described in terms of the statistical exceedance levels LAN, where LAN is the A-weighted sound pressure level exceeded for N% of a given measurement period. For example, the LA1 is the noise level exceeded for 1% of the time, LA10 the noise exceeded for 10% of the time, and so on.

The following figure presents a hypothetical 15 minute noise survey, illustrating various common statistical indices of interest.



Of particular relevance, are:

- LA1 The noise level exceeded for 1% of the 15 minute interval.
- LA10 The noise level exceeded for 10% of the 15 minute interval. This is commonly referred to as the average maximum noise level.
- LA90 The noise level exceeded for 90% of the sample period. This noise level is described as the average minimum background sound level (in the absence of the source under consideration), or simply the background level.
- LAeq The A-weighted equivalent noise level (basically, the average noise level). It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.

5. Frequency Analysis

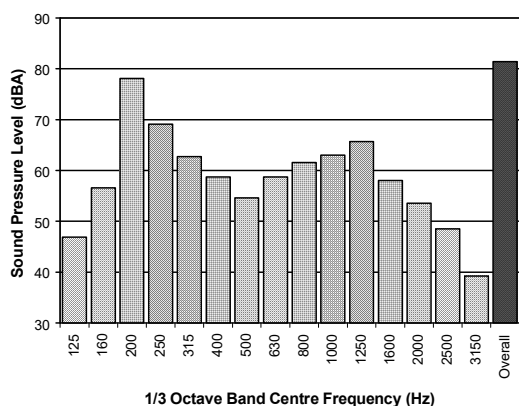
Frequency analysis is the process used to examine the tones (or frequency components) which make up the overall noise or vibration signal.

The units for frequency are Hertz (Hz), which represent the number of cycles per second.

Frequency analysis can be in:

- Octave bands (where the centre frequency and width of each band is double the previous band)
- 1/3 octave bands (three bands in each octave band)
- Narrow band (where the spectrum is divided into 400 or more bands of equal width)

The following figure shows a 1/3 octave band frequency analysis where the noise is dominated by the 200 Hz band. Note that the indicated level of each individual band is less than the overall level, which is the logarithmic sum of the bands.



6. Annoying Noise (Special Audible Characteristics)

A louder noise will generally be more annoying to nearby receivers than a quieter one. However, noise is often also found to be more annoying and result in larger impacts where the following characteristics are apparent:

- **Tonality** - tonal noise contains one or more prominent tones (ie differences in distinct frequency components between adjoining octave or 1/3 octave bands), and is normally regarded as more annoying than 'broad band' noise.
- **Impulsiveness** - an impulsive noise is characterised by one or more short sharp peaks in the time domain, such as occurs during hammering.
- **Intermittency** - intermittent noise varies in level with the change in level being clearly audible. An example would include mechanical plant cycling on and off.
- **Low Frequency Noise** - low frequency noise contains significant energy in the lower frequency bands, which are typically taken to be in the 10 to 160 Hz region.

7. Vibration

Vibration may be defined as cyclic or transient motion. This motion can be measured in terms of its displacement, velocity or acceleration. Most assessments of human response to vibration or the risk of damage to buildings use measurements of vibration velocity. These may be expressed in terms of 'peak' velocity or 'rms' velocity.

The former is the maximum instantaneous velocity, without any averaging, and is sometimes referred to as 'peak particle velocity', or PPV. The latter incorporates 'root mean squared' averaging over some defined time period.

Vibration measurements may be carried out in a single axis or alternatively as triaxial measurements (ie vertical, longitudinal and transverse).

The common units for velocity are millimetres per second (mm/s). As with noise, decibel units can also be used, in which case the reference level should always be stated. A vibration level V , expressed in mm/s can be converted to decibels by the formula $20 \log (V/V_0)$, where V_0 is the reference level (10^{-9} m/s). Care is required in this regard, as other reference levels may be used.

8. Human Perception of Vibration

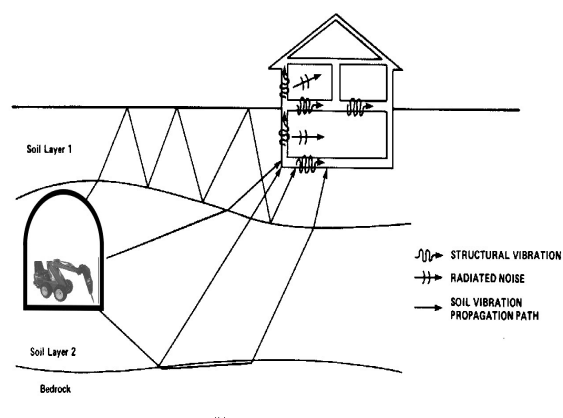
People are able to 'feel' vibration at levels lower than those required to cause even superficial damage to the most susceptible classes of building (even though they may not be disturbed by the motion). An individual's perception of motion or response to vibration depends very strongly on previous experience and expectations, and on other connotations associated with the perceived source of the vibration. For example, the vibration that a person responds to as 'normal' in a car, bus or train is considerably higher than what is perceived as 'normal' in a shop, office or dwelling.

9. Ground-borne Noise, Structure-borne Noise and Regenerated Noise

Noise that propagates through a structure as vibration and is radiated by vibrating wall and floor surfaces is termed 'structure-borne noise', 'ground-borne noise' or 'regenerated noise'. This noise originates as vibration and propagates between the source and receiver through the ground and/or building structural elements, rather than through the air.

Typical sources of ground-borne or structure-borne noise include tunnelling works, underground railways, excavation plant (eg rockbreakers), and building services plant (eg fans, compressors and generators).

The following figure presents an example of the various paths by which vibration and ground-borne noise may be transmitted between a source and receiver for construction activities occurring within a tunnel.



The term 'regenerated noise' is also used in other instances where energy is converted to noise away from the primary source. One example would be a fan blowing air through a discharge grill. The fan is the energy source and primary noise source. Additional noise may be created by the aerodynamic effect of the discharge grill in the airstream. This secondary noise is referred to as regenerated noise.

APPENDIX B

SLR Author CV

CURRICULUM VITAE



JOSHUA RIDGWAY

SENIOR PROJECT CONSULTANT

Acoustics & Vibration, Asia-Pacific

QUALIFICATIONS

MDesSc	2008	Master of Design Science (Audio and Acoustics), University of Sydney, NSW
DipPM	2018	Diploma of Project Management, Charter Australia Education and Training, NSW

EXPERTISE

- Transport (Rail, Road and Air) Noise and Vibration
- Construction Noise and Vibration
- Infrastructure and Industrial Noise and Vibration
- Noise and Vibration Measurement Systems

Joshua completed his Master of Design Science (Audio and Acoustics) at University of Sydney in 2008 and has been a consultant at SLR since 2011.

Joshua has worked on a broad range of assessments involving field measurements, analysis, modelling and reporting of construction and operational impacts from a variety of projects.

Joshua has a Diploma of Project Management and extensive experience in delivering key transportation infrastructure projects in NSW.

Joshua brings detailed knowledge of noise predictive software, including SoundPLAN, through his previous experience of modelling some of NSW's most complex infrastructure projects.

PROJECTS

Transport Noise and Vibration Projects

Blackwattle Bay Transport Improvements REF, NSW	Ambient noise monitoring, construction noise and vibration assessment, lead modeller for operational noise impacts and assessment.
M12 Motorway EIS & AR, NSW	Ambient noise monitoring, construction noise and vibration assessment, lead modeller for operational noise impacts and assessment.
WestConnex M4-M5 Link EIS & Post-Approval Works, NSW	Ambient noise monitoring, construction noise and vibration assessment, lead modeller for operational noise impacts and assessment.
M4 Smart Motorways EIS, M4 Widening EIS and WestConnex M4 East EIS, NSW	Ambient noise monitoring, operational noise assessment and modelling.
Northern Beaches Hospital Road Network Upgrade EIS, NSW	Ambient noise monitoring, operational noise assessment and modelling.

CBD and South East Light Rail EIS & Post-Approval Works, NSW	Noise and vibration environmental impact assessment. Post-commissioning operational noise and vibration measurements and compliance assessment.
North West Rail Link EIS and Sydney Metro EIS, NSW	Ambient noise monitoring, operational and construction noise assessments and modelling.
Northern Sydney Freight Corridor, NSW	Operational noise assessment and modelling.
Sydney Light Rail, NSW	Operational noise and vibration measurements and compliance assessment.
Industrial/Construction Projects	
Oakdale Central, South and West Industrial Developments, NSW	Project manager and lead modeller for noise impact assessments for State Significant Development applications for large multi-stage industrial developments from DA stage to occupation and compliance stage, and preparation of construction and operational noise and vibration management plans.
Enfield Intermodal Logistics Centre, NSW	Preparation of construction and operational noise and vibration management plans.
Metropolitan Colliery, NSW	Ambient noise monitoring, operational noise measurements, risk assessment and noise mitigation strategy.
Built Environment Projects	
Marsden Park North Precinct, NSW	Road traffic and ambient noise monitoring, assessment of noise impacts associated with the Precinct.
The Sheffield, Thornton, NSW	Acoustic assessment and advice for DA stage to CC stage mixed-use development.
Saint Mary MacKillop Catholic Church, Oran Park, NSW	Acoustic assessment and advice for CC to OC stage place of worship development.
Various Residential Developments, Epping, NSW	Acoustic assessment for DA stage residential developments.
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APPENDIX E

Community Consultation Strategy

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COMMUNITY CONSULTATION STRATEGY OAKDALE WEST ESTATE - BUILDING 3B

Prepared for:
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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goodman Property Services (Aust) Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

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630.30081.00000-R01-v10.0	12 July 2021	Kate McKinnon	Samantha Hayes	Dan Thompson
630.30081.00000-R01-v9.0	1 June 2021	Kate McKinnon	Samantha Hayes	Dan Thompson

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1 Introduction

1.1 Background

This Community Communication Strategy (CCS) has been prepared on behalf of Goodman Property Services (Australia) Pty Ltd (Goodman) for the Oakdale West Estate (OWE) Concept and Stage 1 development (State Significant Development [SSD] application 7348). This CCS has also been updated to accommodate Modifications 1-6 to SSD7348 and Development Application (DA21/0440) for the construction of Building 3B in Stage 4.

This CCS has been prepared in accordance with Condition C19 and supporting conditions within the Development Consent for SSD 7348, identifying relevant stakeholders, key issues and the communication methods. Specifically, it details how Goodman and their contractors will engage with relevant stakeholders and the community. The CCS integrates with the Construction Environmental Management Plan (CEMP) and associated suite of documents to provide a comprehensive guide and benchmark for the construction process that aligns with the Development Consent conditions.

1.2 Purpose

The OWE project has been assessed and determined under Division 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The CCS includes the following key aspects:

- Identification of stakeholders to be consulted with during the CCS implementation including adjacent landowners and residents, key stakeholders, relevant agencies and the wider community.
- The tools and actions to be undertaken throughout the construction program to disseminate information to the identified stakeholders, providing opportunities for comment.
- Enquiry and Complaint management protocols.
- Monitoring and feedback mechanisms.

The CCS will be updated as the project progresses to account for variations in the construction program and methodology and modifications to SSD7348, along with changes in stakeholder situation that impacts on stakeholder interests, with these articulated through the feedback mechanisms.

SSD 7348 (as modified) contains the following conditions of relevance to this CCS used to benchmark the contents:

- | | |
|--|--|
| • C19 & C20 – Community Communication Strategy | • D117 – Ongoing Community Engagement |
| • D37 – Landscaping | • D118 - Management Plan Requirements |
| • D43A – Signage and Fencing | • D127 & D128 – Environmental Representative |
| • D71 – Hours of Work | • D133 – Document Review |
| | • D143 – Access to Information |

The details of these conditions are identified within **Table 1** below, along with a cross reference to the relevant section of this CCS.

The approved development includes the construction of the Western North-South Link Road (WNSLR). This road is to be constructed to Roads and Maritime Service (RMS) specifications, to the satisfaction of Penrith City Council (as the Nominated Road Authority). Details of these specifications as they relate to community consultation and communication are identified within **Table 2**, including cross reference to the relevant section of this CCS.

Table 1 Relevant Conditions of Consent

Condition Number	Condition Detail	Report Reference
C19 – Community Communication Strategy	<p>No later than one month before the commencement of construction of any stage of the Development, a Community Communication Strategy (CCS) must be prepared and submitted to the Planning Secretary for approval. The CCS is to provide mechanisms to facilitate communication between the Applicant, Council and the community (including adjoining affected landowners, schools, businesses, and others directly impacted by Stage 1), during design, construction and operation. The CCS must:</p> <ul style="list-style-type: none"> a) assign a central contact person to keep the nearby sensitive receivers regularly informed throughout the Development; b) detail the mechanisms for regularly consulting with the local community throughout the Development, such as holding regular meetings to inform the community of the progress of the development and report on environmental monitoring results; c) detail a procedure for consulting with nearby sensitive receivers to schedule high noise generating works, vibration intensive activities or manage traffic disruptions; d) include contact details for key community groups, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders; and e) include a complaints procedure for recording, responding to and managing complaints, including: <ul style="list-style-type: none"> i. email, contact telephone number and postal addresses for receiving complaints; ii. advertising the contact details for complaints before and during operation, via the local newspaper and through onsite signage; iii. a complaint register to record the date, time and nature of the complaint, details of the complainant and any actions taken to address the complaint; and iv. procedures for the resolution of any disputes that may arise during the course of the Development. 	<p>This CCS Document</p> <ul style="list-style-type: none"> a) Section 4 b) Section 5 c) Sections 5 & 6 d) Section 2.2 e) Section 5.4
C20 – Community Communication Strategy	<p>The Applicant must:</p> <ul style="list-style-type: none"> a) not commence construction of the relevant stage of the Concept Proposal until the CCS required under Condition C19 has been approved by the Planning Secretary; and b) implement the CCS for each stage of the Concept Proposal and following the completion of operation of the Development. 	<ul style="list-style-type: none"> a) Section 1.2 b) Sections 5 & 6
D37 – Landscaping	The Applicant must complete the landscape bund along the western boundary of the Site as shown on Figure 5 in Appendix 2 within six months of commencing any construction including bulk earthworks.	Section 2.2.1 Appendix A
D43A – Signage and Fencing	Prior to construction of any signage for Stage 1, the Applicant must consult with Council on the final signage strategy.	Section 5

Condition Number	Condition Detail	Report Reference
D71 – Hours of Work	<p>Works outside of the hours identified in Condition D70 may be undertaken in the following circumstances:</p> <ul style="list-style-type: none"> (a) works that are inaudible at the nearest sensitive receivers; (b) works agreed to in writing by the Planning Secretary; (c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or (d) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm. 	Section 5.3.2
D117 – Ongoing Community Engagement	The Applicant must consult with the community regularly throughout Stage 1, including consultation with the nearby sensitive receivers identified in Appendix 5, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. Community engagement shall be undertaken in accordance with the Community Communication Strategy approved in accordance with Condition C19.	Sections 5 & 6
D118 – Management Plan Requirements	<p>Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:</p> <ul style="list-style-type: none"> a) details of: <ul style="list-style-type: none"> i. the relevant statutory requirements (including any relevant approval, licence or lease conditions); ii. any relevant limits or performance measures and criteria; and iii. the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, Stage 1 or any management measures; b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria; c) a program to monitor and report on the: <ul style="list-style-type: none"> i. impacts and environmental performance of Stage 1; and ii. effectiveness of the management measures set out pursuant to paragraph (b) above; d) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible; e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time; f) a protocol for managing and reporting any: <ul style="list-style-type: none"> i. incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); ii. complaint; iii. failure to comply with statutory requirements; and g) a protocol for periodic review of the plan. <p>Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.</p>	<ul style="list-style-type: none"> a) Refer to Project CEMPs (SLR, 2019a, SLR 2019b & SLR, 2020) b) Sections 3.2, 5.3 and 5.4 c) Section 6 d) Section 5.4.4 e) Section 6 f) Section 5.4 g) Section 6

Condition Number	Condition Detail	Report Reference
D127 - Environmental Representative	<p>For the duration of construction of Stage 1, or as agreed with the Planning Secretary, the approved ER must:</p> <ul style="list-style-type: none"> (a) receive and respond to communication from the Planning Secretary in relation to the environmental performance of Stage 1; (b) consider and inform the Planning Secretary on matters specified in the terms of this consent; (c) consider and recommend to the Applicant any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community; (d) review the CEMP identified in Condition D119 and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this consent, and if so: <ul style="list-style-type: none"> (i) make a written statement to this effect before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary); or (ii) make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Planning Secretary/Department for information or are not required to be submitted to the Planning Secretary/Department); (e) regularly monitor the implementation of the CEMP, and any other documents identified by the Planning Secretary, to ensure implementation is being carried out in accordance with the document and the terms of this consent; (f) as may be requested by the Planning Secretary, help plan, attend or undertake audits of Stage 1 commissioned by the Department including scoping audits, programming audits, briefings, and site visits; (g) as may be requested by the Planning Secretary, assist the Department in the resolution of community complaints; (h) prepare and submit to the Planning Secretary and other relevant regulatory agencies, for information, an Environmental Representative Monthly Report providing the information set out in the Environmental Representative Protocol under the heading "Environmental Representative Monthly Reports." The Environmental Representative Monthly Report must be submitted within seven calendar days following the end of each month for the duration of the ER's engagement, or as otherwise agreed with the Planning Secretary. 	Section 6.2
D128 - Environmental Representative	<p>The Applicant must provide the ER with all documentation requested by the ER in order for the ER to perform their functions specified in Condition D127 (including preparation of the ER monthly report), as well as:</p> <ul style="list-style-type: none"> (a) the complaints register; and (b) a copy of any assessment carried out by the Applicant of whether proposed work is consistent with the consent (which must be provided to the ER before the commencement of the subject work). 	Section 6.2

Condition Number	Condition Detail	Report Reference
D133 Revision of Strategies, Plans and Programs	<p>Within three months of:</p> <p>(a) the submission of a Compliance Report under Condition D141;</p> <p>(b) the submission of an Environmental Representative Monthly Report under Condition D127;</p> <p>(c) the submission of an incident report under Condition D135;</p> <p>(d) the approval of any modification of the conditions of this consent; or</p> <p>(e) the issue of a direction of the Planning Secretary under Condition D2(b) which requires a review the strategies, plans and programs required under this consent must be reviewed.</p>	Section 6.2
D143 – Access to Information	<p>At least 48 hours before the commencement of construction until the completion of all works under this consent, the Applicant must:</p> <p>a) make the following information and documents (as they are obtained or approved) publicly available on its website:</p> <ol style="list-style-type: none"> the documents referred to in Condition D2 of this consent; all current statutory approvals for the Development; all approved strategies, plans and programs required under the conditions of this consent; the proposed staging plans for the Development if the construction, operation or decommissioning of the Development is to be staged; regular reporting on the environmental performance of the Development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent; a comprehensive summary of the monitoring results of the Development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs; a summary of the current stage and progress of the Development; contact details to enquire about the Development or to make a complaint; a complaint register, updated monthly; the Compliance Report of the Development; audit reports prepared as part of any monitoring or environmental audit of the Development and the Applicant's response to the recommendations in any audit report; any other matter required by the Planning Secretary; and <p>b) keep such information up to date, to the satisfaction of the Planning Secretary.</p>	Section 5.3.1

It is a requirement of the RMS that communications and community liaison are undertaken in accordance with the RMS QA Specification G36 – Environmental Protection. All relevant requirements within the specification are included in **Table 2** below.

Table 2 Relevant RMS Specifications

Specification Number	Relevant Specification Detail	Report Reference
3.3 - Resources, Responsibilities and Authority	<p>Communications and Community Liaison Representative</p> <p>Appoint a Communications and Community Liaison Representative (CCLR) to lead and manage the community involvement activities, including liaison with property owners and key stakeholders. This person is your representative for the requirements of RMS G36 Clause 3.7.</p> <p>The CCLR must have relevant qualifications with a minimum of 5 years' communications and community liaison experience, preferably in infrastructure development and delivery. The CCLR must be flexible and willing to work outside of normal working hours when required, such as nights and weekends. The CCLR is to be the primary daily contact to the public handling of enquiries/complaints management/interface issues.</p> <p>The CCLR must be available for contact by local residents and the community at all reasonable times to answer any questions and to address any concerns in relation to your construction activities. The CCLR must have up-to-date information on:</p> <ul style="list-style-type: none"> emerging stakeholders; planned construction activities; planned traffic arrangements, including any temporary traffic switches; current landowner discussions with members of your staff; planned community and stakeholder consultations; complaints or enquiries received; duties and accountabilities of your staff; and, commitments to stakeholders made by you or Goodman. <p>The CCLR is to handle document management administration and systems/contact database management and maintenance. The CCLR is to liaise with property owners to co-ordinate access and to deal with specific property related issues arising from the upgrade works. The CCLR is to lead in the development and delivery of communication and community engagement strategies and plans.</p> <p>The CCLR is to facilitate meetings, forums and arranging interviews to address concerns from community.</p> <p>The CCLR is to provide advice and participate with the project teams to improve and enhance the delivery of communication services to the community. The CCLR is to build, maintain collaborative and consultative working relationships with internal and external stakeholders.</p> <p>The CCLR is to possess excellent writing and digital media skills including writing and editing copy for printed and electronic material, internal and external materials such as letters, web brochures and public facing reports, and video and photography for promotional use, etc. The CCLR is to possess a current motor vehicle driver's licence.</p> <p>The CCLR must be available for contact by local residents, key stakeholders and community representatives to answer queries and provide more information or feedback.</p>	Section 4
3.7 - Communications	Describe in the CEMP the processes for external and internal communication in relation to the environmental aspects of the work under the Contract.	Refer to Project CEMPs (SLR, 2019a, SLR 2019b & SLR, 2020)

Specification Number	Relevant Specification Detail	Report Reference
	Make all staff and subcontractors working on the Site aware of these external and internal communications procedures and ensure they are properly trained in their application.	Section 5.3
3.7.1 - Liaison with EPA and/ or other Government Agencies	<p>The CEMP must identify at least two persons (together with their contact telephone numbers) who will be available to be contacted by the EPA and/ or Other Government Agencies on a 24 hour basis and who have authority to take immediate action to shut down any activity, or to effect any pollution control measure, as directed by an authorised officer of the EPA and/ or Other Government Agencies.</p> <p>Immediately notify Goodman of any visit to the Site by the EPA and/ or Other Government Agencies. Prepare a report for each occasion when the Site is visited by the EPA and/ or Other Government Agencies, notifying Goodman of the purpose and outcome of the EPA and/ or Other Government Agencies visit, and of all actions taken by you in response to the EPA and/ or Other Government Agencies visit. Submit this report to Goodman within one working day of the EPA and/ or Other Government Agencies site visit.</p>	Section 4
3.7.2 - Community Liaison and/or Notification 3.7.2.1 New or Changed Construction Activities	<p>Notify local residents and other stakeholders about any new or changed construction activities including changes to bus stop locations and / or timetables which will affect access to their properties/ premises at least five 5 working days before commencing work affecting residents.</p> <p>Such notification must state the nature of the work, why it is necessary, the expected duration, details of any changes to the traffic arrangements or property access and the name and 24 hour contact telephone number of your representative who can respond to any resident/stakeholder concerns.</p> <p>Address any concerns raised by residents in accordance with the complaints procedure as required under Clause 3.7.3 and in accordance with any licence or approval held by you.</p>	Section 5.3.2
3.7.2.2 - Extended Working Hours – No Environmental Protection Licence	<p>Following approval from Goodman on each instance to extend working hours, inform affected residents by letter of the location, nature, scope and duration of the proposed work outside normal working hours, not less than 1 week and not more than 2 weeks, before commencing such work.</p> <p>Include the name and contact telephone number of your representative so that residents can contact him over any concerns about extended working hours and any other information required by any licence or approval held by you.</p> <p>Refer to Practice Note vii of RMS publication “Environmental Noise Management Manual” when preparing the letter and notifying the affected residents.</p>	Section 5.3.2
3.7.3 - Complaints and Enquiries Management	As part of your CEMP, prepare and implement a Construction Complaints and Enquiries Management procedure prior to the commencement of construction. You must follow the Construction Complaints and Enquiries Management procedure for the duration of construction. You must ensure your Construction Complaints and Enquiries Management procedure is consistent with AS 4269 "Complaints Handling". This must include:	Section 5.4

Specification Number	Relevant Specification Detail	Report Reference								
	<p>a) an advertised 24 hour contact telephone number listed with a telephone company and include a contact name;</p> <p>b) a postal address to which written complaints and enquiries can be sent;</p> <p>c) an email address to which electronic complaints and enquiries can be sent;</p> <p>d) a procedure to receive, record, track and respond to complaints and enquiries within a specified timeframe. When a complaint or enquiry cannot be responded to immediately, a follow-up verbal response on what action is proposed must be provided to the complainant/enquirer within two hours during night-time works and 24 hours at other times;</p> <p>e) a process for the provision of a written response to the complainant/enquirer within ten (10) days, if the complaint or enquiry cannot be resolved by the initial or follow-up verbal response;</p> <p>f) a mediation system for complaints unresolved through the above system.</p> <p>Within one working day of receiving a complaint about any environmental or other issue which has the capacity to damage Goodman's reputation, including any pollution incidents, arising from the Work Under the Contract, submit a written report to Goodman detailing the complaint and the action taken to remedy the problem. A final report together with your proposed measures to prevent the recurrence of such incidents must be submitted to Goodman within 5 working days.</p> <p>Keep a register of all complaints or enquiries, which must include the following details:</p> <p>(a) date and time of complaint or enquiry;</p> <p>(b) method by which the complaint or enquiry was made (telephone, letter, meeting, etc);</p> <p>(c) name, address, contact telephone number of complainant (if no such details were provided, a note to that effect);</p> <p>(d) nature of complaint or enquiry;</p> <p>(e) action taken in response including follow up contact with the complainant.;</p> <p>(f) any monitoring to confirm that the complaint or enquiry has been satisfactorily resolved;</p> <p>(g) if no action was taken, the reasons why no action was taken by you.</p>									
3.7.4 - Notification to communities and stakeholders	<p>Notify Goodman in advance of the following construction activities:</p> <table><tr><th>Activity</th><th>Notification required</th></tr><tr><td>Work at night (any time between 6pm and 7am)</td><td>2 weeks where possible, a minimum of 1 week</td></tr><tr><td>Work on weekends (including public holidays)</td><td>2 weeks where possible, a minimum of 1 week</td></tr><tr><td>Major changes to configuration of road traffic</td><td>At least 4 weeks</td></tr></table>	Activity	Notification required	Work at night (any time between 6pm and 7am)	2 weeks where possible, a minimum of 1 week	Work on weekends (including public holidays)	2 weeks where possible, a minimum of 1 week	Major changes to configuration of road traffic	At least 4 weeks	Sections 5.3.2
Activity	Notification required									
Work at night (any time between 6pm and 7am)	2 weeks where possible, a minimum of 1 week									
Work on weekends (including public holidays)	2 weeks where possible, a minimum of 1 week									
Major changes to configuration of road traffic	At least 4 weeks									

Specification Number	Relevant Specification Detail		Report Reference	
	Impacts on pedestrians and/or bicyclists	At least 4 weeks		
	Commencement, rescheduling or completion of key construction activities	At least 4 weeks for commencement and completion, 24 hours' notice for rescheduling		
	Commencement or rescheduling of property adjustment work	At least 2 weeks (4 weeks for businesses)		
	Alteration to property access arrangements	At least 4 weeks		
	Other activities not identified above which may impact on the community stakeholders	At least 24 hours		
	Any form of community protest on site	Immediately		
	In your communications with the community, you must comply with the requirements of the Privacy and Personal Information Protection Act 1998 (NSW).			
	You must not make any undertakings on behalf of Goodman without the prior written approval of Goodman. Comply with the distribution for various notification types as follow:			
	Notification Type	Submission to Goodman		Distribution
	Out of Hours Works / Night Works (refer to clause 3.7.2.3)	Draft a notification letter at least 24 hours prior to the works being carried out		2 weeks where possible, a minimum of 1 week prior to the works being carried out
	Traffic Conditions	Draft letter at least 4 weeks prior to the traffic conditions changing		At least 5 business days prior to the traffic conditions changing if deemed necessary by Goodman
	Individual private properties regarding property adjustments or changes to access (refer to clause 3.7.2.1)	Draft letter at least 4 weeks prior to the works being carried out		At least 2 weeks prior to the works being carried out of access changes
	Access for bridgeworks over the Water NSW pipelines	Final draft of notification at least 4 weeks prior to be works being carried out		At least 4 weeks prior to the works being carried out
	Individual businesses regarding property adjustments or	Draft letter at least 4 weeks		At least 4 weeks prior to the works being

Specification Number	Relevant Specification Detail			Report Reference
	changes to access (refer to clause 3.7.2.1)	prior to the works being carried out	carried out of access changes	

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1.3 Community Communications Strategy Scope

The CCS applies to works undertaken by Goodman and their engaged contractors. The project comprises two components with separate contractors engaged for each:

- Bulk earthworks across the site, civil infrastructure and landscaping; and construction of warehousing within Precinct 1 (Stage 1).
- Construction of the WNSLR including a signalised intersection with Lenore Drive, roundabout with Lockwood Road and roundabout with the new internal Estate Road No. 1, earthworks, civil works, utility works, property adjustments and landscaping. A haul road will be constructed through Oakdale West (referred to as the Construction Access Road) as part of the WNSLR construction to provide access to the WNSLR corridor.

The CCS applies to both components of the project. Separate CEMPs have been prepared to address each component of the project with both CEMPs referencing this CCS. Both components will be serviced by the same project website and phone number to provide a simplified and consistent communications process across the project.

1.4 Project Description

SSD 7348 was approved on 13 September 2019, granting approval for the Stage 1 Development and Concept Approval for the Oakdale West Industrial Estate at Kemps Creek. The development, as approved under SSD 7348 and approved modifications are included in **Table 3** below. Note this CCS has been updated to include Penrith City Council DA20/0843 (approved 15 April 2021) this is now included in **Table 3** also.

Table 3 Previous Approved Development and Modifications

Application Number	Development Description
SSD 7348	<p>A Concept Proposal including:</p> <ul style="list-style-type: none"> • concept layout of 22 warehouse buildings inclusive of dock offices and ancillary offices providing 476,000 square metres of gross lettable area, built over five development stages; • concept layout of development lots, internal roads, drainage, landscaping, noise walls, basins and biodiversity offsets; and • development controls <p>A Stage 1 Development including:</p> <ul style="list-style-type: none"> • bulk earthworks across all five stages including retaining walls and noise walls; • lead in services including but not limited to drainage, power, sewer, water and telecommunications; • service infrastructure to Precinct 1, including drainage, power, sewer, water and telecommunications; • construction and operation of three warehouse buildings inclusive of dock offices and ancillary offices in Precinct 1 (1A, 1B and 1C) providing 118,000 square metres of gross lettable area; • Western North-South Link Road and associated subdivision, basins and drainage; • estate roads 1, 2 and 6 and eastern part of road 7; • landscaping of Stage 1, the western boundary, Western North-South Link Road, estate roads 1, 2 and 6 and the eastern part of road 7, detention basins and the amenity lot • subdivision of Stage 1 lots and road

Application Number	Development Description
	<p>infrastructure including the services (substation) lot;</p> <ul style="list-style-type: none"> • stormwater drainage infrastructure for Lots 2A and 2B and all basins; • temporary works to facilitate construction <p>including but not limited to swales, haul road (construction access), landscaping and basins; and</p> <ul style="list-style-type: none"> • works including construction of traffic signals at Lenore Drive/Grady Crescent/WNSLR intersection.
SSD 7348 MOD 1	Minor amendments to pad levels, stormwater changes and refinement of the infrastructure design of OWE has resulted in the need for minor amendments to the approved masterplan layout and necessitates minor modifications to SSD 7348.
SSD 7348 MOD 2	Modifications to the Oakdale West Estate approved concept plan and Stage 1 development, including master plan layout, increase in gross floor area and expansion of Building 1A (Warehouse building 1A including high-bay (39m) and low-bay (28m) components), changes to internal roads, civil design and building pad levels.
SSD 7348 MOD 3	<p>Amendments to the Concept Proposal:</p> <ul style="list-style-type: none"> • the OWE layout and staging • precinct boundaries • reconfigure estate road layout • basic design and infrastructure (including building height, basins, noise wall, pad levels and GLA) • civil strategy and servicing strategy • development standards applicable to the site including a height increase for Building 2B from 15 m to 28m and applicable noise limits for the development. <p>Amendment to the Stage 1 Development:</p> <ul style="list-style-type: none"> • construction of estate road 03, roundabout, retaining wall, noise wall, basins and infrastructure • subdivision of estate roads • extension to noise wall • change to pad levels, bulk earthworks and landscaping and construction hours.
SSD 7348 MOD 4	Inclusion of an additional lot (Lot 9 DP 1157476) in the subject site and carrying out works in the additional lot to facilitate development of the WNSLR
SSD 7348 MOD 5	<p>Concept Approval</p> <ul style="list-style-type: none"> • Update Condition B10 to reflect the 17m building setback to the Southern Link Road • Update Masterplan Landscape Plan reference to reflect the widened road reserve for the Southern Link Road. <p>Stage 1 Approval</p> <ul style="list-style-type: none"> • Update Architectural, Civil, and Landscaping plans to reflect the proposed design changes on Lot 1. • Change incorrect figure reference in Condition D75A from Figure 7 to Figure 6. • Change in correct figure reference in Condition D75C from Figure 7B to Figure 7 and update this condition D75 C to reflect the revised noise barrier completion date. • Update Condition D93 to reflect revised location for biodiversity planting
SSD 7348 MOD 6	Amendments to the approved Concept Plan and Stage 1 development including changes in Precincts 2A, 2C, 2D, 2E layouts, increase in building height control for Precinct 2A, and inclusion of construction Estate Road 8 as part of Stage 1 development.

Application Number	Development Description
DA21/0440 (Penrith City Council)	Torrens Title Subdivision x 2 Lots, Community Title Subdivision x 3 Lots & Construction of Warehouse Distribution Centre

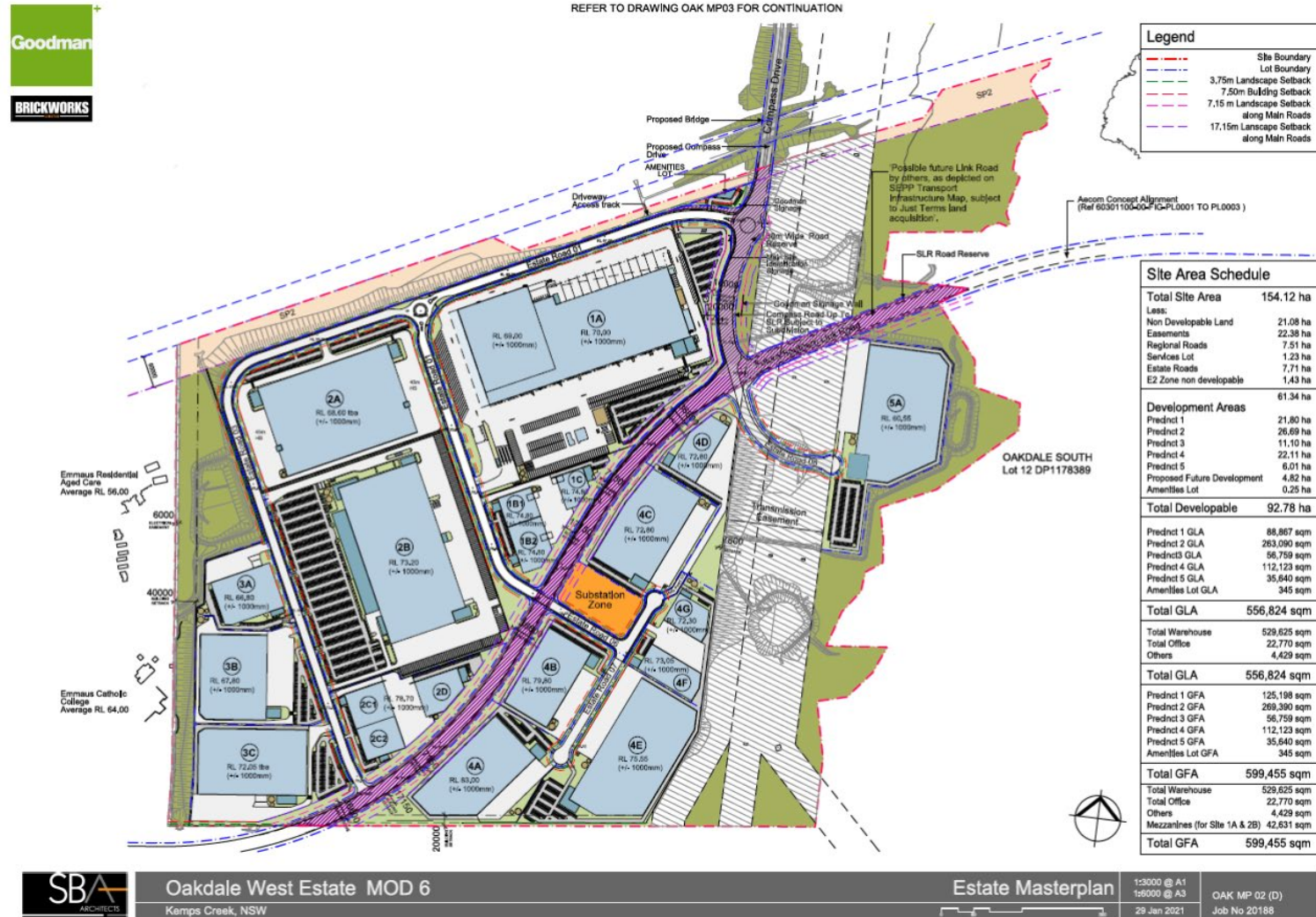
The site works will be undertaken by two contractors, with specific areas of responsibility. Areas of responsibility comprise the bulk earth works, civil infrastructure and services, along with the Stage 1 built form development. A second contractor is engaged for the WNSLR connection north to Lenore Drive and haul road civil works through to the south west corner of the site.

Figure 1 below identifies the site layout, inclusive of both the Stage 1 works and WNSLR.

The project involves construction activities including:

- Site establishment.
- Clearing and stripping.
- Site construction access.
- Demolition of existing buildings.
- Sediment erosion control works.
- Bulk earthworks and haulage of materials.
- Signage and fencing.
- Construction of civil infrastructure including access roads, bridge, drainage, retaining walls and utilities.
- Building construction and landscaping within Stage 1.

Figure 1 Site Layout Inclusive of the WNSLR



Source: SBA Architects

2 Stakeholder Identification

2.1 Community Overview

The site comprises historic agricultural land identified within the Western Sydney Employment Area (WSEA). The site is located across two Australian Bureau of Statistics (ABS) geographical boundaries, with Erskine Park to the north and Kemps Creek to the south. The ABS data below has been used to inform the communications methodology, with appropriate media and language used to reflect the statistical data.

2.1.1 Erskine Park

Erskine Park has a population of 6,436 accommodated in 2,016 dwellings. The median age is 34 compared to a State median of 38. The top ancestry response is Australian, followed by English, Irish, Scottish then Filipino, with languages other than English spoken at home comprising Arabic (2.6%), Tagalog (2.4%), Filipino (1.4%), then Hindi (1.2%).

17.7% of the Erskine Park population completed Year 12 compared to 15.3% for the State, with 66% of the population employed full time compared to a State average of 59.2%. Management comprised the highest percentage of employment, equating to 19.5%, with a median weekly income of \$781, compared to \$664 for the State.

2.1.2 Kemps Creek

Kemps Creek has a population of 2,268 accommodated in 700 dwellings. The median age is 41 compared to a State median of 38. The top ancestry response is Italian, followed by Australian, English, Lebanese then Maltese, with languages other than English spoken at home comprising Italian (10.1%), Arabic (6.4%), Cantonese (4.3%), then Assyrian Neo-Aramaic (3%).

14.2% of the Kemps Creek population completed Year 12 compared to 15.3% for the State, with 58.4% of the population employed full time compared to a State average of 59.2%. Clerical and Administrative Workers comprised the highest percentage of employment, equating to 20%, with a median weekly income of \$588, compared to \$664 for the State.

2.2 Key Stakeholders

The site is located in close proximity to sensitive receivers to the west comprising a Catholic Primary School and College, Anglican School and Age Care facility, along with a number of dwellings to the south. The northern and eastern boundaries comprise environmental corridors and infrastructure. Goodman and their representatives carried out extensive consultation with the community and stakeholders during the development of the EIS (Urbis, 2017). Previously identified stakeholders are categorised in **Table 4** below.

Table 4 Key Stakeholders

Stakeholder Agency/Authority	Interests/Issues
Directly affected stakeholders	<p>Adjacent and directly affected properties, businesses and schools including:</p> <ul style="list-style-type: none"> Residential property – 20 Aldington Road Emmaus Catholic College Trinity Catholic Primary School Emmaus Retirement Village Mamre Anglican School Catholic Healthcare Emmaus Village Little Smarties Early Learning Centre
Local Councils	<ul style="list-style-type: none"> Penrith City Council
State Government Departments and Offices	<ul style="list-style-type: none"> NSW EPA NSW Heritage Office NSW Biodiversity and Conservation Division, Department of Planning Industry and Environment NSW Department of Industry Roads and Maritime Service Transport for NSW NSW Rural Fire Service WaterNSW National Resources Asset Regulator
Utility and Service Providers	<ul style="list-style-type: none"> TransGrid Endeavour Energy WaterNSW Sydney Water Jemena NBN Telstra
Other Interested Parties	<ul style="list-style-type: none"> Registered Aboriginal Parties

Contact details for the key stakeholders listed in **Table 4** above are included in **Appendix B & C**.

2.2.1 Properties receiving adjustments or architectural treatment and mitigating works

Temporary acoustic fencing treatments to assist in acoustic attenuation has been provided to dwellings located on Aldington Road and along the internal road boundaries within the Emmaus Village.

Double glazing has been installed previously within a dwelling located at 20 Aldington Road, Kemps Creek.

3 Key Issues Affecting Stakeholders

3.1 Previous Consultation

Goodman and their representatives have previously undertaken consultation with the community and stakeholders during the development of the project. Details of this consultation were included in the EIS (Urbis, 2017).

A total of 15 submissions were received, including one submission from a Local Council, three submissions from utilities providers, nine submissions from government authorities and two submissions from nearby properties and businesses. In response to the issues raised, Goodman revised several plans and consultant reports, which informed a Response to Submissions Report (Urbis, 2018a).

A further 10 submissions following these revisions were received and further modification to proposed plans and consultant reports were made, with a Supplementary Response to Submissions Report (Supplementary RTS) (Urbis, 2018b) prepared to the satisfaction of the determining authority.

For more information, refer to the Department of Planning and Environment's Major Project Assessments webpage at:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7348v

3.2 Potential Issues and Strategies

Goodman are committed to ongoing proactive consultation with the community and stakeholders while understanding the importance of addressing potential issues and minimising construction related impacts. **Table 5** outlines project issues that are likely or known to be of interest or concern to the community and stakeholders. The table also details communications related measures and strategies that Goodman will undertake to manage and mitigate impacts. The CEMP identifies management and mitigation measures to address those matters extending beyond consultation.

Table 5 Issue Identification and Mitigation

Potential Issue	Potential Key Impacts	Mitigation Strategy
Noise, Vibration and Dust	Truck, machinery and light vehicle movements within, to and from the site, along with civil works have potential to result in negative impacts associated with noise, vibration and dust.	<p>Sensitive receivers and affected stakeholders will be consulted prior to actions likely to generate high levels of noise or vibration in accordance with Section 5.4.2 of this strategy.</p> <p>Up to date information on current and proposed works will be accessible to stakeholders and the wider public on the project web page.</p> <p>Additionally, should any works be likely to generate impacts beyond those identified within the approval's documentation consultation would be undertaken with the applicable managing agency.</p> <p>The CEMP, along with the supporting Dust, Noise and Vibration management plans contain specific measures to manage these impacts. These management plans have been informed by commitments contained within the SSD approvals package, EPA standards and guidelines.</p>
Stormwater, Sediment Control, Erosion, Water Quality	<p>High rainfall events could result in localised flooding.</p> <p>Construction could result in impacts to local water quality, associated with sediment laden runoff.</p>	<p>Surrounding sensitive receivers will be consulted with in relation to adjacent works regarding flooding and water quality issues, with these items discussed at regular meetings, or as they arise via the construction hotline, in accordance with Section 5.4.2 of this Strategy.</p> <p>The CEMP, along with the supporting Soil and Water Management Plan and Water Quality Monitoring Program identify specific mechanisms to manage and mitigate these impacts in accordance with the relevant Penrith City Council standards and commitments within the SSD approvals package.</p>
Construction Traffic	A temporary increase in traffic movements may be experienced associated with the import of fill material, the movement of construction machinery to and from the site and the movement of workers light vehicles.	<p>Sensitive receivers will be notified prior to actions likely to cause traffic disruption in accordance with Section 5.4.2 of this strategy.</p> <p>The CEMP and supporting Construction Traffic Management Plan and Fill Importation Plan identify specific mechanisms to manage and mitigate these impacts.</p>

Potential Issue	Potential Key Impacts	Mitigation Strategy
Local Infrastructure, Utilities and Services	Temporary interruption to existing services including surrounding roads may be required to allow for road connections and the extension of services to the site.	Affected receivers would be notified of possible service disruption via letter box drop and regular meetings, with these disruptions minimised where possible through implementation of the designs identified within the SSD approvals package, measures identified within the CEMP and subsequent engagement with utility providers.
Visual Amenity and Privacy	Visual impacts of earthwork and construction activities, along with potential impacts on the privacy of adjacent sensitive receivers.	Potentially affected receivers would be advised of works with the potential for impact via letter box drop and with these items discussed at regular meetings, or as they arise via the construction hotline, in accordance with Section 5.4.2 of this Strategy. The CEMP identifies specific mechanisms to manage and mitigate these impacts.
Removal of Flora and Fauna	The project approval requires the removal of native and exotic flora and fauna to facilitate the development, with the associated potential for impacts on safety of immediately adjacent receivers, along with biodiversity and visual amenity.	Potentially affected receivers are likely to comprise those receivers immediately adjacent, who are to be advised of works with the potential for impact via letter box drop and regular meetings, or as they arise via the construction hotline, in accordance with Section 5.4.2 of this Strategy. The CEMP, along with the supporting Flora and Fauna Management Plan identify specific mechanisms to manage and mitigate these impacts.
Out of Hours Work	The identified impacts could be magnified due to the works being carried out while surrounding receivers are more likely to be home in the early morning/evening, or asleep, with correspondingly lower background noise levels.	Out of hours works to only be undertaken where necessary and subject to endorsement from the applicable managing agency. Should out of hours work with the potential for impact be proposed the potentially affected receivers would be advised via letter box drop and/ or regular meetings in accordance with Section 5.4.2 of this Strategy.
Aboriginal Heritage	There is the potential for encountering items of Aboriginal Heritage during excavation.	Where topsoil is being disturbed, monitoring of works by appropriately qualified personnel, along with the implementation of an unexpected finds protocol in consultation with Aboriginal Stakeholders and Heritage Division of the Department of Planning, Industry and Environment would be put in place, as discussed within Section 5.4.2 of this document. The CEMP, along with the supporting Unexpected Finds Protocol (Heritage) identify specific mechanisms to manage and mitigate these impacts.

Potential Issue	Potential Key Impacts	Mitigation Strategy
Misinformation and Misunderstanding	<p>Lack of project awareness within the wider community may result in complaints being raised by those unaware of the extent of the approval, with these complaints not directed through the appropriate project hotline.</p> <p>Unauthorised release of project information by the project team to the media, stakeholders or the community has potential to impact on project perception in the community.</p>	<p>The CCS includes measures at Section 5.4.2 to provide regular updates in plain language, supported by imagery to stakeholders and the wider community through public and private media.</p> <p>Contact details including the hotline details will be provided on site, the project web page and in all information issued.</p>
Emergency Event	<p>Unforeseen emergency with the potential to impact on the community either directly, or indirectly through out of hours activities that may generate additional traffic or noise.</p>	<p>The CCS includes measures at Section 5.4.2 to provide updates in emergency events, with the CEMP and Emergency Management Plan identifying specific mechanisms to manage and mitigate these impacts.</p>

4 Communications and Community Liaison Representative

Goodman have appointed a Communications and Community Liaison Representative (CCLR) who will provide the community and stakeholders with a single point of contact for both components of the project, responsible for receiving and disseminating information requests and complaints, along with addressing any interface issues. The CCLR will also facilitate property access should it be required.

The CCLR will be available for contact by local residents and the community at all reasonable times to answer any questions and address any concerns relating to the project. The CCLR will have up-to-date information on:

- Emerging stakeholders
- Planned construction activities
- Planned traffic arrangements, including any temporary traffic switches
- Current landowner discussions with members of staff
- Planned community and stakeholder consultation
- Complaints or enquiries received
- Duties and accountabilities of staff
- Commitments to stakeholders made by Goodman.

The CCLR will be supported by a community consultation team with the following responsibilities:

- Development and delivery of communications strategies, including meeting/workshop facilitation.
- Maintenance of the community and stakeholder consultation register.
- Property owner liaison to address property specific issues.
- Preparation of material and facilitating group and public meetings, workshops and forums for the works.
- Liaison with the construction team to identify items of potential community interest within the upcoming construction program.
- Identifying opportunities for improvement, monitoring community feedback and reporting back to the community via updates to the project web page and at regular community meetings.

The CCLR details are:

- Dan Thompson – Principal Planner – SLR
dthompson@slrconsulting.com 1300 002 887
- Kate McKinnon – Associate – SLR
kmckinnon@slrconsulting.com 1300 002 887

5 Community and Stakeholder Engagement

5.1 Objectives

The key objectives of the strategy are to meet the requirements of condition C19 of SSD7348 and:

- Keep the local community and key stakeholders informed of the commencement and progress of works relating to the OWE project.
- Ensure that enquires and complaints received from the community or key stakeholders are addressed and responded to in a timely and effective manner.
- Inform nearby sensitive receivers in advance of potential disturbances and events likely to cause impact.
- Be good neighbours and members of the local community throughout the duration of the project's lifespan.
- Providing an open two communications channel to allow ongoing, iterative engagement.
- Seek opportunities for improvement throughout the project.

5.2 Approach

Goodman are committed to delivering Community and Stakeholder Engagement outcomes utilising the following principles at the core of their approach:

- **Clarity** – Communication and engagement will be delivered in a clear and easy to understand manner to ensure the project and all associated works are fully understood by the community and stakeholders.
- **Proactivity** – Consultation and notice shall be given prior to the commencement of works or the undertaking of potentially impactful activities.
- **Transparency** – Communication and engagement will be undertaken in an open and transparent fashion, with information shared between the community and the project team.
- **Accessibility** – Information relating to the project will be accessible via a broad range of mediums and will be made readily available to the community and stakeholders. Several avenues of contact shall be provided for the purposes of enquiry or complaint.

In their communications and consultation with the community and key stakeholders, Goodman and their representatives will comply at all times with the requirements of the *Privacy and Personal Information Protection Act 1998 (NSW)* and the *Privacy Act 1988 (Cth)*.

5.3 Communication, Management and Mitigation Tools

A range of tools and techniques will be used to inform and engage with the community and stakeholders regarding the project. **Table 6** below provides an overview of the mechanisms to be utilised to regularly inform and consult with the local community and key stakeholders and measures to mitigate potential issues throughout the development.

Table 6 Communication Management and Mitigation Tools

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
Community Consultation Meetings	Informal meetings, providing a project update and opportunity for the community and stakeholders to discuss recent experiences and upcoming construction activities.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Meetings would initially be held monthly, with the frequency then subject to the level of interest and the construction program.	Project updated including a review of any complaints received and remedial actions, followed by informal discussion with stakeholders and the community.
Community Workshops/Forums	An initial community workshop/forum to be held to identify the overarching construction program and communications protocols, with the event advertised via local newspaper and letter box drop.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Prior to commencement of construction.	The first portion of the workshop is formal, identifying the project program, key personnel and the communications protocol. The second portion is informal with time for stakeholders and the community to ask questions and discuss any concerns.
Consultation Register	Recording community and stakeholder interactions, along with associated remedial actions as required.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Project duration.	The consultation register satisfies the requirements of Condition C19 of SSD7348, and Specification 3.7.3 of the RMS G36 Specifications requiring a Complaints Register. The register will be continually updated to record community engagement, including information provided by Goodman, feedback received, and remedial action undertaken where required.

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
Environmental Review Group Meeting	Meeting of key environmental stakeholders	Environmental Representative	All environmental stakeholders	As required for the project duration	The Environmental Review Group will be briefed on upcoming project tasks with key environmental implications, along with complaints and enquiries received
Individual Community Meetings	Meetings with stakeholders as required to discuss a specific item.	CCLR and Community Consultation Team	The wider community and key stakeholders.	As required.	Details and format subject to the meetings context, with a record of the discussion included in the consultation register and actioned as required.
Agency Meetings	Meetings with agencies to discuss matters relevant to their agency	CCLR and/or Goodman Representative	Relevant Agency	As required.	Meetings will be held as required to address matters relevant to specific agencies including the satisfaction of conditions of consent. These shall be undertaken either directly by Goodman or facilitated by the CCLR at Goodman's discretion.
Newspaper Advertisement	Newspaper Advertisement(s) to be published in The Western Weekender and Mt Druitt – St Marys Standard identifying the project hotline number and web page address.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Prior to the commencement of the initial construction activities on the site and throughout the project prior to known key intrusive events.	An advertisement will be published advising of the commencement date of construction, a brief overview of the project and key contact details for enquires and complaints including the hotline, webpage and email address. Further advertisements will be published where intrusive events are scheduled advising of the nature and date(s) and time(s) of the event and key contact details for enquiries and complaints.

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
Notification Letterbox Drop	Letters would be provided to specific receivers identified as being potentially affected by construction. This could be undertaken in tandem with door knocking.	CCLR and Community Consultation Team	Residents of the immediate area.	As required for the project duration.	Letter box drop details to be recorded in the consultation register. Timing of construction activity to be identified along with relevant contact details.
On Site Signage	Project information details.	CCLR and Community Consultation Team	Visitors to the site and residents of the immediate area.	Project duration.	Contain key project contact details including the hotline and web page, along with relevant project and safety information.
Online Feedback Forms	Simple form allowing rapid ad hoc feedback.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Project duration.	Form available on the Oakdale project web page, with feedback provided to be incorporated into the consultation register and actioned as required.
Project Information and Complaints Number	Project hotline available for 24 hours recording of project feedback.	CCLR and Community Consultation Team	The wider community and key stakeholders.	Project duration.	Hotline number located on site signage, the web page and all project information material. Feedback provided to be incorporated into the consultation register and actioned as required.
Staff and Visitor Induction and Training	Project information details.	Site Forman and Management Staff	Staff and visitors to the site.	Project duration.	Key project safety information, contact details, emergency procedures and site information.
Toolbox and Prestart Meetings for WNSLR and Stage 1 Infrastructure Works	Project information details.	Site Forman and Management Staff	Staff and visitors to the site.	Project duration.	Task specific safety information, emergency procedures and relevant project updates. All staff and subcontractors to be made aware of external and internal communications procedures

Tool/ Technique	Description	Person Responsible	Audience	Frequency/timing	Specifications
Text Message and Email Alerts	Text messages providing prompt updates	CCLR and Community Consultation Team	Residents of the immediate area.	As required for the project duration.	Text Messages and email alerts will provide important information at short notice to potentially affected receivers. Text message and email details to be recorded in the consultation register.
Website	A web page is established at: oakdaleopportunities.com	CCLR and Community Consultation Team	The wider community and key stakeholders.	Project duration.	Website address and phone number located on site signage and all project information material. Web page to provide contact details including hotline, email address and enquiry form, as well as project updates, along with environmental performance monitoring. Refer to Section 5.3.1 below for further details.

5.3.1 Project Website

Goodman has established a website for the project (oakdaleopportunities.com). The website was established prior to the commencement of works and will be maintained during the delivery of the project until the completion of all works.

The following information will be updated monthly or more frequently when necessary and made available on the website as required by SSD 7348 Condition D143:

- A copy of the documents listed in Condition D2 of the SSD Consent (SSD 7348).
- All current statutory approvals for the Development.
- All approved strategies, plans and programs required under conditions of the SSD Consent (SSD 7348).
- The proposed staging plans for the Development if the construction, operation or decommissioning of the Development is to be staged.
- A comprehensive summary of the monitoring results of the Development, reported in accordance with the specifications in any conditions of the SSD Consent (SSD 7348), or any approved plans and programs.
- A summary of the current stage and progress of the Development.
- Contact details (including email address, phone number and postal address) to enquire about the Development or to make a complaint.
- A complaints register, updated monthly and details of the complaints handling protocol for the project.
- The Compliance Report of the Development.
- Audit reports prepared as part of any monitoring or environmental audit of the Development and the Applicant's response to the recommendations in any audit report.
- Any other matter required by the Planning Secretary.

5.3.2 WNSLR Works Liaison and Notification Requirements

Where works relate to the construction of the WNSLR, the RMS QA Specification G36 – Environmental Protection sets out a number of specifications and measures addressing notification to the community and affected stakeholders. In order to comply with these requirements, Goodman shall undertake the following activities:

- Goodman shall notify local residents and other stakeholders about any new or changed construction activities including changes to bus stop locations and / or timetables, which will affect access to their properties/ premises at least five 5 working days before commencing work affecting residents.
- Such notification will state the nature of the work, why it is necessary, the expected duration, details of any changes to the traffic arrangements or property access and the name and 24-hour contact telephone number of the CCLR who can respond to any resident/stakeholder concerns.
- Any complaints shall be addressed in accordance with the complaint's procedure outlined in Section 5.4 of this strategy.
- Where extended working hours are proposed, the contractor shall inform Goodman who will subsequently inform residents of the proposed work outside normal working hours in accordance with the requirements outlined in this strategy. Written approval from the Planning Secretary will be sought for out of hours work.

- Within one working day of receiving a complaint about any environmental or other issue which has the capacity to damage Goodman's reputation, including any pollution incidents, arising from the Work Under the Contract, a written report to Goodman shall be submitted detailing the complaint and the action taken to remedy the problem. A final report together with proposed measures to prevent the recurrence of such incidents shall be submitted to the Goodman within 5 working days.

The contractor shall adhere to set timeframes for notification of Goodman and distribution of notice to the community and stakeholders for activities related to the WNSLR. This commitment is outlined in **Tables 6 and 7** below:

Table 7 Notification Requirements for Goodman prior to Construction Activities

Activity	Notification required
Work at night (any time between 6pm and 7am)	2 weeks where possible, a minimum of 1 week
Work on weekends (including public holidays)	2 weeks where possible, a minimum of 1 week
Major changes to configuration of road traffic	At least 4 weeks
Impacts on pedestrians and/or bicyclists	At least 4 weeks
Commencement, rescheduling or completion of key construction activities	At least 4 weeks for commencement and completion, 24 hours' notice for rescheduling
Commencement or rescheduling of property adjustment work	At least 2 weeks (four weeks for businesses)
Alteration to property access arrangements	At least 4 weeks
Other activities not identified above which may impact on the community stakeholders	At least 24 hours
Any form of community protest on site	Immediately

Table 8 Notification Requirements for works

Notification Type	Submission to Goodman	Distribution to Community and Stakeholders
Out of Hours Works / Night Works	Draft a notification letter at least 24 hours prior to the works being carried out	2 weeks where possible, a minimum of 1 week prior to the works being carried out
Traffic Conditions	Draft letter at least 4 weeks prior to the traffic conditions changing	At least 5 business days prior to the traffic conditions changing if deemed necessary by Goodman
Individual private properties regarding property adjustments or changes to access	Draft letter at least 4 weeks prior to the works being carried out	At least 2 weeks prior to the works being carried out of access changes
Access for bridgeworks over the Water NSW pipelines	Final draft of notification at least 4 weeks prior to be works being carried out	At least 4 weeks prior to the works being carried out
Individual businesses regarding property adjustments or changes to access	Draft letter at least 4 weeks prior to the works being carried out	At least 4 weeks prior to the works being carried out of access changes

5.3.3 Communication with Sensitive Receivers' Procedure

During the course of works the CCLR will consult with nearby sensitive receivers listed below when necessary to advise of and/or schedule events and activities with the potential to cause impact such as high noise generating works, vibration intensive activities or traffic management disruptions.

The CCLR shall also consult with sensitive receivers to arrange respite period offerings where high-noise works are predicted to exceed 75dBA for residential receivers and 65dBA for schools and the retirement village. Respite offers will also be considered for high vibration works where the works are undertaken within the human comfort minimum working distances for all sensitive receivers.

Sensitive receivers are considered to include adjacent and directly affected properties, businesses and schools including:

- Residential properties located along Aldington Road (As shown in **Appendix A**).
- Emmaus Catholic College, Trinity Primary School and Emmaus Retirement Village.

Where development works have the potential to impact on sensitive receivers or respite offerings are proposed the CCLR will implement the sensitive receiver procedure outlined in **Table 9** below:

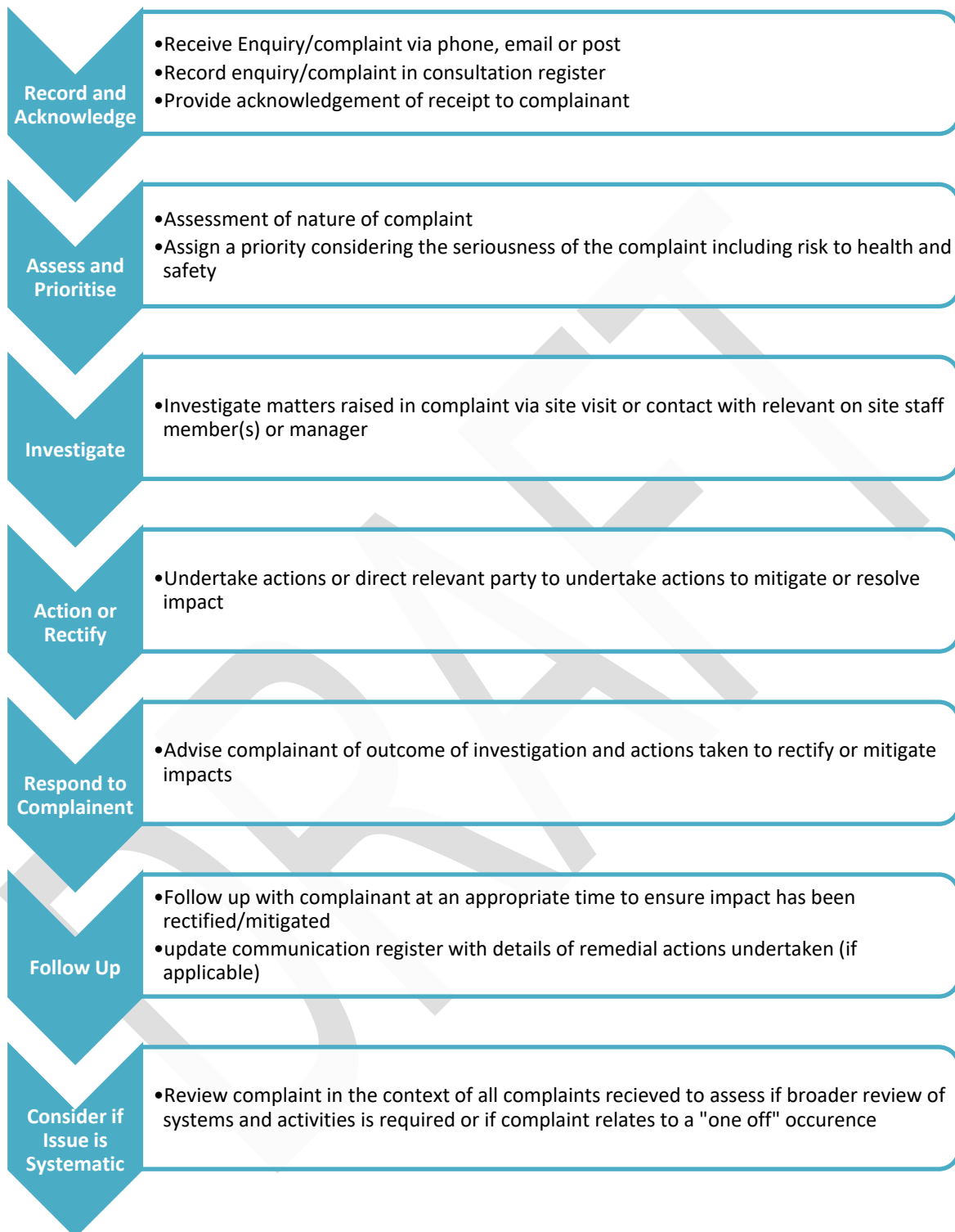
Table 9 Sensitive Receiver Procedure

Potential Impact or Issue	Method of Contact/Consultation	Timeframe
High noise generating work	Email, Text Message or Letterbox drop – notifying of expected commencement, duration and affected hours	No less than 24 hours prior to the activity
Vibration intensive activity	Email, Text Message or Letterbox drop – notifying of expected commencement, duration and affected hours	No less than 24 hours prior to the activity
Traffic management disruption	Email, Text Message or Letterbox drop – notifying of expected commencement, duration and affected hours Variable Message Signs	No less than 24 hours prior to the activity
Respite offerings	Email or phone calls will be undertaken to determine whether respite is required and appropriate scheduling and duration for respite periods	No less than 24 hours prior to the activity

5.4 Complaints Procedure

Goodman are committed to the timely and effective management of enquiries and complaints relating to construction activities for the OWE. To this end, the following complaints procedure shown in **Figure 2** will be adhered to, enabling the receipt and recording of enquiries and complaints, along with the methods of response and resolution of issues raised.

Figure 2 Complaints Handling Procedure



5.4.1 Protocol for Receiving and Recording Enquiries and Complaints

Goodman have established a project email and postal address for the receipt of enquiries and complaints relating to the development. The email and postal accounts will be regularly monitored to receive and respond to customer feedback and enquiries. The community information line (1300002887) is to be established from the commencement of works. The CCLR and community consultation team will manage the information line from the commencement of the project until the completion of works. Where calls are received during hours of construction work (including out of hours works) all calls will be answered by the CCLR. Where calls are received outside of hours of construction works the caller will be invited to leave a message. All approaches from the community and stakeholders will be registered in the project's consultation register. The facilities established for receiving enquiries and complaints about the project during construction are shown in **Table 10**.

Table 10 Enquires and Complaints Facilities

Facility	Purpose	Detail
Community Information Line	A contact phone number and associated contact name for questions/enquiries and the lodgement of complaints relating to the development.	1300 002 887
Email Address	An email address accessible via email and online enquiry form for questions/enquiries and the lodgement of complaints relating to the development.	community.oakdalewest@goodman.com
Postal Address	A postal address for the receipt of questions/enquiries and the lodgement of complaints relating to the development.	Level 17, 60 Castlereagh Street, Sydney, NSW 2000
In person verbal	Verbal enquiries and complaints can be made formally during community meetings or may be made informally where staff interact with members of the public in informal settings.	Verbal in person comments and submissions

Goodman have established a consultation register to record all complaints and enquiries received by the above means. The consultation register will be maintained on a regular basis and used to inform discussion at monthly community consultation and project team meetings. The consultation register shall include the following details for all complaints or enquiries received:

- Date and time of complaint or enquiry.
- Method by which the complaint or enquiry was made.
- Name, address, contact telephone number of complainant (if no such details were provided, a note to that effect).
- Nature of complaint or enquiry.
- Action taken in response including follow up contact with the complainant.
- Any monitoring to confirm that the complaint or enquiry has been satisfactorily resolved.
- If no action was taken, the reasons why no action was taken by you.

An excerpt of the consultation register is included at **Appendix B**.

5.4.2 Protocol for Responding to and Resolving Enquiries and Complaints

Where a complaint or enquiry is received the CCLR will attempt to provide an immediate response if possible via phone or email. Where a complaint or enquiry cannot be responded to immediately the CCLR will assess and prioritise the submission and provide the complainant or enquirer with a follow up verbal response on what action is proposed within two hours during construction works (including night and weekend works) and 24 hours at other times. Where a complaint or enquiry cannot be resolved by the initial or follow-up verbal response, a written response will be provided to the complainant or enquirer within ten days.

In the event of a complaint, the CCLR will assess whether the complaint is founded or unfounded and if necessary delegate the remediation of the issue to the project manager for action or to the relevant project engineer. The CCLR will oversee the rectification of the issue and respond to the complainant once the issue has been resolved.

In the event of an enquiry, the CCLR will endeavour to provide an immediate response where they are in possession of the relevant information. Where more specific or detailed information is required, the CCLR will liaise with the project manager or relevant project engineer to obtain the information required to respond to the enquiry and provide this information to the enquiring party once in hand.

Where the above protocol is unsuccessful in resolving complaints, mediation may be undertaken at the discretion of Goodman to facilitate negotiation between affected parties. This shall be performed by an independent person (mediator) appointed by Goodman.

5.4.3 Unreasonable Complainant Conduct

The NSW Ombudsman provides guidelines which define unreasonable complaint conduct as:

“...any behaviour by a current or former complainant which, because of its nature or frequency, raises substantial health, safety, resource or equity issues for the parties to a complaint.”

Whilst it is not envisioned that the project will attract complainants that exhibit this behaviour, where a complainant is seen to potentially have a negative impact on the CCLR or support team's health, safety, resourcing or equity of service, Goodman shall adhere to the procedures and practices outlined within the NSW Ombudsman's *“Managing Unreasonable Complainant Conduct Practice Manual 2nd Edition”*.

5.4.4 Contingency Management Plan

In accordance with Condition D118(d) of the SSD 7348 consent, a contingency management plan has been developed to outline the management of unpredicted impacts and their consequences. Details of these events, their severity and response are detailed in **Table 11** below:

Table 11 Contingency Management Plan

Key Element	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Submission	Trigger	General feedback/comment (no complaint or query).	Enquiry made by formal or informal channels.	Complaint made by formal or informal channels.
	Response	Acknowledge receipt and record in consultation register. No further response required.	Acknowledge receipt and record in consultation register. Direct enquiry to relevant person for actioning and response within 5 days.	Acknowledge receipt and record in consultation register. Respond to complaint immediately if possible, if not direct enquiry to relevant person for actioning and provide complainant with a follow up verbal response on what action is proposed within two hours during construction works (including night and weekend works) and 24 hours at other times.
Media	Trigger	Positive story in print, online, radio or television.	Neutral or advisory story in print, online, radio or television.	Negative story in print, online, radio or television.
	Response	Record in consultation register and advise Goodman media/marketing team. No further response required.	Record in consultation register and advise Goodman media/marketing team. No further response required.	Record in consultation register and advise Goodman Project Team for further action and response. Contact relevant person for actioning and response within 48 hours
Unscheduled Event	Trigger	Event occurring outside of plan or schedule without impact or potential impact.	Event occurring outside of plan or schedule with minor impact or potential impact.	Event occurring outside of plan or schedule with major impact or potential impact.

Key Element	Trigger/ Response	Condition Green	Condition Amber	Condition Red
	Response	No response required. Identify opportunities for improvement to manage potential future events.	Contact relevant person for actioning and response within 48 hours. Acknowledge in consultation register. Identify opportunities for improvement to manage potential future events.	Contact relevant person for actioning and response immediately. Acknowledge in consultation register. Identify opportunities for improvement to manage potential future events.
Political Interest	Trigger	General or non-specific enquiry by Local, State or Federal political representative.	Enquiry or complaint relating to minor issue by Local, State or Federal political representative.	Enquiry or complaint relating to major issue by Local, State or Federal political representative.
	Response	Community consultation team in conjunction with Goodman Project Team to prepare and provide response or assign response task to relevant staff member for comment. Record in consultation register.	Community consultation team in conjunction with Goodman Project Team to prepare and provide response within 48 hours. Record in consultation register.	Community consultation team in conjunction with Goodman Project Team to prepare and provide response within 24 hours. Record in consultation register.

6 Monitoring, Reporting and Evaluation

Monitoring, Reporting and Evaluation will be undertaken to measure the effectiveness of community consultation, stakeholder engagement and responses to complaints and enquiries. Opportunities for improvement will be sought on a continuous basis, with an annual review of the CCS undertaken to formalise these incremental improvements.

6.1 Monitoring

The performance of this strategy will be monitored monthly based upon an assessment of the following data:

- Total number of monthly complaints.
- Review of number of monthly complaints relating to lack of consultation/misinformation/confusion.
- Review of number of monthly enquiries relating to information previously disseminated to the community through other channels.
- Monthly review of enquiries or complaints of a similar nature or theme indicative of underlying systematic issues with the project or communication strategy.
- Response timeframes, including initial acknowledgement and the response to enquiries or remediation of issue(s).

The parameters of monitoring and performance criteria are outlined in **Table 12** below.

Table 12 Summary of Monitoring Data

Monitoring Parameter	Rationale	Performance Criteria	Monitoring Frequency
Total number of complaints	The number of complaints received in total is indicative of the community's satisfaction with the project.	A reduction in number of complaints, baseline determined by number of complaints received in preceding months.	Monthly
Number of complaints relating to lack of consultation/misinformation/confusion	Number of complaints relating to lack of consultation/ misinformation/ confusion is indicative of the effectiveness and clarity of communication tools utilized.	A reduction in number of complaints, baseline determined by number of complaints received in preceding month.	Monthly
Number of enquiries relating to information previously disseminated	Number of enquiries relating to information previously disseminated is indicative to the effectiveness of the delivery of information.	A reduction in number of enquiries, baseline determined by number of enquiries received in preceding month.	Monthly
Number of complaints/enquiries within defined categories based on theme or subject	A large number of complaints or enquiries relating to a single issue may be indicative of a systematic issue to be addressed as a priority.	A reduction in number of complaints, baseline determined by number of complaints received in preceding month.	Monthly

Monitoring Parameter	Rationale	Performance Criteria	Monitoring Frequency
Response timeframes	Response to enquiries and complaints should be timely to ensure effective responsiveness and rectification of issues and to encourage trust within the community.	Enquiries and complaints acknowledged within 48 hours. Urgent enquiries and complaints responded to within 48 hours of receipt, non-urgent enquiries and complaints responded to within 5 days.	Monthly

6.2 Reporting

Reporting shall be undertaken annually, with a monthly summary of results provided to the approved Environmental Representative (ER) in accordance with Conditions D127(e) and D128 of SSD77348 and the broader project team during monthly project team meetings. The monthly community consultation summary will be made publicly available on the project web page and shall include:

- A summary of community consultation activities undertaken within the preceding month
- A summary of community consultation activities proposed within the following month
- A summary of all enquiries and complaints received within the preceding month, including details of response and/or remediation activities.

Within three months of the submission of documentation identified by Condition D133 this CCS would be reviewed for compatibility.

6.3 Evaluation

Where performance criteria are not being satisfied, review of this strategy and its implementation will be undertaken by the Community Consultation Team and changes to the strategy may be made to rectify the short fall. Where systematic issues are identified associated with construction activities, the project manager will be advised and immediate rectification of the issue will be requested.

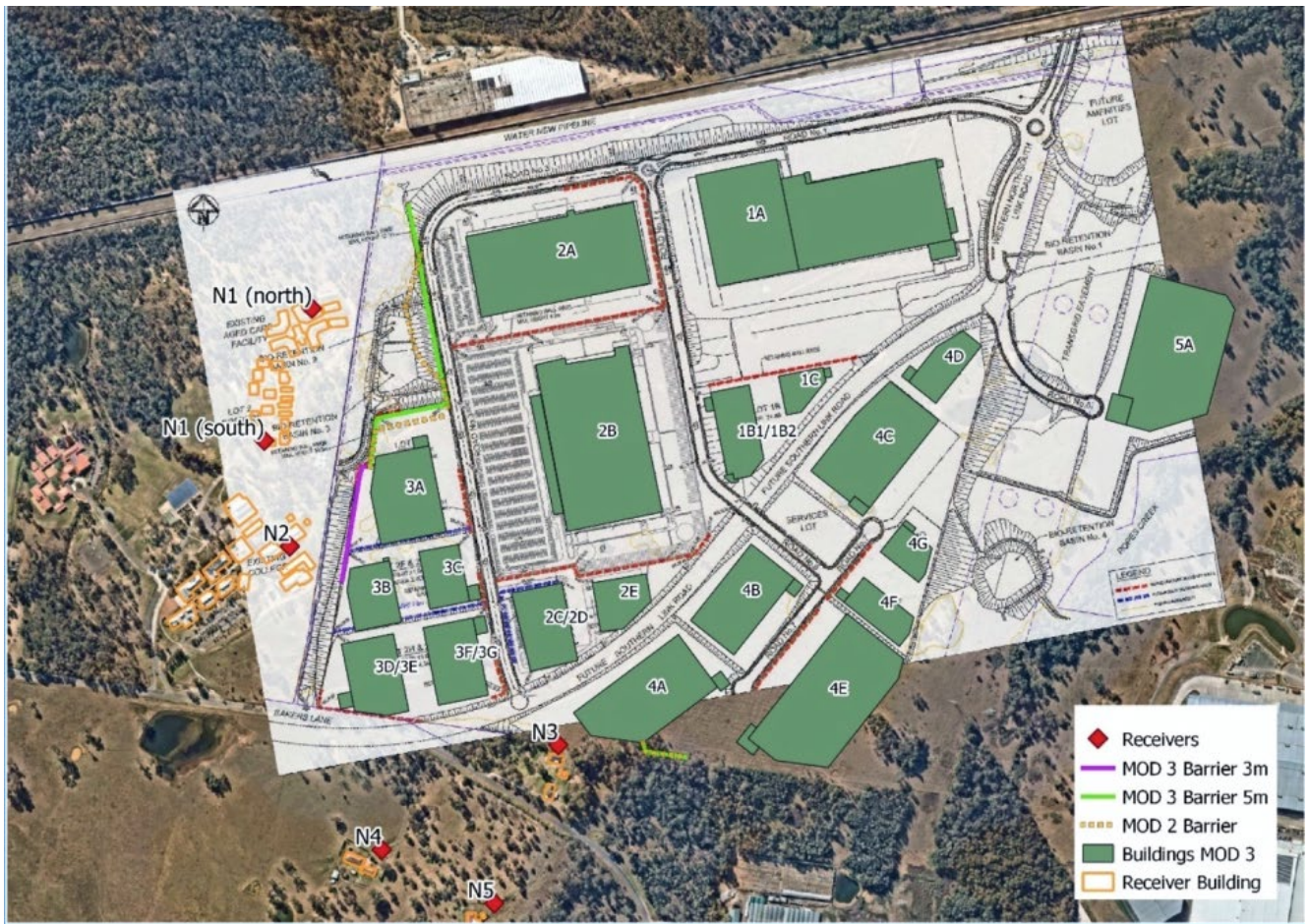
7 References

- NSW Ombudsman (2012) *Managing Unreasonable Complainant Conduct Practice Manual 2nd Edition*
- SLR Consulting Australia (2019) *Construction Environmental Management Plan*
- SLR Consulting Australia (2020) *Construction Environmental Management Plan*
- Urbis (2017) *Environmental Impact Statement – Oakdale West Estate (State Significant Development Application Ref 7348)*
- Urbis (2018) *Response to Submissions (A)*
- Urbis (2018) *Response to Submissions (B)*

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APPENDIX A

Sensitive Receiver Map



APPENDIX B

Key Stakeholder Contact Details

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Contact Name/Organisation	Contact Details
The Residents – 20 Aldington Road	
Emmaus Catholic College	Harvey Anchique - Business Manager P: (02) 9670 8300 F: (02) 9834 3403 M: 0428 063 119 E: hanchique@parra.catholic.edu.au
Trinity Catholic Primary School	Catherine Hey - Principal, chey@parra.catholic.edu.au, 02 8856 6200
Mamre Anglican School	Cathie Graydon – Principal (02)98341881, cathie.graydon@mamre.nsw.edu.au Marijana Motrivic, Business Manager 02, 8073 6908 marijana.mitrovic@mamre.nsw.edu.au,
Catholic Healthcare Emmaus Village	James Byrne Building Services Manager, M. 0434604370, jbyrne@chcs.com.au Kate Todd, Emmaus Village, ktodd@chcs.com.au, Ph: 02 8804 0200
Little Smarties Learning Centre	61 2 9834 2155 kempscreek@littlesmarties.com.au
Penrith City Council	61 2 4732 7777 council@penrith.city
NSW EPA	131 555 info@epa.nsw.gov.au
NSW Biodiversity and Conservation Division, Department of Planning Industry and Environment	61 2 9995 5000 info@environment.nsw.gov.au
NSW Department of Industry	61 2 9338 6600
Roads and Maritime Service	13 22 13
Transport for NSW	61 2 8202 2200
NSW Rural Fire Service	61 2 8741 5555 webmaster@rfs.nsw.gov.au
WaterNSW	1300 662 077 Customer.Helpdesk@waternsw.com.au
National Resources Asset Regulator	61 2 9338 6600
TransGrid	61 2 9284 3000
Endeavour Energy	131 081
Sydney water	13 20 92
Jemena	1300 536 362
NBN	1300 687 626
Telstra	13 22 00
Registered Aboriginal Parties	See Appendix C

APPENDIX C

Registered Aboriginal Parties

Name	Organisation	Address	Suburb	State	Postcode	Email	Phone	Notes
Caroline Hickey	A1 Indigenous Services					cazadirect@live.com	Mobile: 0411 650 057	
Andrew Williams	Aboriginal Archaeology Service Inc.	PO Box 6283	Rouse Hill	NSW	2155	AAS.info@bigpond.com	Mobile: 0490 126 040	
Amanda Hickey	Amanda Hickey Cultural Services	41 Dempsey St	Emu Heights	NSW	2750	amandahickey@live.com.au	Mobile: 0434 480 588	
Karia Lea Bond	Badu	11 Jeffery Pl	Morya	NSW	2537	baduclhts@gmail.com	Mobile: 0476 381 207	
Sell Storer	Biamanga					biamangaclhts@gmail.com		
Richard Andy	Bidawal CHTS					bidawalclhts@gmail.com		
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APPENDIX D

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APPENDIX F

Construction Air Quality Management Plan

DRAFT

OAKDALE WEST INDUSTRIAL ESTATE - LOT 3B

Construction Air Quality Management Plan

Prepared for:

Goodman Property Services (Aust) Pty Ltd
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1-11 Hayes Road
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PREPARED BY

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goodman Property Services (Aust) Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.30081-3B-R21-v1.1	11 October 2021	Varun Marwaha Sahar Bagheri	Varun Marwaha	Varun Marwaha
630.30081-3B-R21-v1.0	16 September 2021	Varun Marwaha Sahar Bagheri	Varun Marwaha	Varun Marwaha

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1 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Goodman Property Services (Aust) Pty Ltd (Goodman) to prepare a Construction Air Quality Management Plan (CAQMP) for Lot 3B (Development Site) within Precinct 3 of the Oakdale West Estate (OWE) located in the western Sydney area of Erskine Park, New South Wales (NSW).

The CAQMP for construction of the OWE was finalised by SLR in January 2020 (SLR 2020), which was required under Condition D100 of Development Consent for State Significant Development 7348 (SSD 7348).

Whilst Development Consent SSD 7348 has been granted for the OWE 'Concept Proposal' and 'Stage 1 Development', this CAQMP is specifically for the construction of Lot 3B and generally adheres to the requirements stipulated in the overarching OWE CAQMP.

1.1 Development Overview

The OWE is a proposed regional warehouse and distribution hub, located at Kemps Creek within the Penrith Local Government Area (LGA) and forms part of the broader Oakdale Industrial Precinct located within the Western Sydney Employment Area (WSEA).

The OWE is bound to the north by the Water NSW Pipeline and to the east by the Ropes Creek riparian corridor. Land along the eastern boundary of the site is also affected by a transmission easement associated with Transgrid infrastructure. To the east of the site is Goodman's Oakdale South Estate. Emmaus Catholic College and Emmaus Retirement Village are located to the west of the site. Other boundaries interface with adjoining rural lands accommodating a mix of rural-residential and agricultural uses (see **Figure 1**).

The Development Consent for the OWE was granted for the OWE 'Concept Proposal', 'Stage 1 Development' and all subsequent development stages. The Concept Proposal essentially comprises a 'Master Plan' to guide the staged development of OWE and core development controls that will form the basis for design and assessment of future development applications for the site. It includes:

- Establishing primary site access, road layouts (including internal road network and connections to the external road network), developable and non-developable lands, biodiversity offsets, indicative development stages and development controls for the future development of the site;
- Stage 1 Development of the Estate including:
 - Estate Works, including site preparation, bulk earthworks and retaining walls, catchment level stormwater infrastructure, trunk services connections and utility infrastructure, roads and access infrastructure associated with Stage 1 and subdivision in Stage 1 development works;
 - Precinct Development, including construction, fit out and use of warehouse buildings within Precinct 1, detailed earthworks, on lot stormwater, services and utility infrastructure and construction of industrial/warehouse buildings;
 - Construction of a new regional road known as the Western North South Link Road (WNSLR) connecting to Lenore Drive to provide the primary access to the site; and
 - Western boundary landscaping.

This CAQMP has been prepared to cover the construction of Lot 3B by Construction Contractor. Lot 3B is located in Precinct 3 of the OWE as shown in **Figure 2**. At the time of writing this report, a Construction Contractor has yet to be engaged.

For the purposes of this document, the development is described in *Environmental Impact Statement, Oakdale West Estate - State Significant Development Application* (EIS) prepared by Urbis (2017), including all specialist assessments and other appendices.

The development of Lot 3B will proceed once approval is gained from the Department of Planning under SSD7348 MOD 7 and Penrith City Council under Development Application (DA) DA21/0440.

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Figure 1 Regional Locality

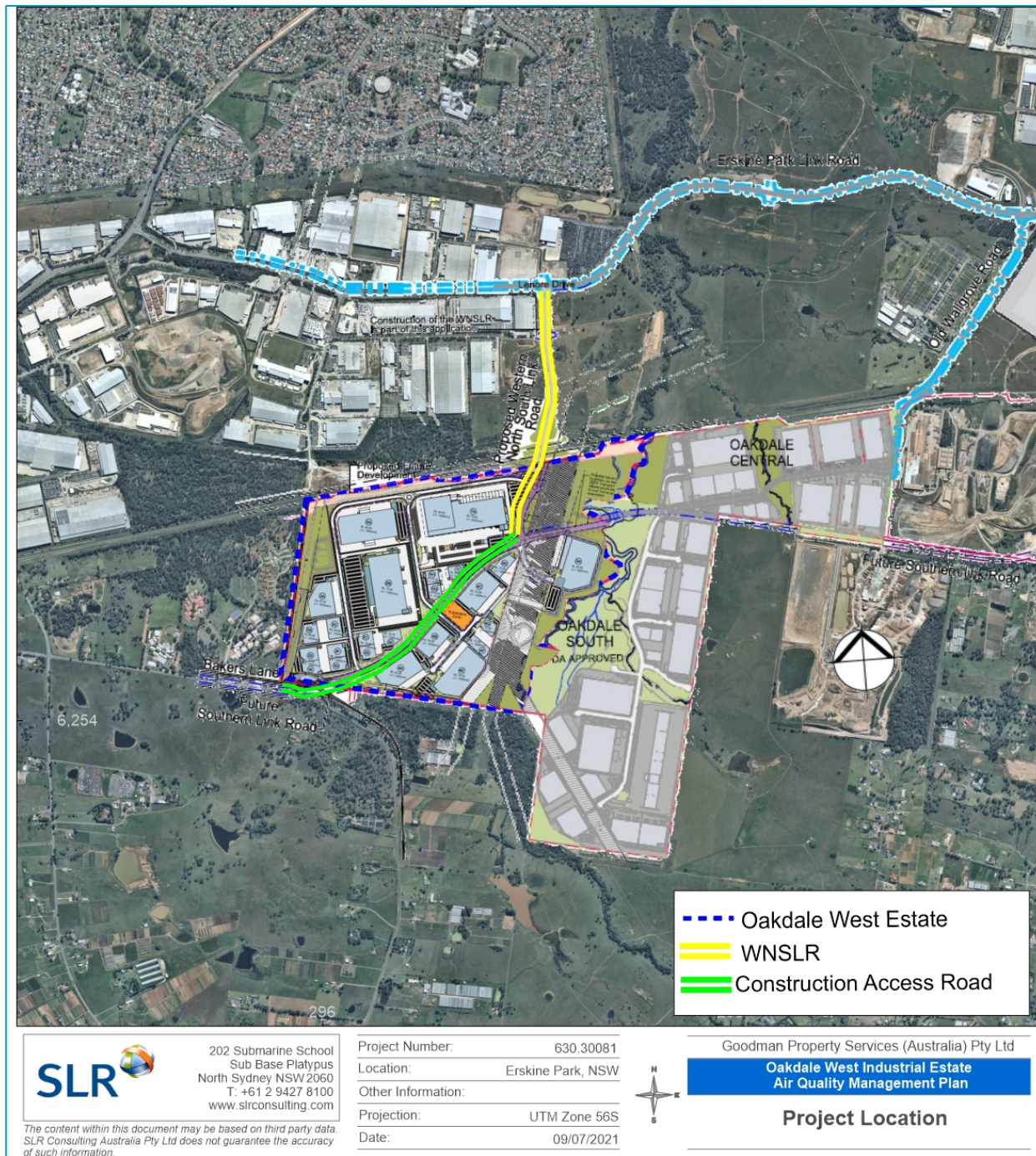
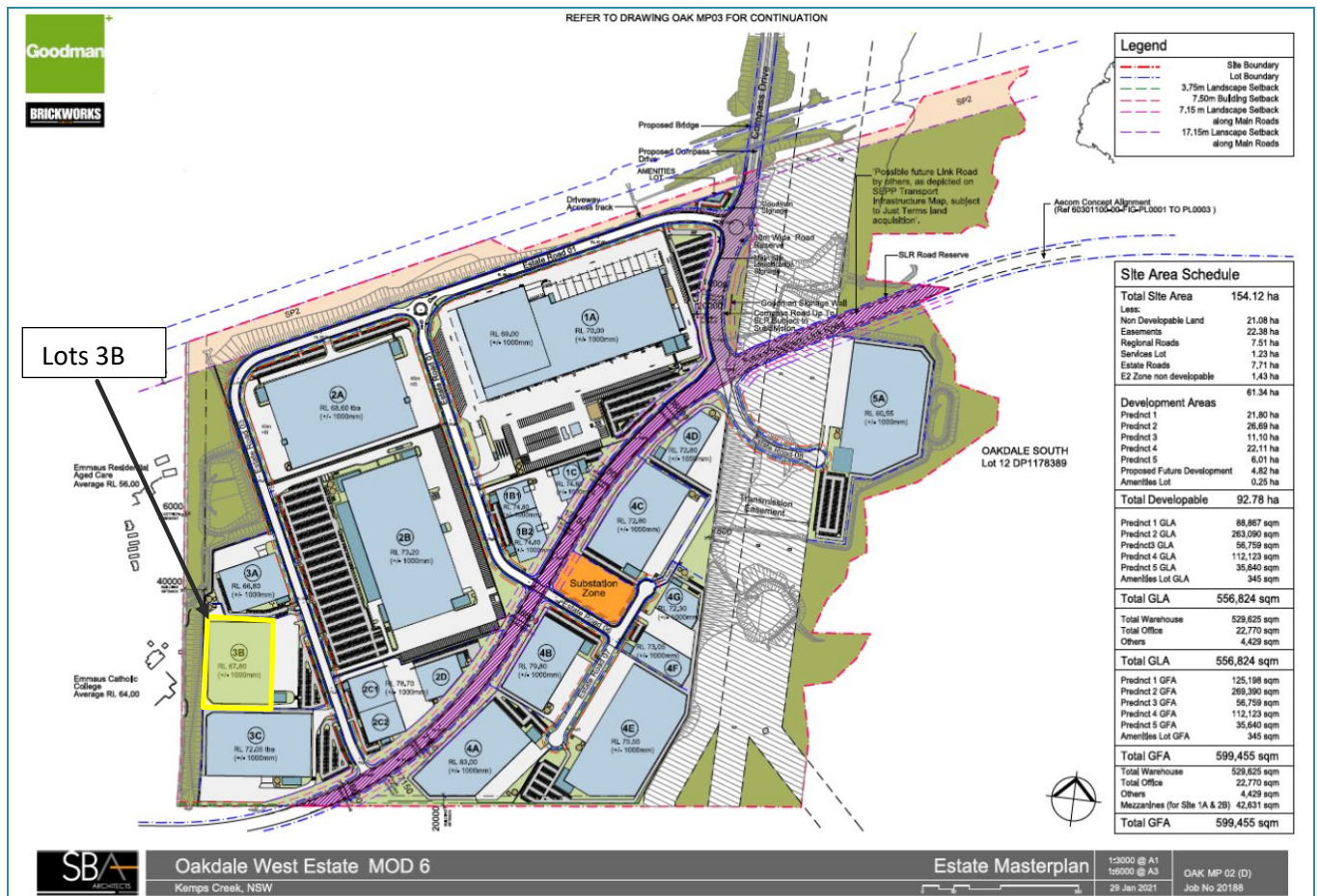


Figure 2 Oakdale West Masterplan



1.2 Objectives of the CAQMP

The objectives of this CAQMP are as follows:

- Maintain acceptable levels of amenity for surrounding residents during construction activities in Lot 3B;
- Ensure compliance with relevant ambient air quality criteria for particulate matter at surrounding receptor locations;
- Maintain an effective response mechanism to deal with issues and complaints relating to dust emissions from the construction works;
- Outline roles and responsibilities in relation to the management of dust emissions during construction; and
- Promote environmental awareness among employees and subcontractors.

2 Statutory Requirements

The Development Consent (SSD 7348) requirements stipulated for the construction of Lot 3B, and where they have been addressed in this CAQMP, are shown in **Table 1**.

Table 1 Assessment against SSD 7348 Conditions

Conditions	Response / Section Reference
Condition D98 (Dust Minimisation)	
The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.	Section 8
Condition D99 (Dust Minimisation)	
During construction of Stage 1, the Applicant must ensure that: <ul style="list-style-type: none"> (a) exposed surfaces and stockpiles are suppressed by regular watering and or other dust suppression methods; (b) all trucks entering or leaving the Site with loads have their loads covered; (c) trucks associated with Stage 1 do not track dirt onto the public road network; (d) public roads used by these trucks are kept clean; and (e) land stabilisation works are carried out progressively on site to minimise exposed surfaces. 	Section 8
Condition D100 (Construction Air Quality Management Plan)	
(a) be prepared by a suitably qualified and experienced person(s)	2-page CV of the author is attached in Appendix D
(b) detail and rank all emissions from all construction activities, including particulate emissions	Section 4 and Section 7
(c) describe a program that is capable of evaluating the performance of the construction and determining compliance with key performance indicators	Section 10
(d) identify the control measures that will be implemented for each emission source	Section 8
(e) nominate the following for each of the proposed controls: <ul style="list-style-type: none"> - key performance indicator - monitoring method - location, frequency and duration of monitoring - record keeping - complaints register - response procedures - compliance monitoring 	Section 8 and Section 10
Condition D118 (Management Plan Requirements)	
(a) details of: <ul style="list-style-type: none"> i. the relevant statutory requirements (including any relevant approval, licence or lease conditions); ii. any relevant limits or performance measures and criteria; and iii. the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, Stage 1 or any management measures; 	Section 5.2

Conditions	Response / Section Reference
(b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Section 8
(c) a program to monitor and report on the: <ul style="list-style-type: none"> i. impacts and environmental performance of Stage 1; and ii. effectiveness of the management measures set out pursuant to paragraph (b) above; 	Section 10
(d) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Section 11
(e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time;	Section 10 and Section 13
(f) a protocol for managing and reporting any: <ul style="list-style-type: none"> i. incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria); ii. complaint; iii. failure to comply with statutory requirements; and 	Section 9 and Appendix C See overarching CEMP
(g) a protocol for periodic review of the plan.	Section 13

The construction and operation of Lot 3B at Oakdale West is also subject to DA21/0440, submitted to Penrith City Council. There are no air quality specific requirements stipulated in DA21/0440, however the general environmental protection measures are incorporated within this CAQMP and if needed the CAQMP will be updated to incorporate the relevant conditions from DA21/0440 when approved.

3 Project Overview

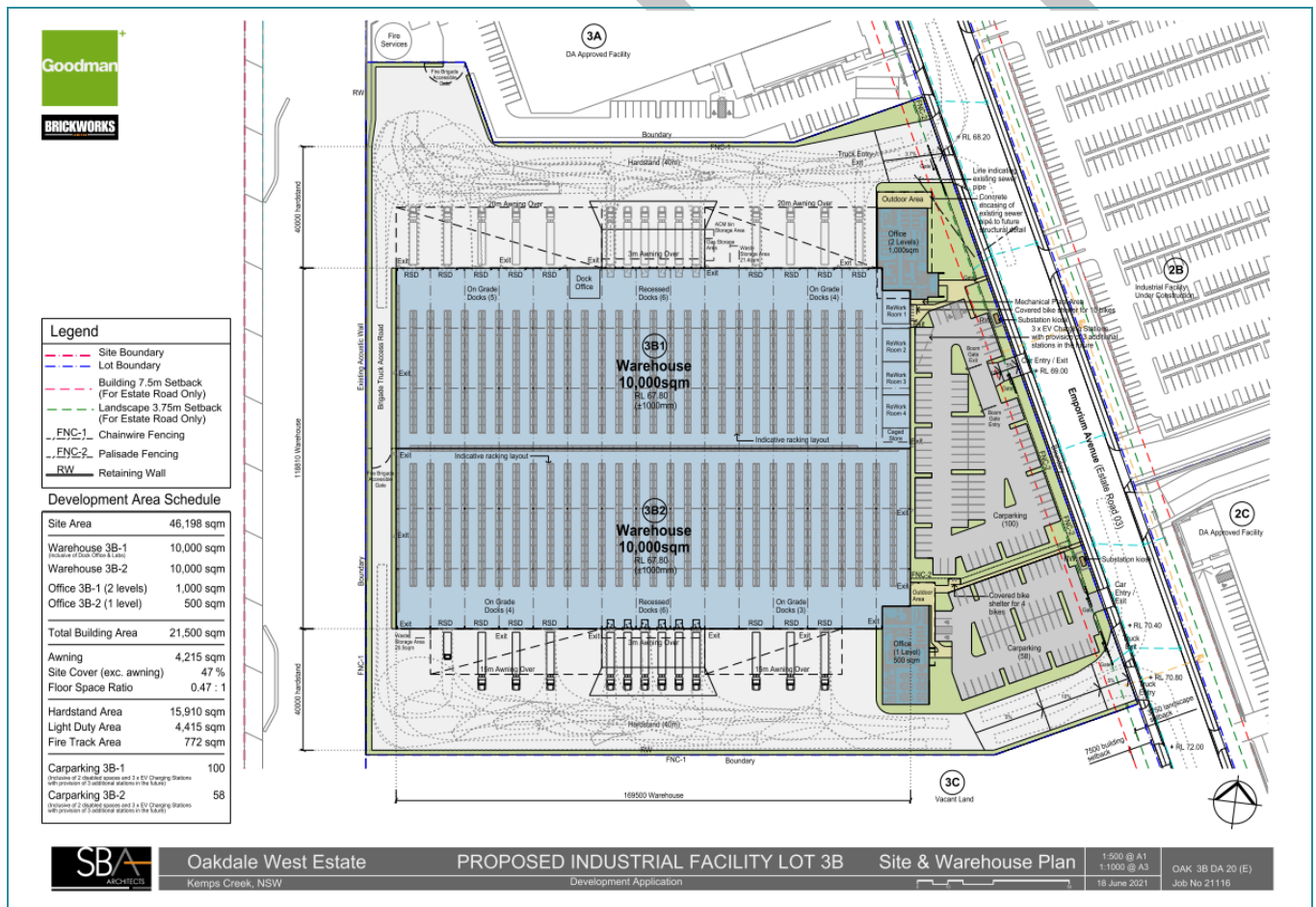
3.1 Surrounding Land Uses

The area surrounding the OWE includes land uses such as industrial warehouses and factories, several of which have been identified as having the potential to be considered sources of air emissions. The nearest residential receptors to the OWE boundary is located approximately 50 metres (m) south on Aldington Road, Erskine Park, however Precinct 3 is located on the west side of the OWE and is approximately 50 m away from the nearest Emmaus College building.

3.2 Lot 3B Layout

Lot 3B layout is shown in **Figure 3**.

Figure 3 Lot 3B Layout



3.3 Construction Activities

Construction at Site 3B is scheduled to commence in July 2021 and will likely extend until February 2022. The construction activities will be staged and are summarised in **Table 2**.

It is noted that other construction activities may also be ongoing simultaneously with the construction of Lot 3B, that is likely to result in cumulative air quality impacts.

Table 2 Construction Staging and Activities

Stage	Stage Length	Activities
Stage 1	5 Weeks	Excavation and Enabling Works
Stage 2	6 Weeks	Structures
Stage 3	8 weeks	Internal Slab Concrete Pouring Works
Stage 4	17 weeks	External Finishes

3.4 Construction Hours

Construction hours will be in accordance with Conditions D70 and D71 of Development Consent SSD 7348, which are reproduced below:

D70. The Applicant must comply with the hours detailed in Table 5, unless otherwise agreed in writing by the Planning Secretary.

Table 5: Hours of Work

Activity	Day	Time
Construction	Monday – Friday	7 am to 6 pm
	Saturday	8 am to 1 pm

D71. Works outside of the hours identified in Condition D70 may be undertaken in the following circumstances:

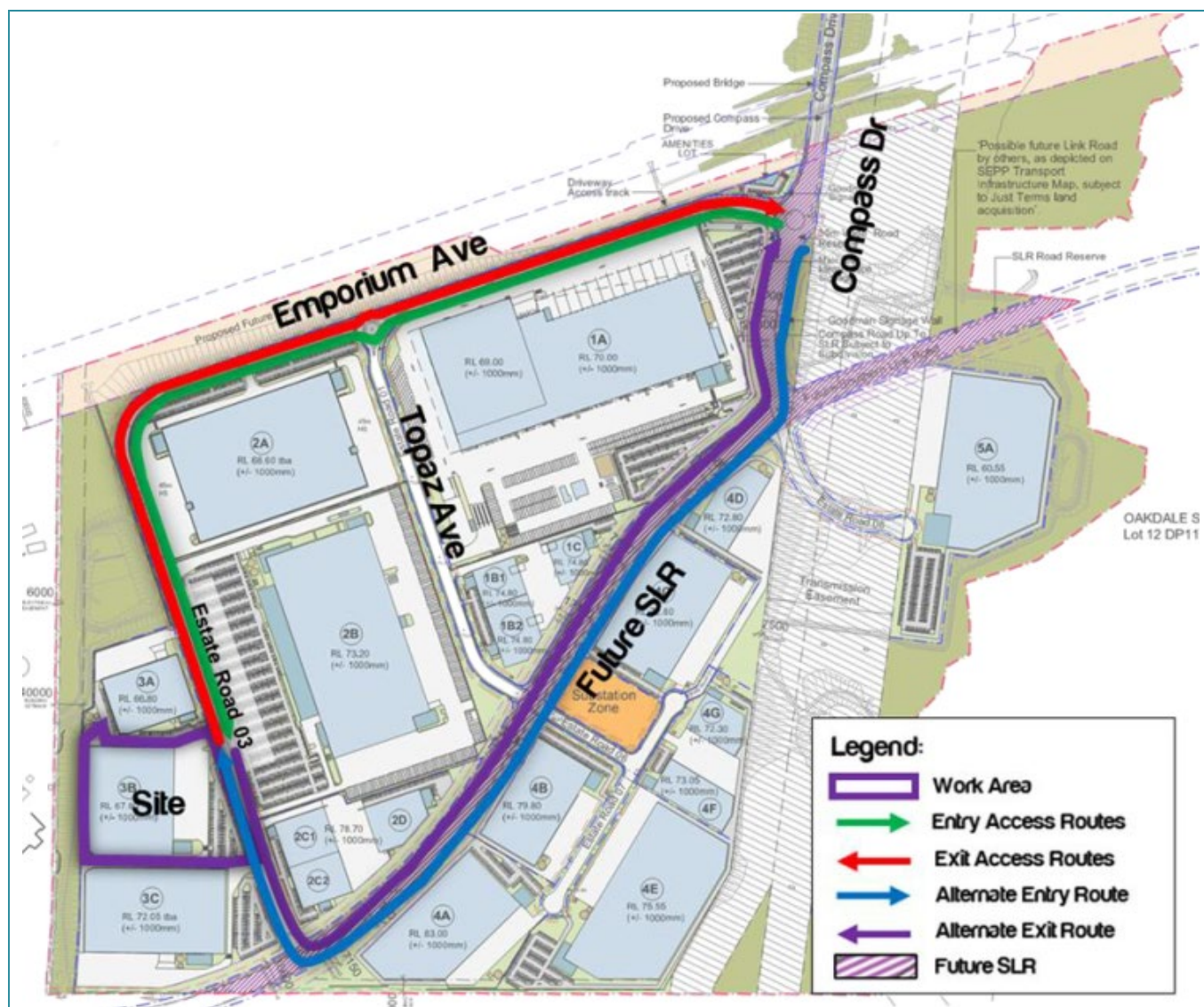
- works that are inaudible at the nearest sensitive receivers;*
- works agreed to in writing by the Planning Secretary;*
- for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or*
- where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.*

The construction hours will be provided to all staff and contractors in the induction. The movements of staff and contractors will be recorded for this project.

3.5 Construction Site Access

Access to Site 3B shall be available via Compass Drive, the Link Road, and Emporium Ave, as shown in **Figure 4**.

Figure 4 Construction Site Access



3.6 Construction Contact Details

Table 3 lists the key contacts during the construction of Lot 3B.

Table 3 Construction Contact List

Role	Name	Company	Contact Details
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Site Lead Environmental Consultant (Environmental Consultant)	tbc	tbc	tbc
Communications and Community Liaison Representative	Dan Thompson	SLR	0428 060 995 dthompson@slrconsulting.com

4 Potential Sources of Air Emissions

During the construction works, fugitive dust emissions are considered to be the primary emission type, which could give rise to nuisance and/or health impacts for the surrounding sensitive areas. The key potential sources of dust associated with construction of Lot 3B have been identified as:

- Dust emissions from earthworks activities (e.g. excavation and loading of soils to trucks);
- Wind-generated dust from disturbed surfaces and stockpiles;
- Wheel-generated dust and particulate matter emissions in diesel exhaust emissions from on-site plant and equipment and construction traffic movements; and
- Particulate matter associated with exhaust emissions from increased/congested traffic emissions on the local road network due to road closures or diversions (if any).

In addition to the construction activities being carried out at any point in time, a number of other environmental factors may also affect the generation and dispersion of dust emissions, including:

- Wind direction - determines whether dust and suspended particles are transported in the direction of the sensitive receptors;
- Wind speed - governs the potential suspension and drift resistance of particles;
- Surface type - more erodible surface material types have an increased soil or dust erosion potential;
- Surface material moisture - increased surface material moisture reduces soil or dust erosion potential;
- Other external factors such as current works being undertaken by others outside of the defined Project boundaries and current climatic (dry) weather conditions;
- Rainfall or dew - rainfall or heavy dew that wets the surface of the soil reduces the risk of dust generation.

The Environmental Impact Statement (EIS) for the construction and operation of the whole OWE was prepared by Urbis in November 2017 (Urbis 2017). Appendix U (Air Quality Impact Assessment) of the EIS states that the main emissions to air during the construction phase will be emissions of suspended particulate matter and nuisance dust from the movement of vehicles and construction equipment, excavation and rehabilitation, demolition, clearing and grading, truck loading and unloading and wind erosion. The same sources are also identified for construction of Lot 3B.

The construction activities are broadly divided into four categories i.e. demolition, earthworks, construction (building) and trackout. Potential air quality impacts associated with construction of Lot 3B and the relative risk ratings are addressed in **Section 7**.

5 Relevant Pollutants and Air Quality Criteria

5.1 Pollutants of Concern

As identified in **Section 4**, potential air pollutants of interest for the construction of Lot 3B are considered to be both:

- Suspended particulate matter; and
- Deposited dust.

The following sections outline the potential health and amenity issues associated with the above pollutants, while **Section 5.2** outlines relevant air quality assessment criteria.

5.1.1 Suspended Particulate Matter

Airborne contaminants that can be inhaled directly into the lungs can be classified on the basis of their physical properties as gases, vapours or particulate matter. In common usage, the terms “dust” and “particulates” are often used interchangeably. The health effects of particulate matter are strongly influenced by the size of the airborne particles. Smaller particles can penetrate further into the respiratory tract, with the smallest particles having a greater impact on human health as they penetrate to the gas exchange areas of the lungs. Larger particles primarily cause nuisance associated with coarse particles settling on surfaces.

The term “total particulate matter” (TSP) refers to a category of airborne particles, typically less than 30 microns (μm) in diameter. Particulate matter with an aerodynamic diameter of 10 microns or less is referred to as PM_{10} . The PM_{10} size fraction is sufficiently small to penetrate the large airways of the lungs, while $\text{PM}_{2.5}$ (2.5 microns or less) particulates are generally small enough to be drawn in and deposited into the deepest portions of the lungs. Potential adverse health impacts associated with exposure to PM_{10} and $\text{PM}_{2.5}$ include increased mortality from cardiovascular and respiratory diseases, chronic obstructive pulmonary disease and heart disease, and reduced lung capacity in asthmatic children. In an urban setting, the emission of $\text{PM}_{2.5}$ is primarily associated with vehicles exhausts resulting from the incomplete combustion of diesel.

For the purposes of this CAQMP, suspended particulate matter refers to PM_{10} only.

5.1.2 Deposited Dust

Section 5.1.1 is concerned in large part with the health impacts of particulate matter. Nuisance impacts need also to be considered, mainly in relation to deposited dust. Dust can cause nuisance by settling on surfaces and possessions, affecting visibility and contaminating tank water supplies. High rates of dust deposition can also adversely affect vegetation by blanketing leaf surfaces.

5.2 Ambient Air Quality Criteria

There are no air quality criteria specified within Development Consent SSD 10397, therefore the NSW EPA criteria have been adopted, as discussed below.

5.2.1 Suspended Particulate Matter

State air quality guidelines specified by the NSW Environmental Protection Agency (EPA) for the pollutants identified in **Section 5.1** are published in the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA 2017a) (hereafter 'Approved Methods'). The ground level air quality impact assessment criteria listed in Section 7 of the Approved Methods have been established by NSW EPA to achieve appropriate environmental outcomes and to minimise associated risks to human health as published in the Approved Methods. They have been derived from a range of sources and are the defining ambient air quality criteria for NSW, and are considered to be appropriate for use in this assessment.

A summary of the relevant impact assessment criteria for particulate matter is provided in **Table 4**.

Table 4 NSW EPA Criterion for Particulate Matter

Pollutant	Averaging Period	Concentration
PM ₁₀	24 Hours	50 µg/m ³
	Annual	25 µg/m ³

Source: EPA 2017a

5.2.2 Deposited Dust

The relevant criterion for nuisance dust deposition is provided in **Table 5**. The rate of dust deposition is measured by means of a collection gauge, which catches the dust settling over a fixed surface area and over a period of about 30 days.

Table 5 NSW EPA Criterion of Nuisance Dust Deposition

Pollutant	Averaging Period	Assessment Criteria (g/m ² /month)
Deposited dust	Annual	2 (maximum increase in deposited dust level) 4 (maximum total deposited dust level)

5.3 Local Government Air Quality Toolkit

The NSW EPA has developed the Local Government Air Quality Toolkit (EPA 2018), in response to requests from local Council officers for information and guidance on the common air quality issues they manage. Guidance is available under Part 3 of the Local Government Air Quality Toolkit for Construction Sites.

This document lists the common sources of emissions and mitigation and management measures to control airborne dust levels from construction sites and has been consulted in the development of this CAQMP.

6 Existing Environment

6.1 Local Meteorology

The Bureau of Meteorology (BoM) maintains and publishes data from weather stations across Australia. The closest such station recording wind speed and wind direction data is the Horsley Park Automatic Weather Station (AWS) (Station ID 67119), located approximately 5.5 km southeast of the OWE. The long term and short term seasonal wind roses and long term rainfall patterns observed at the Horsley Park AWS indicate that:

- Winds that would blow fugitive dust emissions from the demolition/construction works in Lot 3B towards the nearest sensitive receptors located to the west and south of the proposed construction activities, occur rarely during autumn and winter and are more likely to occur during summer and spring.
- The long term wind and rainfall patterns suggest that construction activities at the Development Site have the greatest potential to impact on surrounding sensitive receptors during the months of May (autumn), and July (winter) to October (spring).

Full analysis of the wind roses and rainfall data can be found in **Appendix A**.

6.2 Background Air Quality

The NSW OEH maintains a network of Air Quality Monitoring Stations (AQMSs) across NSW. The nearest such station is located at St Marys, approximately 4.5 km northwest of OWE. The St Marys AQMS was commissioned in 1992 and is located on a residential property off Mamre Road, St Marys. It is situated in the centre of the Hawkesbury Basin and is at an elevation of 29 m.

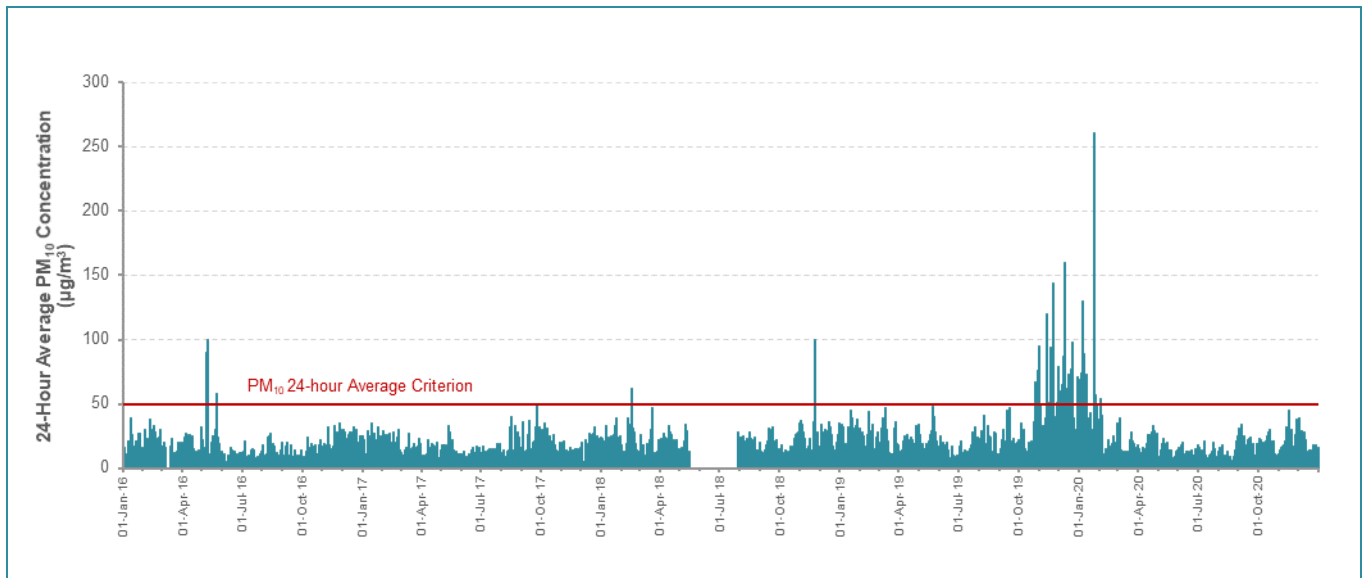
A summary of the PM₁₀ concentrations for the last five years (2016-2020) is tabulated in **Table 6** and presented graphically in **Figure 5**.

Table 6 Summary of PM₁₀ Monitoring Data at St Marys AQMS (2016 – 2020)

Year	Maximum 24-hour Average	Annual Average
	µg/m ³	µg/m ³
2016	100.2	16.1
2017	49.8	16.2
2018	100.5	19.4
2019	159.8	24.7
2020	260.3	18.9
Criterion	50	25

Exceedances of the 24-hour average PM₁₀ criterion were recorded by the St Marys AQMS in all years except 2017. A review of the exceedances recorded during other years indicate that they were associated with natural events such as bushfires or dust storms, or hazard reduction burns.

Figure 5 Measured 24-Hour Average PM₁₀ Concentrations at St Marys AQMS (2016 – 2020)



It has been noted in the latest NSW Annual Air Quality Statement (DPIE 2021) that air quality levels varied across the NSW depending on regions. Daily average PM₁₀ levels exceeded the national standard at one or more metropolitan and regional centres on 24% (87 days) of days in 2020, compared to 48% (175 days) of days in 2019. During 2020, days with extreme air pollution were attributed to the following sources:

- 10 days due to smoke from bushfires (January and February)
- 9 days due to a combination of smoke from bushfires and dust storms (January and February)
- 4 days due to dust storms (January, February and August)
- 1 day due to smoke from hazard reductions burns (September).

Air quality in NSW was greatly affected by the unprecedented extensive bushfires between late 2019 and early 2020. In 2020, the air quality in NSW met national standards between 85% and 99% of the time across regions, a significant improvement compared to 2019 (60% to 92%).

In summary, even though the air quality is generally good in the Sydney region, there is potential for short term elevations in background particulate concentrations associated with regional events such as bushfires and dust storms etc to elevate local ambient particulate concentrations at the Development Site. Care needs to be taken to minimise emissions of dust from the construction works during these periods, to avoid exacerbating these particulate pollution events.

7 Assessment of Dust Emissions During Construction

The key potential health and amenity issues associated with construction of Lot 3B are:

- Elevated suspended particulate concentrations (PM₁₀); and
- Nuisance due to dust deposition (soiling of surfaces) and visible dust plumes that may potentially be observed to be leaving the site.

7.1 Construction Impact Assessment Methodology

Quantitatively assessing impacts of fugitive dust emissions from construction projects using predictive modelling is seldom considered appropriate, primarily due to the uncertainty in the details of the construction activities, including equipment type, number, location and scheduling, which are unlikely to be available at the time of the assessment. Furthermore, they are also likely to change as construction progresses. In comparison, the equipment and operations of a mine or quarry are determined during the planning stages and more likely to remain consistent for long periods (several months or years).

Instead, it is considered appropriate to conduct a qualitative assessment. Potential impacts of dust emissions associated with proposed demolition and construction activities at the Development Site have been performed based on the methodology outlined in the Institute of Air Quality Management (UK) (IAQM) document, *"Assessment of dust from demolition and construction"* (Holman et al 2014). This guidance document provides a structured approach for classifying construction sites according to the risk of air quality impacts, to identify relevant mitigation measures appropriate to the risk (see **Appendix C** for full methodology).

The IAQM approach has been used widely in Australia for the assessment of air quality impacts from construction projects and the identification of appropriate mitigation measures, which has been accepted by regulators across all states and territories for a variety of construction projects.

The IAQM method uses a four-step process for assessing dust impacts from construction activities:

- **Step 1:** Screening based on distance to the nearest sensitive receptor; whereby the sensitivity to dust deposition and human health impacts of the identified sensitive receptors is determined.
- **Step 2:** Assess risk of dust effects from activities based on:
 - the scale and nature of the works, which determines the potential dust emission magnitude; and
 - the sensitivity of the area surrounding dust-generating activities.
- **Step 3:** Determine site-specific mitigation for remaining activities with greater than negligible effects.
- **Step 4:** Assess significance of remaining activities after management measures have been considered.

7.2 Risk Assessment

Table 7 presents the preliminary risk of air quality impacts from uncontrolled construction activities at the OWE derived using the risk matrix provided in **Table C4** in **Appendix C**, based on the identified receptor sensitivity and sensitivity of the area. It is noted that these risks are for the whole OWE construction project, not for the construction of Lot 3B in isolation.

Table 7 Preliminary Risk of Air Quality Impacts from Construction Activities (Uncontrolled)

Impact	Sensitivity of Area	Dust Emission Magnitude				Preliminary Risk			
		Demolition	Earthworks	Construction	Trackout	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Low	Small	Large	Large	Medium	Negligible	Low Risk	Low Risk	Low Risk
Human Health	Low					Negligible	Low Risk	Low Risk	Low Risk

The results indicate that there is a low risk of adverse dust soiling and a low risk of human health impacts occurring at the off-site sensitive receptor locations if no mitigation measures were to be applied to control emissions during the works.

Based on the dust emission magnitudes and the preliminary risk from these activities, the activities are ranked as (highest risk to lowest risk):

1. Earthworks
2. Construction
3. Track out
4. Demolition

For almost all construction activity, the IAQM Methods notes that the aim should be to prevent significant effects on receptors through the use of effective mitigation, and experience shows that this is generally possible.

8 Mitigation Measures

The potential for dust emissions during construction of Lot 3B and the potential impact (as discussed in **Section 4**) on surrounding sensitive receptors are anticipated to be largely controllable through a range of mitigation measures, including good site management, good housekeeping measures, appropriate vehicle maintenance and applying appropriate dust mitigation measures where required. The dust mitigation measures to be implemented during construction of Lot 3B are detailed in **Table 8**, which are consistent with those stipulated in the CAQMP for the OWE (SLR 2020). The dust mitigation measures specific to the key emission activities (ie earthworks, construction, track out and demolition) are also provided in **Table 8**.

Note: **Table 8** is replicated as Table 13 in the CEMP.

Table 8 Dust Mitigation Measures

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Communications			
The Community Communications Strategy will be implemented.	Communications and Community Liaison Representative	Prior to commencing construction and ongoing	Best practice
The name and contact details of person(s) accountable for air quality and dust issues will be displayed on the site boundary. This may be the Contractor's Project Manager.	Construction Contractor's Representative		
The head or regional office contact information will be displayed on site signage.			
Site Management			
All dust and air quality incidents will be undertaken as per Section 3.5 of the CEMP.	Construction Contractor's Representative	Ongoing	CEMP Section 3.5
All dust and air quality complaints will be undertaken as per Section 3.6 of the CEMP.			CEMP Section 3.6
Where excessive dust events occur (i.e. prolonged visual dust in a particular area), additional watering of dust producing activities will be undertaken or activities temporarily halted until such times that the dust source is under control.		During excessive dust events	Best practice
Horsley Park Bureau of Meteorology station weather forecast will be reviewed daily (i.e. wind, rain) to inform site dust management procedures for the day.		Daily	
Preparing and Maintaining the Site			
All reasonable steps to minimise dust generated will be undertaken during construction.	Construction Contractor's Representative	Ongoing	SSD 7348 Condition D98
Exposed surfaces and stockpile will be suppressed by regular watering or use of approved dust suppressants.			SSD 7348 Condition D99a
Land stabilisation works will be carried out in such a way on site to minimise exposed surfaces.			SSD 7348 Condition D99e

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Construction of Lot 3B will not cause or permit the emission of any offensive odour, as defined in the POEO Act.	Construction Contractor's Representative	Ongoing	SSD 7348 Condition D102
Dust generating activities in areas close to receptors will be closely monitored and additional mitigation applied as required to best manage potential dust emissions			Best practice
Stockpiles that will be in place for more than 20 days and are not actively used as well as any stockpiles that are susceptible to wind or water erosion will be suitably protected from erosion within 10 days of the establishment of each stockpile.			
Temporary stabilisation of disturbed surfaces will be undertaken within two weeks of the stockpile being established.			
Site fencing and barriers will be kept clean using wet methods.			
Operating Vehicle/Machinery and Sustainable Travel			
Trucks associated with Stage 1 will not track dirt off site and onto the public road network.	Construction Contractor's Representative	Ongoing	SSD 7348 Condition D99c
Project access roads used by delivery trucks will be kept clean.			SSD 7348 Condition D99d
All on-road vehicles will comply with relevant vehicle emission standards (prescribed by the NSW RMS), where applicable, and will be maintained in good condition, in accordance with manufacturer's specifications and POEO Act.			Best practice
Delivery trucks will switch off engines whilst undertaking a delivery on-site, if idling time is likely to exceed 5 minutes.			
Vehicle speed limit restrictions are implemented on site, including: <ul style="list-style-type: none">General - 20km/hHigh risk area - 10km/hHaul routes – 50 km/h			
Truck queuing and unnecessary trips will be minimised through logistical planning and by the identification and use of specific park up/hold areas away from the Project.			
Operations			
Only cutting, grinding or sawing equipment fitted with suitable dust suppression systems, such as water sprays will be used.	Construction Contractor's Representative	Ongoing	Best practice
Adequate water supply will be available on the site for effective dust/particulate matter suppression/ mitigation using a combination of potable and non-potable water sources.			

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Water carts will be used on all denuded or exposed surfaces and unsealed roads to minimise dust emissions.	Construction Contractor's Representative	Ongoing	Best practice
Equipment, inclusive of, but not limited to Environmental spill kits will be readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.			
Works will be assessed during strong winds or in weather conditions where high levels of airborne particulates may potentially impact the sensitive receivers. Continual monitoring of wind speed and direction will be undertaken to guide this decision and ensure that adequate mitigation measures are undertaken		Continuously and during high winds	
Waste Management			
All trucks entering or leaving the Site will have their loads covered.	Construction Contractor's Representative	Ongoing	SSD 7348 Condition D99b
No waste materials, timbers or any other combustible materials will be burnt on site.			Best practice
Earthworks			
Scopes of work will be planned in such a way to assist in minimising the duration that surfaces are left denuded.	Construction Contractor's Representative	Ongoing	Best practice
Rehabilitation of disturbed surfaces will be undertaken within 20 days of final construction levels.		Within 20 days of final construction levels	
If unanticipated strong odours or significant visual dust emissions are noted or observed on site, an investigation will be undertaken by the Construction Contractor Project Manager to identify the scope of work or source of the emission prior to undertaking and applying any additional mitigation measures.		Ongoing	
Construction			
Sand and other aggregates will not be allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	Construction Contractor's Representative	Ongoing	Best practice
Trackout			
Water-assisted road sweeper(s) will be used on an as required basis should any material be tracked out of the site.	Construction Contractor's Representative	Ongoing	Best practice
Record all regular inspections and maintenance undertaken of site haul routes and project related access roads in a site log book.			
A wheel washing system and/or cattle grid system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site) will be implemented.			

Environmental Management Control	Person Responsible	Timing / Frequency	Reference / Notes
Demolition			
Ensure effective water suppression of dust is used during demolition operations.	Construction Contractor's Representative	Ongoing	Best practice
Bag and remove any biological debris or damp down such material before demolition.			

As required by condition D100 (e), **Table 9** summarises the parameters identified to assess the effectiveness of the control measures shown in **Table 8**.

Table 9 Summary of the Parameters to Assess the Effectiveness of Control Measures

Parameter	Visible Dust	Dust Deposition	Complaints	PM ₁₀
Key performance indicator	No visible dust leaving the site boundary	<4 g/m ² /month	No complaints related to nuisance dust	<50 µg/m ³ as a 24-hour average
Monitoring method	Visual inspection / observations	Dust deposition gauges	-	See note
Location, frequency and duration of monitoring	Daily onsite inspection	Section 10	-	See note
Record keeping	Section 10	Section 10	Section 9	See note
Response procedures	Section 11	Section 11	Section 9	See note
Compliance monitoring	-	Section 10	-	See note

Note: Real-time suspended particulate monitors are installed at the site to assist with dust management (see **Section 10**). The monitoring system used however, does not meet the requirements of a compliance instrument. Should compliance-level monitoring be required as per **Table 10**, then this table will be updated to reflect the expanded monitoring programme.

9 Complaints Handling and Response Procedure

All complaints will be handled in accordance with the sections below and the OWE *Community Communication Strategy* (CCS) (SLR 2021).

9.1.1 Performance Objective

To ensure that all environmental complaints in relation to air emissions from construction of Lot 3B are promptly and effectively received, handled and addressed.

9.1.2 Responsibility

The Communications and Community Liaison Representative is responsible for ensuring that the appropriate management response and handling procedures are instigated and carried through in the event of an environmental complaint. The induction and toolbox talks outlined in the CEMP will be used to ensure all site employees are aware of and understand their obligations for complaints response.

All employees who take receipt of a complaint, either verbal or written, are to immediately notify the Contractor's Project Manager, who will then contact the Communications and Community Liaison Representative.

9.1.3 Complaints Handling Procedure

Upon becoming aware of a complaint, the protocol outlined below will be followed.

1. Record and Acknowledge

Any employee who take receipt of a complaint, either verbal or written, is to immediately notify the Contractor's Project Manager who will then contact the Communications and Community Liaison Representative. The Contractor's Project Manager will be available 24 hours a day, seven days a week and have the authority to stop or direct works.

In the normal course of events, the first contact for complaints will usually be made in person or by telephone.

The complainant's name, address and contact details, along with the nature of the complaint, must be requested. If the complainant refuses to supply the requested information, a note will be made on the form and complainant advised of this.

2. Assess and Prioritise

The Communications and Community Liaison Representative will prioritise all complaints by considering the seriousness of the complaint including risk to health and safety and will attempt to provide an immediate response via phone or email. This will be undertaken in accordance with the CCS (SLR 2021).

3. Investigate

A field investigation will be initiated in an attempt to confirm details relevant to the complaint and the cause of the problem. Any air quality monitoring information and/or site records at and around the time of the complaint will be reviewed for any abnormality or incident that may have resulted in the complaint.

If the complaint is due to an incident, the notification requirements and handling procedures outlined in CEMP will be followed.

4. Action or Rectify

Once the cause of the complaint has been established, every possible effort will be made to undertake appropriate action to rectify the cause of the complaint and mitigate any further impact. The Communications and Community Liaison Representative will assess whether the complaint is founded or unfounded and delegate the remediation of the issue to the Contractor's Project Manager for action, as required.

As outlined in **Section 11**, if a complaint regarding air quality impacts is concluded to be substantiated, the need for any changes to the air quality mitigation measures identified for the Project in **Section 8** and/or the air quality monitoring programme outlined in **Section 10** is to be reviewed and, the AQMP updated as appropriate.

5. Respond to Complainant

The Communications and Community Liaison Representative and the Contract Superintendent will oversee the rectification of the issue. The Communications and Community Liaison representative will then respond to the complainant once the issue has been resolved. The complainant will be provided with a follow up verbal response on what action is proposed within two hours during night-time works (between the hours of 6:00 pm and 10:00 pm) and 24 hours at other times. Where a complaint cannot be resolved by the initial or follow-up verbal response, a written response will be provided to the complainant within ten days.

6. Record

It is imperative that an investigation of the situation is carried out and proposed improvements documented in order to minimise the potential for similar complaints in the future. On this basis, every complaint received is to be recorded in the Complaint Enquiry Form. A copy of the completed form will be maintained for at least five years. The complaint will also be recorded in the Complaints Register.

7. Preventative Action

Once the complaint has been suitably handled, proposed improvements will be investigated and implemented to minimise the potential of re-occurrence. The Complaint Enquiry Form will not be closed out until the preventative actions are completed and recorded on the form.

9.1.4 Complaints Register

A Complaints Register will be maintained during construction and will contain the following:

- A copy of the environmental complaint handling procedure;
- A separate reference sheet containing the contact details;
- Blank hard copies of the Complaint Enquiry Form; and
- Copies of all completed Complaint Enquiry Forms, which are to be maintained for at least five years after the event to which they relate.

10 Air Quality Monitoring Program

As discussed in **Section 7**, the risk of construction dust emissions causing nuisance impacts at off-site sensitive receptor locations is concluded to be low. It is also noted that any impacts will be temporary and managed through the implementation of appropriate mitigation measures (see **Section 8**).

An air quality monitoring program has been implemented by Goodman as part of the management of air emissions during construction of the OWE and WNSLR. The construction works on the:

- OWE commenced on 5 December 2019 and are still ongoing;
- WNSLR commenced on 6 January 2020, and were completed in January 2021.

The data from ongoing monitoring program for OWE will be utilised to inform the management measures and contingency response for the construction of Lot 3B.

A summary of the on-site air quality monitoring programme at OWE is shown in **Table 10**. The locations of these monitors are shown in **Figure 6**. Further details are provided in the OWE AQMP.

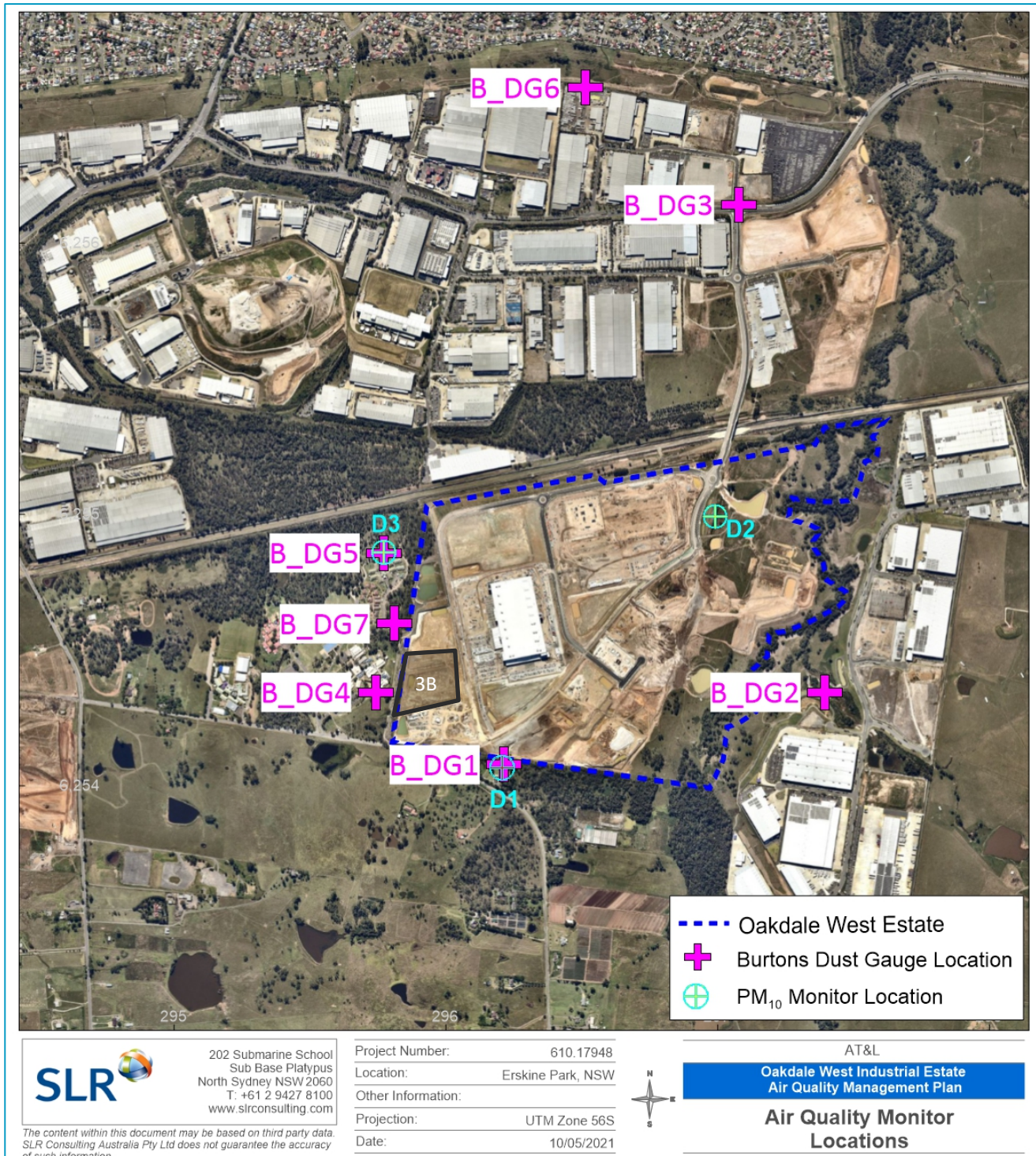
Table 10 Summary of On-Site Monitoring Programme

Pollutant	Equipment Used	Number of Monitoring Sites	Criterion (Averaging Period)
PM ₁₀	Dust Pro 7000 ^a (with telemetric capacity managed by Sentinex systems)	3	50 µg/m ³ (24-hour average)
Deposited dust	Dust Deposition Gauges (DDGs) - Burtons ^b	7	4 g/m ² /month (annual average)

^a The Dust Pro 7000 system is non-compliant with the *Approved Methods for Sampling and Analysis of Air Pollutants in NSW* (December 2006), and is used as a management tool to proactively manage the onsite operations to reduce dust impacts.

^b The dust gauges were installed and maintained by construction contractor (Burtons). It has not been confirmed by SLR if the installation of these dust gauges was undertaken in compliance with the AS/NZS 3580.1.1:2016.

Figure 6 Air Quality Monitoring Locations for the OWE Construction Project



Note: The black highlighted area represent approximate area covered by Lot 3B.

11 Contingency Management Plan

The air quality contingency management plan for the construction of Lot 3B is shown in **Table 11**. As noted in **Section 10**, data from the ongoing monitoring program for OWE and WNSLR will be utilised to inform the appropriate contingency response for the construction of Lot 3B.

Table 11 Air Quality Contingency Management Plan for the Construction of Lot 3B

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Visible dust leaving the site	Trigger	Daily inspections show that there is no visible dust leaving the site.	Daily inspections show that there is visible dust leaving the site.	Daily inspections show that there is visible dust leaving the site multiple times during a day OR from multiple locations within the site.
	Response	Continue monitoring program as normal.	Review and investigate construction activities and respective control measures. Where appropriate, implement additional remedial measures, such as: <ul style="list-style-type: none"> Deployment of additional water sprays, water trucks etc 	Undertake an investigation of the dust generating activities, and if necessary, temporarily halt the dust generating activities

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Dust deposition reading of $>4\text{g/m}^2/\text{month}$	Trigger	Dust deposition rates are less than $4\text{g/m}^2/\text{month}$ at all the dust gauges.	Dust deposition rate greater than $4\text{g/m}^2/\text{month}$ is recorded by any of the dust gauges	Dust deposition rates greater than $4\text{g/m}^2/\text{month}$ are recorded by two or more dust gauges for two months in a row.
	Response	Continue monitoring program as normal.	<ul style="list-style-type: none"> OWE Project Manager to analyse data to try to identify the source(s) of dust. Construction Contractor to review operations to reduce dust emissions from the identified key source(s). Implement any additional mitigation measures as required, such as additional watering. 	<ul style="list-style-type: none"> OWE Project Manager to review and investigate construction activities and respective control measures for the monitoring period. If it is concluded that construction activities at Lot 3B were directly responsible for the exceedance (i.e. the exceedance event was not caused due to high regional dust levels or local non-project dust source), Construction Contractor to submit an incident report to government agencies.
Complaints received regarding nuisance dust	Trigger	There are no complaints received during the construction	An air-quality related complaint is received from a nearby resident	Further complaints are received from the same complainant after the additional mitigation measures have been implemented
	Response	Continue monitoring program as normal.	<ul style="list-style-type: none"> Report the complaint to the regulator, in line with complaints handling procedure (See Section 9). Review and investigate construction activities and increase dust suppression measures (additional watering, covering stockpiles etc), where appropriate. 	<ul style="list-style-type: none"> Review real-time monitoring data at the existing continuous monitors to investigate the likelihood of onsite activities contributing (see Appendix D).

Key Element	Trigger / Response	Condition Green	Condition Amber	Condition Red
Real-time suspended particulate matter monitoring (TSP and PM ₁₀)	Trigger	Running 24-hour average PM ₁₀ concentrations < 40 µg/m ³	Running 24-hour average PM ₁₀ concentrations >40 µg/m ³ but <50 µg/m ³	Running 24-hour average PM ₁₀ concentrations >50 µg/m ³
	Response	Continue monitoring program as normal.	<p>OWE Project Manager to review and investigate construction activities and respective control measures.</p> <p>Where appropriate, implement additional remedial measures, such as:</p> <ul style="list-style-type: none"> • Deployment of additional water sprays, water trucks etc • Relocation or modification of dust-generating sources • Record findings of investigations and actions taken to reduce dust levels • Continue to closely monitor dust levels to ensure they are decreasing <p>If elevated dust levels are due to regional dust event (fire, dust storm etc) – still take action to minimise dust from the Lot 3B site to minimise cumulative impacts, but also record details of the cause of the elevated background levels.</p>	<ul style="list-style-type: none"> • OWE Project Manager to review and investigate construction activities and respective control measures for the monitoring period, in an air pollution incident report (see Appendix D). • If it is concluded that construction activities at Lot 3B were directly responsible for the exceedance (ie the exceedance event was not caused due to high regional dust levels or local non-project dust source), Construction Contractor to submit an incident report to government agencies.

12 Roles and Responsibilities

Overall roles and responsibilities relating to the project are outlined in Section 3.2 of the overarching CEMP. The key responsibilities specifically for dust management are as follows:

Contractor's Project Manager

- Ensuring appropriate resources/plant/personnel are available for the implementation of this CAQMP;
- Assessing data from inspections and providing project-wide advice to ensure consistent approach and outcomes are achieved;
- Providing necessary training for project personnel to cover air quality management;
- Reviewing and update of this CAQMP;
- Ensuring that the Environmental Coordinator monitors the PM₁₀ data being supplied by the onsite Senitex system, and any other dust monitoring systems identified as being required;
- Assessing and engaging (as required) additional mitigation controls to best manage the risks of elevated dust levels before commencing works each day and ensuring that the appropriate controls are implemented and effective;
- Reviewing weather forecasts daily and current observations of meteorological conditions (as recorded at Horsley Park AWS);
- Throughout the day, visually assessing the dust levels and the effectiveness of any dust controls that have been implemented, which may include engaging additional resources to reduce or mitigate the risk of dust leaving the site;
- Ceasing particular scopes of works as required in the event of excessive dust generation due to extreme weather conditions or inadequately controlled construction activities (eg high winds, surface dirt accumulation, etc.); and
- In the event that an air quality complaint is received, the procedure in Section 3.6 of the CEMP will be implemented (see **Section 9**).

Environmental Coordinator

- Undertaking dust monitoring program; and
- Review that control measures are working in accordance with the CAQMP.

All Workers on Site

- Observing any dust emission control instructions and procedures that apply to their work;
- Taking action to prevent or minimise dust emission incidents; and
- Identifying and reporting dust emission incidents.

13 Review and Improvement of the CAQMP

The review of the CAQMP will be undertaken at least quarterly and will include participation by Goodman. The review will comprise, as a minimum, the following:

- Identification of areas of opportunity for ongoing improved environmental performance;
- Analysis of the causes of any recorded non-compliances, including those identified in environment inspections and audits;
- Verification of the effectiveness of corrective and preventative actions; and
- Highlighting any changes in procedures resulting from process improvement.

This CAQMP will also be reviewed and, if necessary, revised in the following circumstances:

- Where there is any change to the scope of the construction activities and/or disturbance footprint;
- Where it is identified that the environmental performance is not meeting the objectives of the CAQMP;
- In the event of a substantiated complaint being received regarding air quality impacts; and/or
- At the request of a relevant regulatory authority.

14 References

- DEC 2006, Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales, Department of Environment and Conservation NSW, December 2006.
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APPENDIX A

WIND ROSES AND RAINFALL DATA ANALYSIS

Wind Conditions

Local wind speed and direction influence the dispersion of air pollutants. Wind speed determines both the distance of downwind transport and the rate of dilution as a result of 'plume' stretching. Wind direction, and the variability in wind direction, determines the general path pollutants will follow and the extent of crosswind spreading. Surface roughness (characterised by features such as the topography of the land and the presence of buildings, structures and trees) will also influence dispersion.

The Bureau of Meteorology (BoM) maintains and publishes data from weather stations across Australia. The closest such station recording wind speed and wind direction data is the Horsley Park Automatic Weather Station (AWS) (Station ID 67119), located approximately 5.5 kilometres (km) southeast of the Oakdale West. Considering the relatively flat terrain between Oakdale West and Horsley Park AWS, it is considered reasonable to assume that the wind conditions recorded at the Horsley Park AWS are representative of the wind conditions experienced at the Oakdale West.

Annual and seasonal wind roses for the years 2016 to 2020 compiled from data recorded by the Horsley Park AWS are presented in **Figure A1**. Wind roses show the frequency of occurrence of winds by direction and strength. The bars correspond to the 16 compass points (degrees from North). The bar at the top of each wind rose diagram represents winds blowing from the north (i.e. northerly winds), and so on. The length of the bar represents the frequency of occurrence of winds from that direction, and the widths of the bar sections correspond to wind speed categories, the narrowest representing the lightest winds. Thus it is possible to visualise how often winds of a certain direction and strength occur over a long period, either for all hours of the day, or for particular periods during the day.

The 'Beaufort Wind Scale' (consistent with terminology used by the BoM) presented in **Table A1** was used to describe the wind speeds experienced at Oakdale West.

Table A1 Beaufort Wind Scale

Beaufort Scale #	Description	m/s	Description on land
0	Calm	0-0.5	Smoke rises vertically
1	Light air	0.5-1.5	Smoke drift indicates wind direction
2-3	Light/gentle breeze	1.5-5.3	Wind felt on face, leaves rustle, light flags extended, ordinary vanes moved by wind
4	Moderate winds	5.3-8.0	Raises dust and loose paper, small branches are moved
5	Fresh winds	8.0-10.8	Small trees in leaf begin to sway, crested wavelets form on inland waters
6	Strong winds	>10.8	Large branches in motion, whistling heard in telephone wires; umbrellas used with difficulty

Source: <http://www.bom.gov.au/lam/glossary/beaufort.shtml>

The annual wind roses for the years 2016 to 2020 (**Figure A1**) indicate that predominant wind directions in the area are consistently from the southwest quadrant. Very low frequencies of winds from the north-eastern quadrant were recorded across all years. The annual frequency of calm wind conditions was recorded to be approximately 14% for all the years between 2016 and 2020. Also, a review of the annual wind roses (**Figure A1**) indicates that:

- Winds that would blow fugitive dust emissions from the demolition/construction works towards the nearest sensitive receptors located to the north and northwest of the proposed construction activities occur approximately 15-20% of the time.

The seasonal wind roses for the years 2016 and 2020 (**Figure A1**) indicate that:

- In summer, wind speeds ranged from calm to fresh winds (between 0.5 m/s and 9.8 m/s). The majority of winds originated from eastern and south eastern quadrants, with very few winds from western directions. Calm wind conditions were recorded approximately 12% of the time during summer.
- In autumn, wind speeds ranged from calm to fresh winds (between 0.5 m/s and 8.9 m/s). The majority of winds originated from southwest quadrant, with very few winds from other directions. Calm wind conditions were observed to occur approximately 15% of the time during autumn.
- In winter, wind speeds ranged from calm to fresh winds (between 0.5 m/s and 8.6 m/s). The majority of winds originated from southwest quadrant, with very few winds from other directions. Calm wind conditions were observed to occur approximately 13% of the time during winter.
- In spring, wind speeds ranged from calm to fresh winds (between 0.5 m/s and 9.8 m/s). The frequency of winds are generally even in each direction, except for a relatively low frequency of winds originating from southern quadrant. Calm wind conditions were observed to occur approximately 12% of the time during spring.

Wind erosion of dust from exposed surfaces (ie, during the construction phase of the development) is usually initiated when wind speeds exceed the threshold friction velocity for a given surface or material, however a general rule of thumb is that wind erosion can be expected to occur above 5 m/s (USEPA 2006). The frequency of wind speeds for the period of 2016-2020 is presented in **Figure A2**. The plot showed that the frequency of wind speeds exceeding 5 m/s for the period 2016-2020 at Horsley Park AWS was approximately 6%.

Figure A1 Annual Wind Roses for Horsley Park (2016 to 2020)

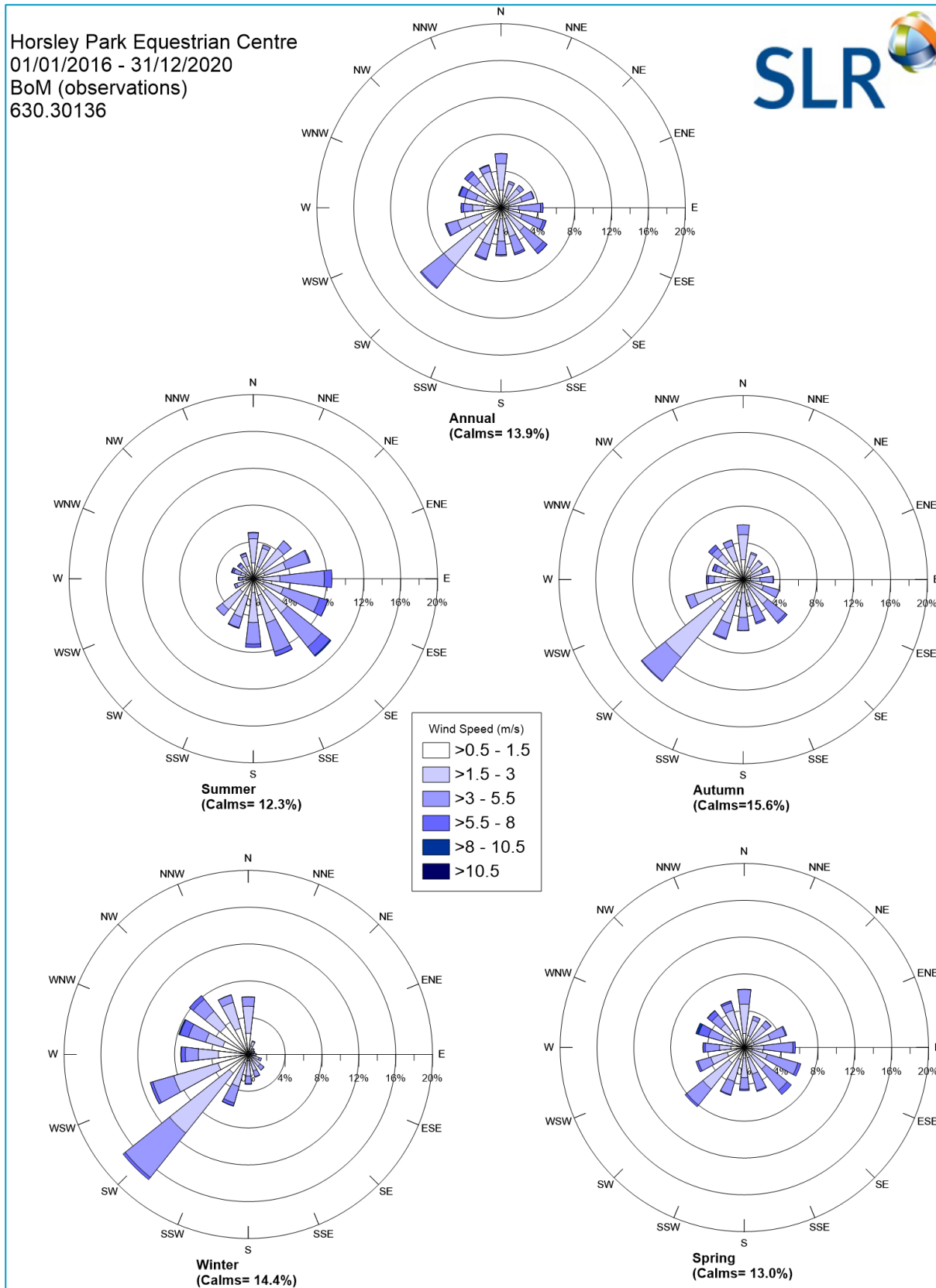
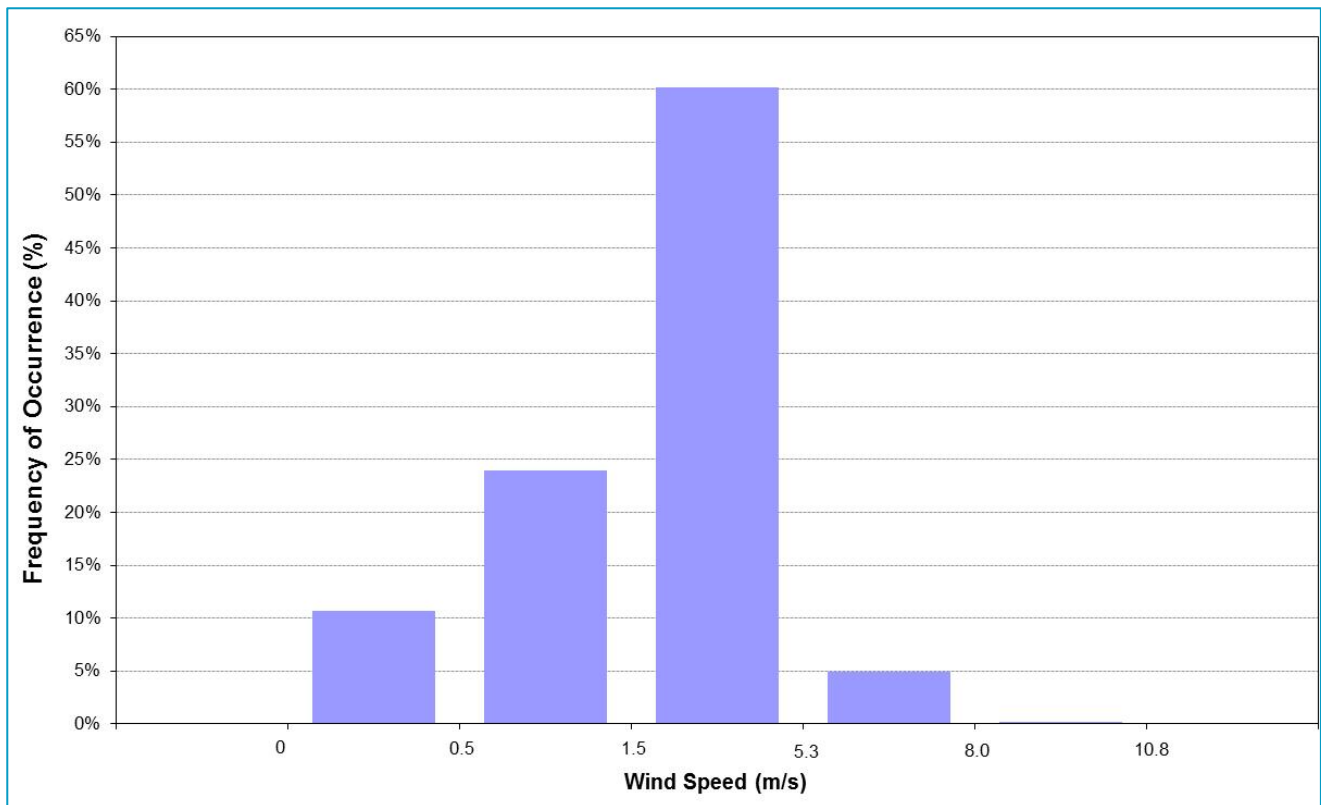


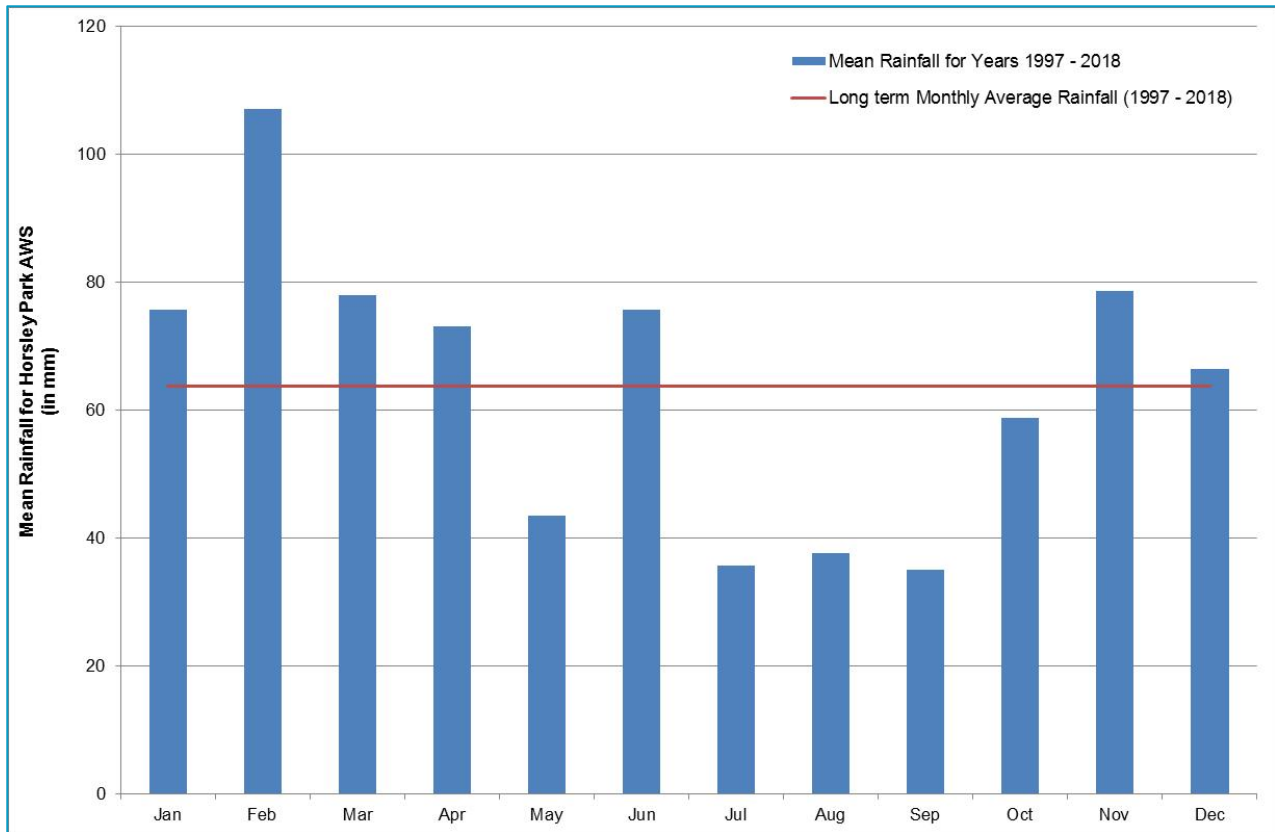
Figure A2 Wind Speed Frequency Chart for Horsley Park AWS – 2016-2020



Rainfall

Dry periods (no rainfall) have the greatest potential for fugitive dust emissions during construction. The long term monthly rainfall averages recorded at Horsley Park AWS rain gauge are shown in **Figure A4**. It is noted that generally rainfall is relatively low in mid-winter to mid spring periods. This rainfall pattern suggests that dust emissions from the demolition/construction activities at Oakdale West have the greatest potential to impact on receptors for the period of late autumn to early spring.

Figure A3 Long term Mean Rainfall for Horsley Park AWS – 1997 to 2018



APPENDIX B

CONSTRUCTION PHASE RISK ASSESSMENT METHODOLOGY

Step 1 – Screening Based on Separation Distance

The Step 1 screening criteria provided by the IAQM guidance suggests screening out any assessment of impacts from construction activities where sensitive receptors are located more than 350 m from the boundary of the site, more than 50 m from the route used by construction vehicles on public roads and more than 500 m from the site entrance. This step is noted as having deliberately been chosen to be conservative, and will require assessments for most projects.

The nearest sensitive receptor is located approximately 100 m from the nearest OWE boundary.

The screening criteria for detailed assessment are:

- a ‘human receptor’ within:
 - 350 m of the boundary of the site; or
 - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).
- an ‘ecological receptor’ within:
 - 50 m of the boundary of the site; or
 - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

Sensitive receptors (residences) are located within 350 m of the OWE boundary, therefore further assessment is required.

Step 2a – Assessment of Scale and Nature of the Works

Step 2a of the assessment provides “dust emissions magnitudes” for each of four dust generating activities; demolition, earthworks, construction, and track-out (the movement of site material onto public roads by vehicles). The magnitudes are: *Large*; *Medium*; or *Small*, with suggested definitions for each category. The definitions given in the IAQM guidance for earthworks, construction activities and track-out, which are most relevant to this Development, are as follows:

Demolition (Any activity involved with the removal of an existing structure [or structures]. This may also be referred to as de-construction, specifically when a building is to be removed a small part at a time):

- **Large:** Total building volume >50,000 m³, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20 m above ground level;
- **Medium:** Total building volume 20,000 m³ – 50,000 m³, potentially dusty construction material, demolition activities 10-20 m above ground level; and
- **Small:** Total building volume <20,000 m³, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.

Earthworks (*Covers the processes of soil-stripping, ground-levelling, excavation and landscaping*):

- **Large:** Total site area greater than 10,000 m², potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), more than 10 heavy earth moving vehicles active at any one time, formation of bunds greater than 8 m in height, total material moved more than 100,000 t.
- **Medium:** Total site area 2,500 m² to 10,000 m², moderately dusty soil type (e.g. silt), 5 to 10 heavy earth moving vehicles active at any one time, formation of bunds 4 m to 8 m in height, total material moved 20,000 t to 100,000 t.
- **Small:** Total site area less than 2,500 m², soil type with large grain size (e.g. sand), less than five heavy earth moving vehicles active at any one time, formation of bunds less than 4 m in height, total material moved less than 20,000 t, earthworks during wetter months.

Construction (*Any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure will include a residential dwelling, office building, retail outlet, road, etc*):

- **Large:** Total building volume greater than 100,000 m³, piling, on site concrete batching; sandblasting.
- **Medium:** Total building volume 25,000 m³ to 100,000 m³, potentially dusty construction material (e.g. concrete), piling, on site concrete batching.
- **Small:** Total building volume less than 25,000 m³, construction material with low potential for dust release (e.g. metal cladding or timber).

Track-out (*The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network*):

- **Large:** More than 50 heavy vehicle movements per day, surface materials with a high potential for dust generation, greater than 100 m of unpaved road length.
- **Medium:** Between 10 and 50 heavy vehicle movements per day, surface materials with a moderate potential for dust generation, between 50 m and 100 m of unpaved road length.
- **Small:** Less than 10 heavy vehicle movements per day, surface materials with a low potential for dust generation, less than 50 m of unpaved road length.

In order to provide a conservative assessment of potential impacts, it has been assumed that if at least one of the parameters specified in the 'large' definition is satisfied, the works are classified as large, and so on.

Based on the above, dust emission magnitudes have been categorised as presented in **Table B1**.

Table B1 Categorisation of Dust Emission Magnitude

Activity	Dust Emission Magnitude	Basis
Demolition	Small	<p>IAQM Definition: Total building volume <20,000 m³, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.</p> <p>Relevance to this Project: Demolition activities will predominantly be limited to removal of any old structures (if any) within Lot 3B site boundary.</p>
Earthworks	Large	<p>IAQM Definition: Total site area greater than 10,000 m², potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), more than 10 heavy earth moving vehicles active at any one time, formation of bunds greater than 8 m in height, total material moved more than 100,000 t.</p> <p>Relevance to this Project: The footprint of Lot 3B is approximately 21,500 m² and involves construction of two new buildings (total volume of approximately 46,000 m³).</p>
Construction	Large	<p>IAQM Definition: Total building volume greater than 100,000 m³, piling, on site concrete batching; sandblasting.</p> <p>Relevance to this Project: The footprint of Lot 3B is approximately 21,500 m² and involves construction of two new buildings (total volume of approximately 215,000 m³).</p>
Trackout	Medium	<p>IAQM Definition: Between 10 and 50 heavy vehicle movements per day, surface materials with a moderate potential for dust generation, between 50 m and 100 m of unpaved road length.</p> <p>Relevance to this Project: <i>The peak traffic volume during construction is estimated to be 20 vehicle movements per hour.</i></p>

Step 2b – Risk Assessment

Assessment of the Sensitivity of the Area

Step 2b of the assessment process requires the sensitivity of the area to be defined. The sensitivity of the area takes into account:

- The specific sensitivities that identified sensitive receptors have to dust deposition and human health impacts;
- The proximity and number of those receptors;
- In the case of PM₁₀, the local background concentration; and
- Other site-specific factors, such as whether there are natural shelters such as trees to reduce the risk of wind-blown dust.

Individual receptors are classified as having *high*, *medium* or *low* sensitivity to dust deposition and human health impacts (ecological receptors are not addressed using this approach). The IAQM method provides guidance on the sensitivity of different receptor types to dust soiling and health effects as summarised in **Table B1**. It is noted that user expectations of amenity levels (dust soiling) is dependent on existing deposition levels.

Table B2 IAQM Guidance for Categorising Receptor Sensitivity

Value	High Sensitivity Receptor	Medium Sensitivity Receptor	Low Sensitivity Receptor
Dust soiling	Users can reasonably expect a high level of amenity; or The appearance, aesthetics or value of their property would be diminished by soiling, and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods as part of the normal pattern of use of the land.	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or The appearance, aesthetics or value of their property could be diminished by soiling; or The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.	The enjoyment of amenity would not reasonably be expected; or Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.
	<i>Examples: Dwellings, museums, medium and long term car parks and car showrooms.</i>	<i>Examples: Parks and places of work.</i>	<i>Examples: Playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.</i>
Health effects	Locations where the public are exposed over a time period relevant to the air quality objective for PM ₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).	Locations where the people exposed are workers, and exposure is over a time period relevant to the air quality objective for PM ₁₀ (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).	Locations where human exposure is transient.
	<i>Examples: Residential properties, hospitals, schools and residential care homes.</i>	<i>Examples: Office and shop workers, but will generally not include workers occupationally exposed to PM₁₀.</i>	<i>Examples: Public footpaths, playing fields, parks and shopping street.</i>

According to the IAQM methods, the sensitivity of the identified individual receptors (as described above) is then used to assess the *sensitivity of the area* surrounding the active construction area, taking into account the proximity and number of those receptors, and the local background PM₁₀ concentration (in the case of potential health impacts) and other site-specific factors. Additional factors to consider when determining the sensitivity of the area include:

- any history of dust generating activities in the area;
- the likelihood of concurrent dust generating activity on nearby sites;
- any pre-existing screening between the source and the receptors;
- any conclusions drawn from analysing local meteorological data which accurately represent the area and if relevant, the season during which the works will take place;
- any conclusions drawn from local topography;
- the duration of the potential impact (as a receptor may be willing to accept elevated dust levels for a known short duration, or may become more sensitive or less sensitive (acclimatised) over time for long-term impacts); and
- any known specific receptor sensitivities which go beyond the classifications given in the IAQM document.

Based on the criteria listed in **Table B2**, the sensitivity of the identified receptors in this study is concluded to be *high* for health impacts and *high* for dust soiling, as they include residential areas where people may be reasonably expected to be present continuously as part of the normal pattern of land use.

The IAQM guidance for assessing the sensitivity of an area to dust soiling is shown in **Table B3**. The sensitivity of the area should be derived for each of activity relevant to the project (ie construction and earthworks).

Table B3 IAQM Guidance for Categorising the Sensitivity of an Area to Dust Soiling Effects

Receptor Sensitivity	Number of receptors	Distance from the source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Note: Estimate the total number of receptors within the stated distance. Only the *highest level* of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors < 20m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors < 50 m is 102. The sensitivity of the area in this case would be high.

A modified version of the IAQM guidance for assessing the *sensitivity of an area* to health impacts is shown in **Table B4**. For high sensitivity receptors, the IAQM methods takes the existing background concentrations of PM₁₀ (as an annual average) experienced in the area of interest into account and is based on the air quality objectives for PM₁₀ in the UK. As these objectives differ from the ambient air quality criteria adopted for use in this assessment (i.e. an annual average of 19.1 µg/m³ for PM₁₀) the IAQM method has been modified slightly.

This approach is consistent with the IAQM guidance, which notes that in using the tables to define the *sensitivity of an area*, professional judgement may be used to determine alternative sensitivity categories, taking into account the following factors:

- any history of dust generating activities in the area;

- the likelihood of concurrent dust generating activity on nearby sites;
- any pre-existing screening between the source and the receptors;
- any conclusions drawn from analysing local meteorological data which accurately represent the area, and if relevant the season during which the works will take place;
- any conclusions drawn from local topography;
- duration of the potential impact; and
- any known specific receptor sensitivities which go beyond the classifications given in this document.

Table B4 IAQM Guidance for Categorising the Sensitivity of an Area to Dust Health Effects

Receptor sensitivity	Annual mean PM ₁₀ conc.	Number of receptors ^{a,b}	Distance from the source (m)				
			<20	<50	<100	<200	<350
High	>25 µg/m ³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	21-25 µg/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	17-21 µg/m ³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<17 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>25 µg/m ³	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	21-25 µg/m ³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	17-21 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<17 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Notes:

(a) Estimate the total within the stated distance (e.g. the total within 350 m and not the number between 200 and 350 m); noting that only the highest level of area sensitivity from the table needs to be considered.

(b) In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) approximate the number of people likely to be present. In the case of residential dwellings, just include the number of properties.

The nearest sensitive receptor is located within 350 m from the nearest OWE boundary. Based on the classifications shown in **Table B3** and **Table B4**, the sensitivity of the area to dust soiling and to health effects may both be classified as '*low*'. This categorisation has been made considering the individual receptor sensitivities derived above, the annual mean background PM₁₀ concentration of 19.4 µg/m³ recorded at St Marys AQMS (see **Section 6.2**) and the anticipated number of sensitive receptors present in the vicinity of the OWE.

Risk Assessment

The dust emission magnitude from Step 2a and the receptor sensitivity from Step 2b are then used in the matrices shown in **Table B5** (earthworks and construction), **Table B6** (track-out) and **Table B7** (demolition) to determine the risk category with no mitigation applied.

Table B5 Risk Category from Earthworks and Construction Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table B6 Risk Category from Track-out Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

Table B7 Risk Category from Demolition Activities

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

APPENDIX C

AIR QUALITY NOTIFICATION FORM

APPENDIX D - CURRICULUM VITAE OF AUTHOR

CURRICULUM VITAE



VARUN MARWAHA

ASSOCIATE

Air Quality, Asia-Pacific

QUALIFICATIONS

BEng	2006	Bachelor of Engineering - Chemical, University of Sydney
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EXPERTISE

- Air Quality Dispersion modelling using a variety of software applications
- Meteorological and Ambient air quality monitoring & assessment for legislative compliance
- Australian state and federal regulatory compliance – Air Quality
- Opportunities and constraints reporting
- Detailed knowledge of air quality/meteorological interactions

Varun is an Associate Air Quality Consultant working within the Air Quality team. He has over 10 years of environmental and process engineering experience.

Varun has acquired a broad environmental experience including air quality (including odour) impact assessments, emission inventories (including National Pollutant Inventory), air quality dispersion modelling (including Ausplume, CALPUFF and CAL3QHCR), air quality monitoring (including odour), meteorological monitoring, meteorological modelling (The Air Pollution Model [TAPM] & CALMET), greenhouse gas assessments and overall project management.

Varun has conducted numerous environmental audits and prepared NPI reports for a range of industries including power stations throughout Australia.

Varun is a Certified Air Quality Professional (CAQP) and a Certified Practicing Project Manager (CPPM), and is respected for his contribution to the air quality industry.

PROJECTS

Sentosa Gateway Project, Singapore	The project involved the assessment of air impacts due to road traffic tunnel from Sentosa Island to mainland Singapore. The project proposed to build a tunnel for the outbound traffic from Sentosa with tunnel exits located on Lower Delta Road and Keppel Road. The emissions were quantified and modelled using CAL3QHCR and CALPUFF modelling suites to predict the roadside impacts. The project also included assessment of other sources of pollutants in the region for the cumulative assessment
Sydney Harbour Bridge, Sydney, NSW, Australia	Compliance Monitoring (Lead, PM ₁₀ and TSP). The project involves repainting the iconic Sydney Harbour Bridge. The process includes stripping the old paint (containing lead), preparation of the surface and repainting. The monitoring was conducted for lead concentration in the air along with the concentration of particulate (PM ₁₀ and TSP) was required. For lead monitoring, membrane filters were used and for particulate monitoring High Volume air samplers (HVAS) were employed.

CURRICULUM VITAE

VARUN MARWAHA

Capital Metro Project, Canberra, ACT, Australia (2018-2019)	The project involved preparation of Air Quality Impact Assessment (AQIA) for the proposed ACT Light Rail Stage 1 – Gungahlin to Civic Project, a 12 kilometre light rail service linking the fast- developing area of Gungahlin in the north, to the City. The emissions due to the operation of light rail network were quantified and compared to the existing regional air emissions levels. It was demonstrated that the regional emissions were likely to decrease significantly when compared with the current situation.
Proposed Residential Development, RMS	Road Traffic Impact Assessment. The project involved assessment of roadside impacts on the proposed residential development due to road traffic on a busy motorway. The aim of the project was to determine the maximum impacts and validating against the monitored roadside data. The emissions were quantified and modelled using CAL3QHCR modelling suite to predict the roadside impacts. The project also included assessment of other sources of pollutants in the region for the cumulative assessment. The modelling skills were put to test when integrating predicted results from several modelling suites (CAL3QHCR and CALPUFF)
Proposed Haul Roads (Fortescue Metals Group), WA, Australia	The project involved assessment of two possible options for building haul roads in separate directions. The aim of the project was to determine mine access route from the nearest transport facility. The emissions were quantified and modelled using CALPUFF modelling suite to predict the roadside impacts on the nearest receptors on each haul road route.
Confidential Highway Project, QLD, Australia	Emissions estimation and modelling for an air quality impact assessment for a proposed new highway in Queensland. Work included the estimation of vehicle emissions for the operational phase using the COPERT-Australia emissions modelling software and dispersion modelling of the road and tunnel emissions using CAL3QHCR and CALPUFF dispersion models.
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ACCREDITATION	Certified Air Quality Professional (CAQP), CASANZ
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APPENDIX G

Construction Traffic Management Plan

DRAFT



Construction Traffic Management Plan

Lot 3B, Oakdale West Estate

Oakdale West Estate, Kemps Creek

13/08/2021

P1670r02



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Document Control

Project No	P1670r02
Project	Lot 3B – Construction Traffic Management Plan
Client	Goodman Property Services (Aust) Pty. Limited
File Reference	P1670r02v1 CC CTMP_Lot 3B, Oakdale West Industrial Estate

Revision History

Revision No.	Date	Details	Author	Approved by
-	09/07/2021	Draft	J. Laidler	D. Choi
I	13/08/2021	Issue	A. Tan	A. Tan

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APPENDICES

Appendix A. Traffic Guidance Scheme

Appendix B. TGS Verification Checklist

Glossary

Acronym	Description
AGRD	Austrroads Guide to Road Design
AGTM	Austrroads Guide to Traffic Management
CC	Construction Certificate
Council	Penrith City Council
DA	Development Application
DCP	Development Control Plan
DoS	Degree of Saturation
DPIE	Department of Planning, Industry and Environment
FSR	Floor space ratio
GFA	Gross Floor Area
HRV	Heavy Rigid Vehicle (as defined by AS2890.2:2018)
LEP	Local Environmental Plan
LGA	Local Government Area
LoS	Level of Service
MOD	Section 4.55 Modification (also referred as a S4.55)
MRV	Medium Rigid Vehicle (as defined by AS2890.2:2018)
NHVR	National Heavy Vehicle Regulator
OC	Occupation Certificate
RMS Guide	Transport for NSW (formerly Roads and Traffic Authority), Guide to Traffic Generating Developments, 2002
S4.55	Section 4.55 Modification (also referenced as MOD)
S96	Section 96 Modification (former process terminology for an S4.55)
SRV	Small Rigid Vehicle (as defined by AS2890.2:2018)
TDT 2013/04a	TfNSW Technical Direction, Guide to Traffic Generating Developments – Updated traffic surveys, August 2013
TfNSW	Transport for New South Wales
TGS	Traffic Guidance Scheme
TIA	Transport Impact Assessment
TIS	Transport Impact Statement
veh/hr	Vehicle movements per hour (1 vehicle in & out = 2 movements)

1 Introduction

1.1 Overview

Ason Group has been engaged by Goodman Property Services (Aust) Pty. Limited (Goodman) to prepare a Construction Traffic Management Plan (CTMP) relating to the construction of Lot 3B within the Oakdale West Industrial Estate (OWE) at Kemps Creek (the Site). A site plan and an overview of the proposed surroundings are provided in **Figure 1**.

Noting SSD-7348 MOD 6 approval was granted on 10 March 2021, this report has been prepared in response to the conditions of consent from the Department of Planning Industry and Environment (DPIE) reproduced in Section 1.4 of this report.

1.2 Report Purpose

The purpose of this report is to detail a traffic management plan for construction that seeks:

- To minimise traffic impacts on the surrounding road network and adjacent landowners / occupiers,
- Ensure safety of workers, pedestrians, road users and any site specific considerations (including schools and neighbours to the west),
- Provide appropriate warnings of changes in road / traffic conditions , and of personnel / workers and plant engaged in the works on or adjacent to roads accessible to the general public;
- Minimise disruptions to public transport;
- Provide information regarding the construction vehicle access routes and any changed road conditions (if applicable); and
- Communicate the arrangements for and impacts of any activities affecting traffic.

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

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

This report has been prepared by consultants who hold the TfNSW (formerly RMS) Prepare a Work Zone Traffic Management Plan certification. Details of the accredited personnel are provided below:

- Dora Choi Certification No. 0051848825
- James Laidler Certification No. 0052158569

In accordance with Condition D65 of the consent, no works can commence until a CTMP report is approved by the Planning Secretary of the Department of Planning, Industry & Environment.

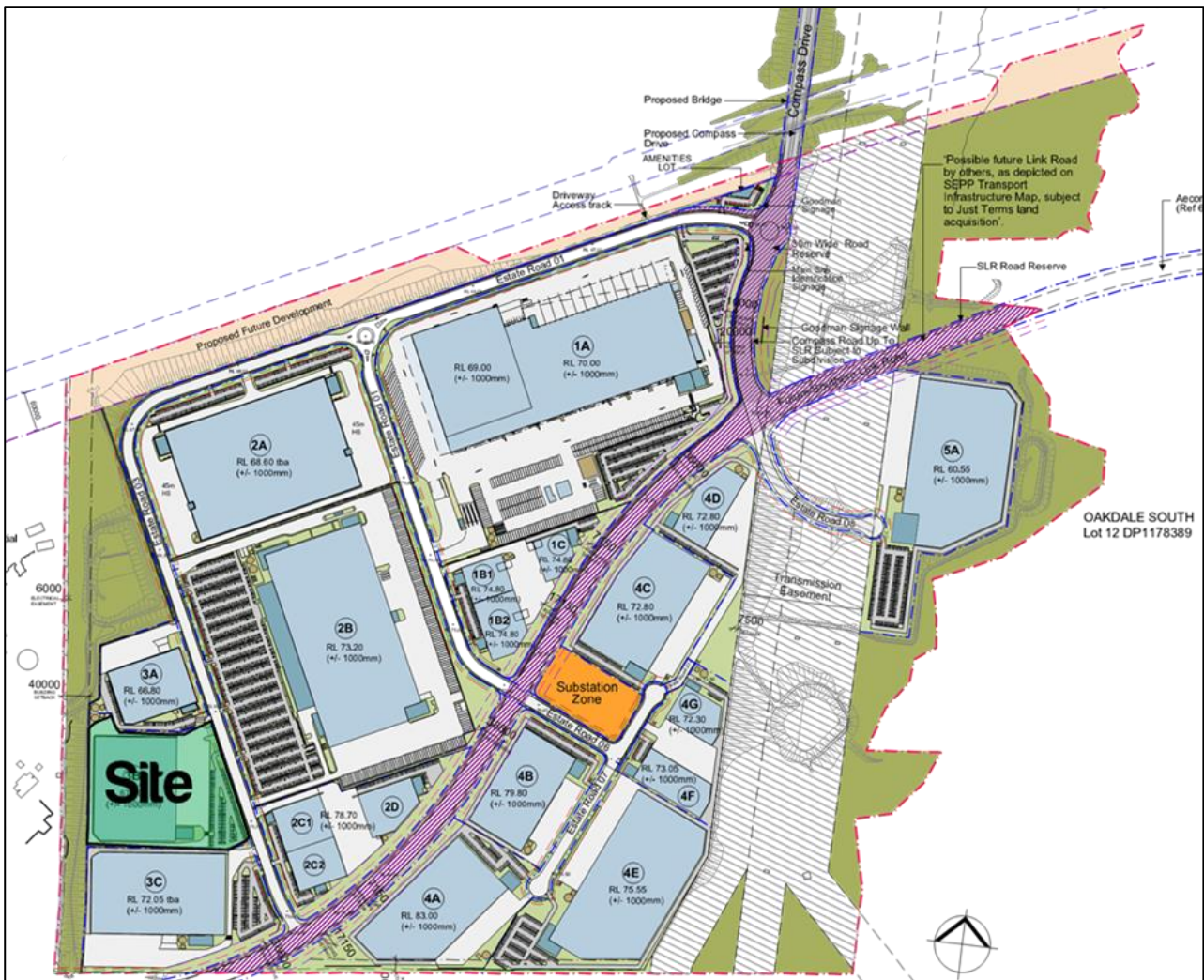


Figure 1: OWE Context Showing Lot 3B

1.3 Site Context

There is existing works associated with the construction of Compass Drive and the OWE. For context, the works are generally summarised as follows:

- OWE is a staged development for warehousing and distribution hub. Stage 1 of the OWE (the proposed works) comprises of estate wide earthworks and construction of road infrastructure in preparation of the construction of warehouses, however it currently excludes the actual construction of any warehouses.
- Compass Drive is proposed as part of a State Significant Development. Compass Drive provides a connection between Lenore Drive and the future Southern Link Road (SLR). In the short-term Compass Drive will be a public road, owned by Council, providing local access to the future Oakdale West Estate and other industrial areas north of the Water NSW Pipeline.

Each of the above has been subject to a separate Construction Traffic Management Plan — versions referenced in preparing this CTMP:

- Ason Group, Construction Traffic Management Plan, Oakdale West Estate, Kemps Creek, 0129r06v19 CTMP_ Oakdale West Estate, Kemps Creek Issue IX, 06/04/2020

- Ason Group, Construction Traffic Management Plan, WNSLR, Erskine Park (Western North South Link Road), 0605r01v5 CTMP_WNSLR, Erskine Park, 12/09/2019
- Ason Group, *Transport Assessment, Development Application, Lot 3B – Oakdale West Industrial Estate*, P1670r01 DA TA_Lot 3B, Oakdale West Industrial Estate, 18/06/2021

It is noteworthy that the Approved Oakdale West Estate (MOD 6) will generate the following peak hourly traffic volumes associated with future operation of the Estate.

- AM peak 1,366 veh/hr.
- PM peak 1,050 veh/hr
- Daily 11,394 veh/day

1.4 Authority Requirements

The following SSD conditions have been imposed with respect to construction traffic management.

TABLE 1: SSD 7348 – MOD 6 APPROVAL – COMPLIANCE TABLE

Reference	SSD Condition Requirement	Response
D65	Prior to the commencement of construction of Stage 1, the Applicant must prepare a Construction Traffic Management Plan (CTMP) to the satisfaction of the Planning Secretary. The CTMP must form part of the CEMP required by Condition D119 and must	
a)	be prepared by a suitably qualified and experienced person(s)	Consultants from Ason Group are suitably qualified Traffic Engineers, with relevant “Prepare a Work Zone Traffic Management Plan” accreditation.
b)	be prepared in consultation with Council, Mamre Anglican School, Emmaus Catholic College, Emmaus Catholic Care Village and Trinity Catholic Primary School	Further consultation is expected to occur, following issue of development approval, prior to finalisation of this CTMP.
c)	detail specific measures to manage construction traffic to avoid school drop off and pick-up times (Monday to Friday 8 am – 9.30 am and 2.30 pm – 4 pm) and Higher School Certificate exam periods, including any temporary infrastructure arrangements and traffic safety measures;	Consultation will be undertaken with Council, however any consultation with the schools and aged care facility within Bakers Lane will not be required, as there shall be no construction vehicles utilising Bakers Lane during construction as a result of these works.
d)	detail the measures to be implemented to ensure road safety and network efficiency during construction, including scheduling deliveries of heavy plant and equipment outside of peak periods, or during school holidays where possible;	Refer Section 6.2 with regard to impacts to traffic efficiency. This section concludes that construction traffic can be satisfactorily mitigated to not have a material impact on the road network. Furthermore, Traffic Guidance Schemes (TGSs) shall be developed for all works impact public roads and approved by the Transport for NSW (TfNSW) Traffic Management Centre. As noted in previous Reference items above, there shall be no limitations to timed

		deliveries other than being within the approved construction hours (outlined within Section 2.6).
e)	detail heavy vehicle routes, access and parking arrangements;	The site access arrangements – relevant to each stage - are outlined in subsequent sections of this report (Refer Section 3).
f)	include a Driver Code of Conduct to: <ul style="list-style-type: none"> (i) minimise the impacts of construction on the local and regional road network; (ii) minimise conflicts with other road users including the students, staff, visitors and residents of the neighbouring schools and aged care village; (iii) minimise road traffic noise, both on Bakers Lane and from construction vehicles on Site; and (iv) ensure truck drivers use specified routes and adhere to the speed restrictions on Bakers Lane; 	<p>A driver Code of Conduct is a requirement of and included within this CTMP.</p> <p>The Drivers Code of Conduct (included in Section 5) addresses ways to minimise the impacts on the road network, with other road users, ensure truck routes are utilised and to manage pedestrian movements.</p> <p>Any reference to the schools and aged care facility within Bakers Lane within the Drivers Code of Conduct is not required, as there shall be no construction vehicles utilising Bakers Lane during construction.</p>
g)	include a program to monitor the effectiveness of these measures	<p>The Contractor / Owner of Estate shall include a program to monitor the effectiveness of the measures. Deliveries will be tracked against approved volumes and will keep a vehicle log - including rego & time of entry - for the purpose of assessing the effectiveness of these monitoring programs.</p> <p>These programs will be completed in accordance with Section 7.</p>
h)	detail procedures for early notification for residents and the community (including local schools), of any potential disruptions to routes.	The Contractor will notify the community liaison representative (SLR) when traffic conditions are expected to exceed parameters within Condition Green of Table 7. Measures that may be included within the strategy have been identified within Section 7.2
i)	update the CTMP to include modifications to construction traffic management approved under MOD 2 and MOD 3	The CTMP shall be reviewed and updated on a regular basis – including the construction traffic management approved under MOD 2 and MOD 3.
D66	The Applicant must:	
a)	not commence construction of Stage 1 until the CTMP required by Condition D65 is approved by the Planning Secretary; and	Noted and reiterated in Section 1.2
b)	implement the most recent version of the CTMP approved by the Planning Secretary for the duration of construction.	Noted
D118	Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	-
a)	details of: the relevant statutory requirements (including any relevant approval, licence or lease conditions).	<p>Relevant requirements are outlined in this table.</p> <p>Other specific requirements are detailed in Section 4</p>

	any relevant limits or performance measures and criteria; and the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, Stage 1 or any management measures;	
b)	a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	Refer to Section 7
c)	program to monitor and report on the: impacts and environmental performance of the development; and effectiveness of the management measures set out pursuant to paragraph (c) above;	Refer Section 7.1 of this Plan which outlines requirement for this Plan to be updated regularly.
d)	a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Refer Section 7.1 of this Plan which outlines the requirement for this Plan to be updated regularly. TGS's — outlined in Section 4.2.9 shall be prepared to respond to specific work situations and subject to approval by the relevant Roads Authority (Council and/or TfNSW), providing a suitable level of independent oversight.
e)	a program to investigate and implement ways to improve the environmental performance of the development over time	Refer Section 7.1 of this Plan which outlines requirement for this Plan to be updated regularly.
f)	a protocol for managing and reporting any: (i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria). (ii) complaint. (iii) failure to comply with statutory requirements; and	Management and reporting protocols are outlined in the Construction Environmental Management Plan. Reference is also made to Section 5.5 of this Plan in relation to incident management.
g)	a protocol for periodic review of the plan.	Refer Section 7.1 of this Plan.

Refer to the Department of Planning, Industry & Environment's Major Project Assessments website for a full list of all conditions of approval and other background documents.

1.5 Site Location

At a regional level, the Site is located approximately 3 kilometres south of the nearest suburban area, Erskine Park, 18 kilometres west of Parramatta, and 37 kilometres west of the Sydney CBD. It is within the Local Government Area (LGA) of Penrith City Council.

Within the context of the OWE, Lot 3B is located on the eastern boundary of Emporium Ave, with a total site area of 21,500 m².

1.6 Road Hierarchy

The road hierarchy in the locality is presented in **Figure 2** and summarised below for key roads.

1.6.1 Lenore Drive / Old Wallgrove Road

Lenore Drive is a recently upgraded sub-arterial route providing an east-west connection linking Old Wallgrove Road (OWR) to the east and Erskine Park Road to the west. It provides four lanes (two in each direction) within a divided carriageway with a shared path along the northern side of the road. It is subject to an 80 km/h speed zoning.

1.6.2 Compass Drive

Compass Drive is a high capacity road and is part of a State Significant Development. Compass Drive provides a connection between Lenore Drive and the future Southern Link Road (SLR). In the short-term Compass Drive will be a public road, owned by Council, providing local access to the future Oakdale West Estate and other industrial areas north of the Water NSW Pipeline. It shall have signalised intersections at both ends of Lockwood Drive. It is subject to an 80 km/h speed zoning.

1.6.3 Emporium Avenue

Emporium Avenue is currently a private road providing access to Precinct 1 and Precinct 2 and links the Future Southern Link Road (SLR) to Compass Drive. In the longer term, the intention is for this road to be dedicated to Council as a public road, however that is expected to occur following completion of the construction works covered by this plan. It is subject to 50 km/h speed zoning.

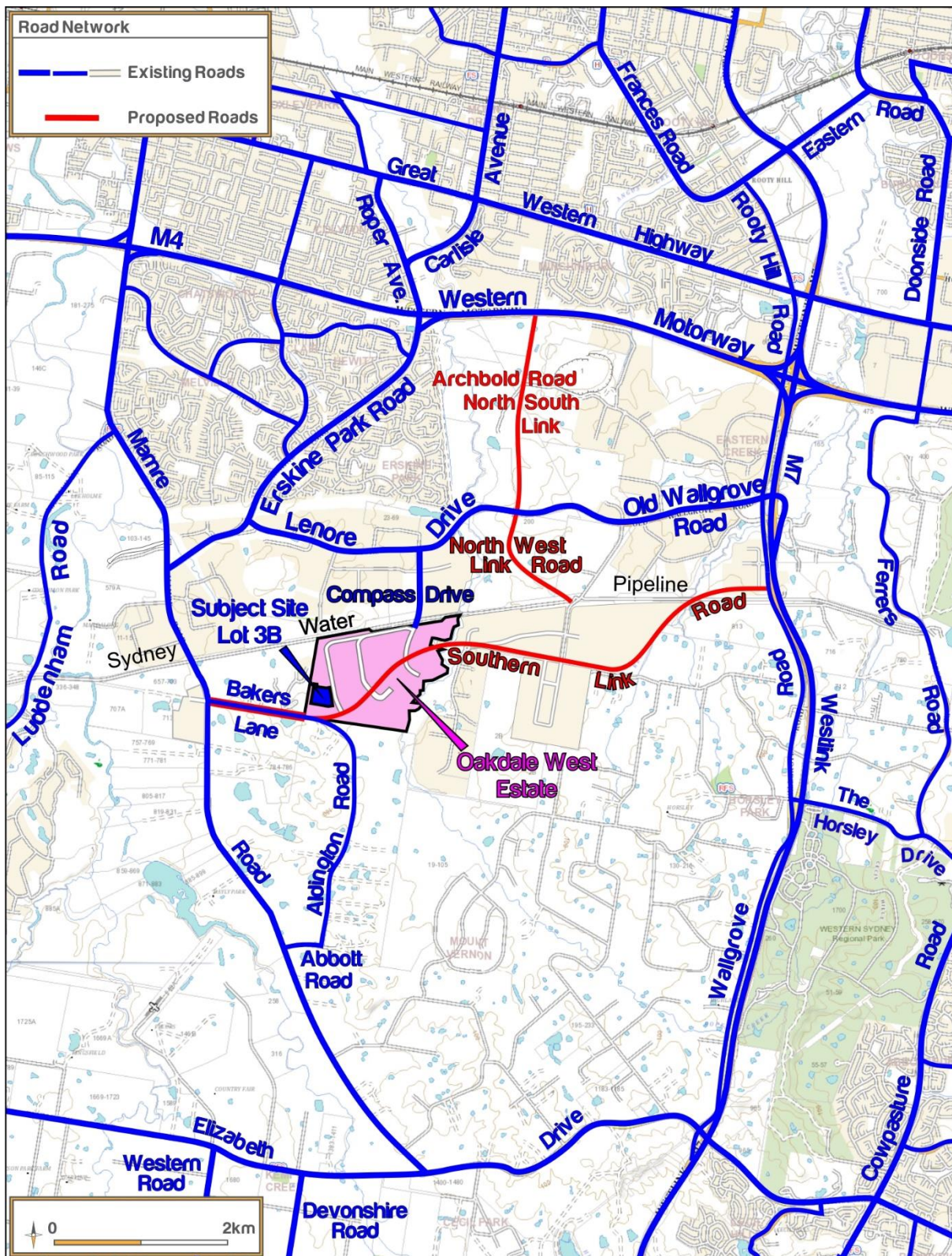


Figure 2: Road Hierarchy

1.7 Project Representatives and Stakeholders

Through the preparation of this CTMP, the project representatives and stakeholders for this project are as follows;

- Goodman Property Services (Aust)
 - Stephanie Partridge (Senior Development Manager)
 - Adrian Tesoriero (Senior Project Manager)
 - Guy Smith (Planning Manager)
 - Kym Dracopoulos (Manager, Technical Services)
 - Mack Bowman (Project Administrator)
- Ason Group
 - Ali Rasouli (Principal Traffic Engineer)
 - Dora Choi (Principal Traffic Engineer)
 - James Laidler (Senior Traffic Engineer)
 - Matthew Tangonan (Traffic Engineer)

During the CTMP approvals stage, the draft CTMP should be provided to relevant stakeholders for consideration, such as Council, neighbouring properties, and Goodman Safety team, to support traffic management investigations.

2 Overview of Works

2.1 Works Stages

For the purposes of this CTMP, these works will commence following the completion of Compass Drive. The access and traffic management required is outlined later within this report. Recognising the purpose of this CTMP, it is estimated that the total duration of the construction works will be approximately 35 weeks from the commencement date. The following summarises key aspects of the construction stages:

2.1.1 Stage 1 – Excavation and Enabling Works

TABLE 2: STAGE SUMMARY – STAGE 1

Criteria	Response
Description of Key Activities	General earthworks, Construction of the temporary accesses, and Enabling works
Stage Length	5 weeks
Max. Vehicle Size	20.0m Articulated Vehicles (Special Permits may be required for floating in plant)
Vehicle Movement Frequency	Approximately 30 light vehicle movements / day + Approximately 18 heavy vehicle movements / day
Truck Access Requirements	All vehicles shall access via Compass Drive
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	Y – upon written approval by the Planning Secretary
Contractor Parking	Y – Location varies depending on discreet work area(s). Builder shall nominate contactor parking zones, clear of truck manoeuvring areas.
Pedestrian Control	Wire mesh site boundary fencing. and Type A hoarding
Public Transport Services Affected	Nil
Road Occupancy Requirements (if yes, provide further details)	N
Lane or Footpath Closures (if yes, provide further details)	N
Traffic Guidance Scheme	Refer below.

2.1.2 Stage 2 – Structures

TABLE 3: STAGE SUMMARY – STAGE 2

Criteria	Response
Description of Key Activities	Construction of Warehouse and other structures within Site.
Stage Length	4 weeks
Max. Vehicle Size	20.0m Articulated Vehicles (Special Permits may be required for floating in plant)
Vehicle Movement Frequency	Approximately 40 light vehicle movements / day + Approximately 12 heavy vehicle movements / day
Truck Access Requirements	All vehicles shall access via Compass Drive
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	Y – upon written approval by the Planning Secretary
Contractor Parking	Y – Location varies depending on discreet work area(s). Builder shall nominate contactor parking zones, clear of truck manoeuvring areas.
Pedestrian Control	Wire mesh site boundary fencing.
Public Transport Services Affected	Nil
Road Occupancy Requirements (if yes, provide further details)	N
Lane or Footpath Closures (if yes, provide further details)	N
Traffic Guidance Scheme	Refer below.

2.1.3 Stage 3 – Internal Slab Concrete Pouring Works

TABLE 4: STAGE SUMMARY – STAGE 3

Criteria	Response
Description of Key Activities	Construction of warehouse internal base concrete slab
Stage Length	8 weeks
Max. Vehicle Size	8.8m Concrete Trucks
Vehicle Movement Frequency	Approximately 30 light vehicle movements / day + Approximately 60 heavy vehicle movements / day
Truck Access Requirements	All vehicles shall access via Compass Drive
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	Y – upon written approval by the Planning Secretary
Contractor Parking	Y – Location varies depending on discreet work area(s). Builder shall nominate contactor parking zones, clear of truck manoeuvring areas.
Pedestrian Control	Wire mesh site boundary fencing.
Public Transport Services Affected	Nil
Road Occupancy Requirements (if yes, provide further details)	N
Lane or Footpath Closures (if yes, provide further details)	N
Traffic Guidance Scheme	Refer below.

2.1.4 Stage 4 – External Finishes

TABLE 5: STAGE SUMMARY – STAGE 4

Criteria	Response
Description of Key Activities	Construction of hardstand, car park and landscaping works
Stage Length	17 weeks
Max. Vehicle Size	8.8m Concrete Trucks
Vehicle Movement Frequency	Approximately 30 light vehicle movements / day + Approximately 60 heavy vehicle movements / day
Truck Access Requirements	All vehicles shall access via Compass Drive
Vehicle access / egress in a forward direction (Y / N)	Y
Out of Hours Deliveries (Y/N)	Y – upon written approval by the Planning Secretary
Contractor Parking	Y – Location varies depending on discreet work area(s). Builder shall nominate contactor parking zones, clear of truck manoeuvring areas.
Pedestrian Control	Wire mesh site boundary fencing.
Public Transport Services Affected	Nil
Road Occupancy Requirements (if yes, provide further details)	N
Lane or Footpath Closures (if yes, provide further details)	N
Traffic Guidance Scheme	Refer below.

2.2 Hours of Work

Having regard for the Conditions of Consent, Condition D66 outlines the permitted hours of works are as follows:

During General Construction:

- 7:00AM – 6:00PM Monday – Friday.
- 8:00AM – 1:00PM Saturday.
- No work public holidays.

Work outside these hours may be undertaken (with prior consent) under the following conditions:

- Works that meet the current applicable Construction Noise Guidelines as published by EPA NSW.
- For one-off / occasional delivery of specific plant / equipment or the delivery of materials required outside these hours as required by the relevant authorities for safety reasons; or
Where works is required to make safe to avoid the loss of lives, property or environmental harm.

2.3 Access Arrangements

Emergency vehicle access to and from the Site will be available at all times while the site is occupied by construction activities. This process would be implemented through emergency protocols on the site which will be developed by the Contractor and shall be documented within the Contractor's Construction Management Plan.

This is discussed in further detail below. All construction vehicles are to use the primary access Emporium Ave and shown within **Figure 3**.

At no stage will vehicles utilise Bakers Lane to access the Site.

3 Existing Conditions

3.1 Site Access

Access to the site shall be available via Compass Drive, the Link Road, and Emporium Ave, as shown below.

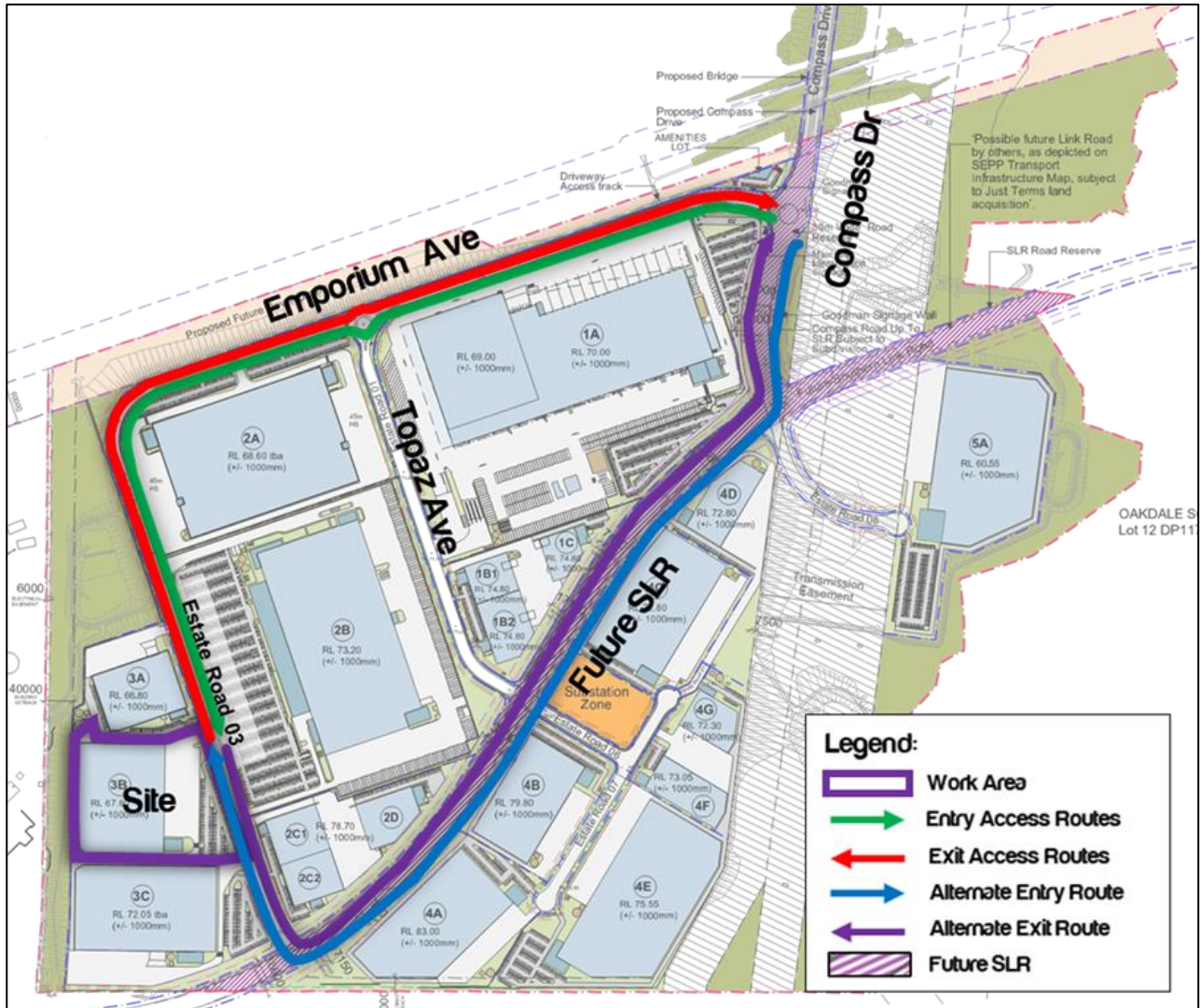


Figure 3: Access Arrangements

3.2 Active Transport Connections

A Shared Path (cyclists and pedestrians) is provided along the northern side of Lenore Drive and western side of Old Wallgrove Road, providing connections to the regional pedestrian and cycle networks. Compass Drive and the Access Roads will include a 2.5-metre shared path for both pedestrians and cyclists.

Footpaths and cycle routes do not carry high volumes of pedestrians or cyclists. Notwithstanding, any TGS shall maintain a suitable level of access past work areas for these users at all times.

3.3 Public Transport Services

At the time of preparation of this CTMP, there are no public transport services within the immediate vicinity of the site that will be impacted by the proposed works.

As the closest bus stop is located on Lenore Drive, some 2.4km away from the subject site, use of public transport to/from the site during construction is considered impractical.

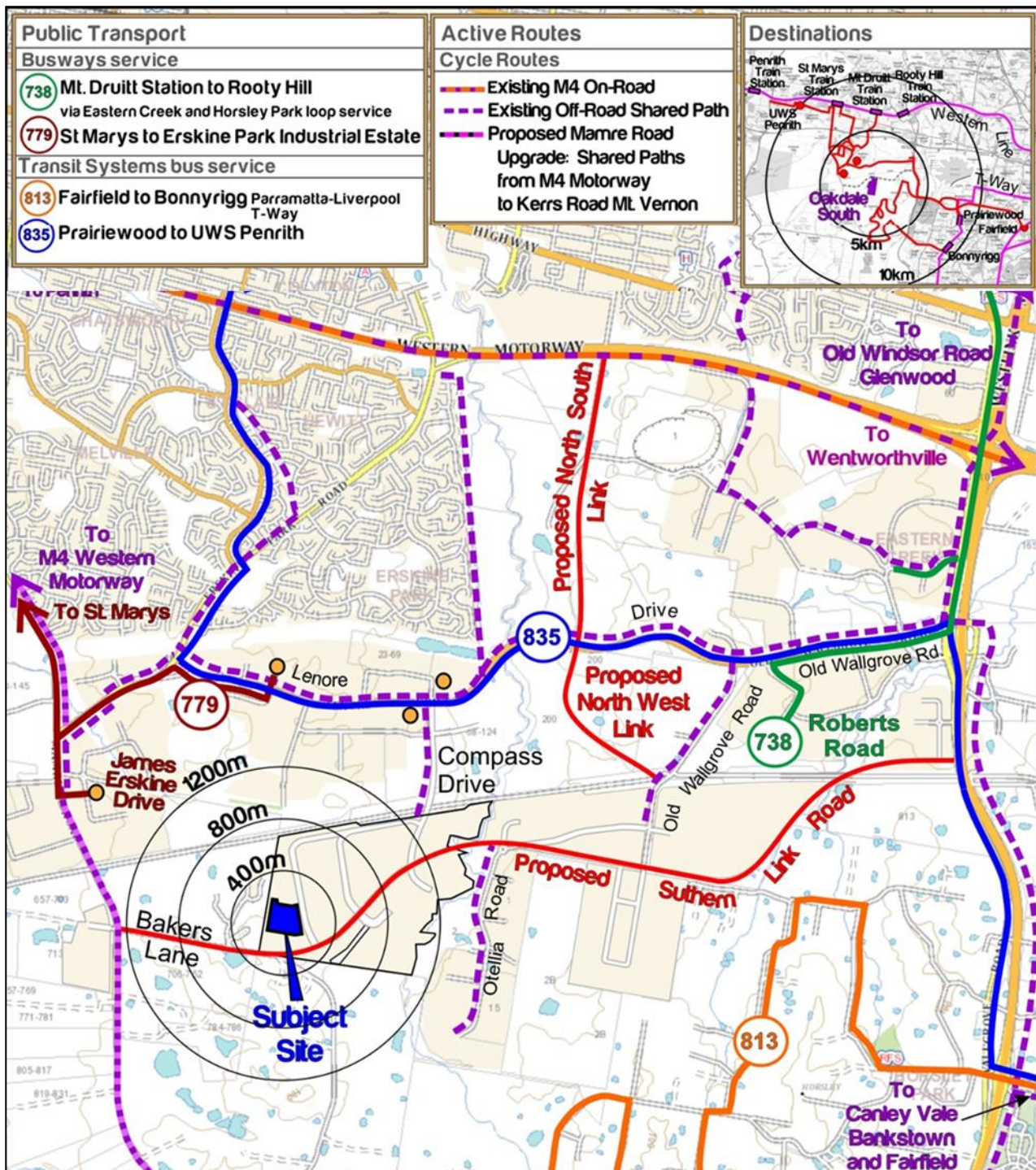


Figure 4: Existing Public Transport and Cycle Links

4 Management Plan

4.1 Traffic Movements

4.1.1 Background

The traffic report (Ason Group Ref: 1670r01) supporting the Lot 3B submission, outlined the following relevant figures with regard to future operational traffic volumes associated with the Site:

- AM Peak 58 movements per hour (movements, in & out combined)
- PM Peak 58 movements per hour (movements, in & out combined)

For the purpose of this report, 1 truck is equal to 1 inbound movement plus 1 outbound movement which equals to a total of 2 movements.

4.1.2 Current Construction Traffic Estimates

The anticipated vehicle movements generated by the construction of the Site have been estimated having consideration of the likely requirements for construction staff, plant, equipment and haulage. The anticipated construction schedule has been provided by the contractor, with the estimated traffic volumes are as follows:

- Lot 3B Construction Works – up to 70 light vehicle movements per day and 120 heavy vehicle movements per day (including truck and dog and 3 tonne rigid trucks) shall access the Site, although not in the same time period per day. Notwithstanding the estimated maximum daily construction vehicle generation is up to 190 vehicle movements per day.

For reference, the definitions of light and heavy vehicles are as follows;

- Light Vehicles: For the purpose of this report a light vehicle is a car, ute, or four-wheel drive that relates to the construction works of the site.
- Heavy Vehicle: For the purpose of this report, a heavy vehicle ranges from (but is not limited to) a 12.5m Heavy Rigid Vehicle (HRV) up to a 26.0m B-Double that relates to the construction works of the site.

For reference, a construction vehicle would relate to all contracted parties involved in day to day construction activities on site. This would include ;

- All Vehicles making material deliveries to and from the Site.
- All Contractors and their sub-contractor's construction site vehicles
- All construction staff working on the projects arriving / departing the Site in private cars.

In turn, the following are exempt from the requirements of the CTMP (as they are not part of construction works within the Site);

- All Goodman staff and their design / management consultants
- Food vans / food deliveries by non-contracted parties
- Relevant Authorities / Agencies (including DPIE or Penrith City Council/, and other stakeholders including Endeavour Energy, TransGrid, Sydney Water, NBN or others who have assets on the site)
- Members of the public who may drive in ad hoc.

4.1.3 Truck Movements & Contractor Parking

The primary construction access will be from Compass Drive via the Link Road, and an ancillary connection via Emporium Ave. However, construction activity on the site may require that access be made from the Construction Access Road (Future SLR road reserve). Relevant truck routes are outlined within Figure 3. The implementation of the access route shall be done so in accordance with any and all conditions of consent received from TfNSW.

It is expected that a schedule for deliveries of materials and goods will be established prior to that day, with Traffic Controllers maintaining radio contact with construction vehicles at all times. Thus, at no stage shall queueing occur on the public road network. In the event that vehicles were required to use a layover prior to arrival to site, it is expected that the vehicles shall laydown within Compass Drive before arriving to site in order to avoid any on-street queueing.

It is expected that future contractors shall prepare Vehicle Movement Plans (VMP) for on-site circulation for key stages generating more than 20 truck movements (10 in, 10 out) per day.

In preparing relevant details VMPs, the contractor should:

- Minimise interaction with other work areas, as far as possible.
- Where possible, separate truck movements from contractor car parking areas
- Prepare Traffic Control Plans where necessary to provide additional management of on-site vehicle movements.

It should be noted that TfNSW is yet to complete detailed design of the SLR. As such, it is unlikely that SLR works will commence during the timeframes envisaged by this CTMP. Nevertheless, regular engagement with TfNSW should be undertaken to coordinate any final design and/or construction access requirements.

Notwithstanding, It is noted that the conditions of consent require detail of specific measures to manage construction traffic during school drop-off and pick up times (Monday to Friday 8:00 – 9.30AM and 2.30 – 4:00PM, and Higher School Certificate exam periods). It is not expected that construction vehicles will utilise Bakers Lane for access to and from the Site, therefore shall not encroach within the school peak periods. Detail around vehicles not using Bakers Lane shall be included within regular toolbox talks and within the Drivers Code of Conduct.

4.1.4 TransGrid Easement

A TransGrid easement runs to the east of the Work Area which is subject to a number of restrictions. Whilst contractors associated with the subject works are not likely to impact this area, it is important to note that no vehicle circulation is permitted within 5 metres of any transmission structure or guy-wires unless otherwise pre-arranged. All endeavours shall be undertaken to limit vehicular movements with the easement areas for all construction works, wherever practicable.

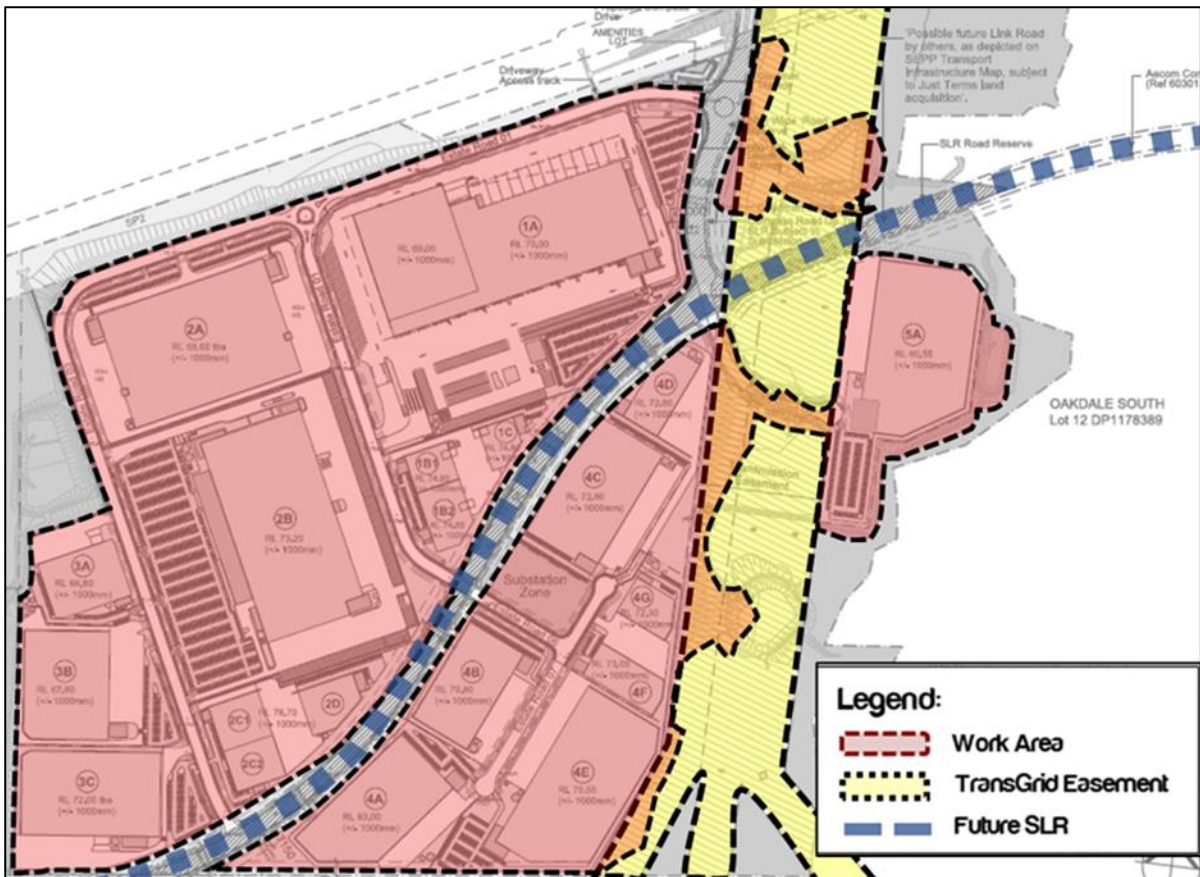


Figure 5: TransGrid Easement Within the Estate

4.2 Other General Requirements

4.2.1 Driver Code of Conduct

All drivers shall adhere to the Driver Code of Conduct, outlined in Section 5.

4.2.2 Contractor Parking

Contactors shall nominate the parking zones without obstructing any vehicle manoeuvre routes. The location of Contractor parking lots are expected to change as construction continues and encompasses various portions of the Site.

4.2.3 Access Road Management

Vehicles shall be tracked upon entry and exit of the Site's access to ensure that vehicles are abiding by both the timed restrictions and construction volume constraints.

4.2.4 Loading & Materials Handling

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

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

During latter stages of construction, tie in works will be required within the kerbside of Emporium Ave. All materials handling shall be undertaken off the public roadway, however in the event materials handling are required from the roadway, then prior approval shall be sought and obtained from the relevant Authorities. Noting that Estate Roads are currently in private ownership, this would require consent of the Estate Management and be subject to special management.

4.2.5 Work Zone Requirements

An on-street Works Zone is proposed for the use of hydrant fill points by Contractor water carts. The locations will be confirmed by the builder at a later date, and subject to approval by PCC prior to any filling.

A separate application to Council will therefore be required in the event that any special or discreet work activities do require the use of kerbside parking for the purposes of a Works Zone.

4.2.6 Fencing Requirements

Temporary exclusion fencing will be erected along the entire boundary of the site and will be maintained for the duration of the construction program. The fencing is to ensure unauthorised persons are kept out of the Site. Site access gates would be provided within Sepia Ave and will be closed at all times outside of the permitted construction hours.

Careful consideration for pedestrian protection shall be included within relevant TGS's, as outlined below.

4.2.7 Pedestrian and Cyclist Management

Chain mesh construction fencing shall be provided along all site frontages accessible by the public to prevent unwanted pedestrian and/or cyclist access.

Careful consideration for pedestrian protection shall be included within relevant TGSs, as outlined below.

4.2.8 Engineering Construction Specifications

Any Signage and/or line marking to be installed as a result of these construction works shall be installed as per Council's Engineering Construction Specification For Civil Works document (October 2017).

4.2.9 Traffic Guidance Scheme's

Any Traffic Guidance Schemes (TGSs), associated risk assessment, consultation schedules, TGS verification checklist, and inspection checklists shall be prepared by an accredited person, in accordance with the TfNSW Traffic Control at Worksites Manual (Issue 6.0) and AS1742.3:2019.

All TGSs involving signage or impacts to public roads shall be approved by the Traffic Management Centre (TMC), prior to the works for which they relate. These TGSs shall be updated to respond to any changes to prevailing traffic conditions throughout the life of the works.

5 Divers Code of Conduct

5.1 Objectives of the Drivers Code of conduct

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

5.2 Code of Conduct

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

- Demonstrate safe driving and road safety activities.
- Abide by traffic, road and environmental legislations.
- Follow site signage and instructions.
- Drivers must only enter and exit the site via the approved entry and exit points and travel routes.
- Drivers must not utilise Bakers Lane for any reason while travelling to or from the Site.

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

- Reckless or dangerous driving causing injury or death.
- Driving whilst disqualified or not correctly licensed.
- Drinking or being under the influence of drugs while driving
- Failing to stop after an incident.
- Loss of demerit points leading to suspension of licence.
- Any actions that warrant the suspension of a licence
- Exceeding the speed limit in place on any permanent or temporary roads
- The use of roads other than internal roads, and Compass Drive to arrive and/depart from the site to access the wider road network.
- Use of Bakers Lane is not permitted, for any reason.

5.3 Driver Responsibilities

All Drivers on site must:

- Be responsible and accountable for their actions when operating a company vehicle or driving for the purposes of work.
- Display the highest level of professional conduct when driving a vehicle at all times.
- Ensure they have a current driver licence for the class of vehicle they are driving, and this licence is to be carried at all times.

- Immediately notify their supervisor or manager if their drivers' licence has been suspended, cancelled, or has had limitations applied.
- Comply with all traffic and road legislation when driving.
- Assess hazards while driving.
- Undertake daily pre-start checks of oil, tyre pressures, radiator and battery levels of company vehicles they regularly used.
- Drive within the legal speed limits, including driving to the conditions.
- Not drive outside of the approved heavy vehicle routes. All drivers must obey weight, length and height restrictions imposed by the National Vehicle Regulator, and other Government agencies. Heavy Vehicles shall adhere to the routes outlined in Section 0.
- Be cognisant of the noise and emissions requirements imposed within the EIS, and in a broader sense, the NSW/ Australian Road Rules. Works must be constructed with the aim of achieving the construction noise management levels detailed in the Interim Construction Noise Guideline.
- Do not queue on public roads unless a prior approval has been sought.
- Be aware that at no time may a tracked plant be permitted or required on a paved road.
- Never drive under the influence of alcohol or drugs, including prescription and over the counter medication if they cause drowsiness – to do so will merit disciplinary measures.
- All drivers to report to their supervisor if they have been prescribed medication prior to the start of work.
- Wear a safety seat belt at all times when in the vehicle.
- Avoid distraction when driving – the driver will adjust car stereos/mirrors etc. before setting off or pull over safely to do so.
- Report ALL near-misses, crashes and scrapes to their manager,
- Report infringements to a manager at the earliest opportunity.
- Report vehicle defects to a manager prior to the next use of the vehicle.
- Follow the approved site access/egress routes only.
- Follow speed limits as imposed within the estate.
- Keep loads covered at all times.

5.4 The Site Team Responsibilities

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

This will be achieved by undertaking the following:

- Ensuring all vehicles are well maintained and that the equipment enhances driver, operator and passenger safety by way of:
 - Pre-commencement checks for all new plant arriving on-site and prior to undertaking any work.
 - Daily prestart inspections for all plant, vehicles and equipment currently on-site.
 - All construction plant must be fitted with a flashing light, fire extinguisher and reverse alarms (or squawkers).
 - Ensure all operators onsite have a current verification of competency (VOC) for their current driver's licence of the appropriate class.
- Ensure maintenance requirements are met and recorded.
- Identify driver training needs and arranging appropriate training or re-training. This may include providing the below:
 - Operator VOC assessment as part of all inductions.

- Regular Toolbox discussions on safety features, managing fatigue, approved heavy routes, driver responsibility and drink-driving.
- Encouraging Safe Driving behaviour by:
 - Ensuring the subcontractor is informed if their staff become unlicensed.
 - Not covering or reimbursing staff speeding or other infringement notices.
 - Ensuring Legal use of mobile phones in vehicles while driving only
- Encouraging better fuel efficiency by:
 - Use of other transport modes or remote conferencing, whenever practical.
 - Providing training on, and circulating information about, travel planning and efficient driving habits.

5.5 Crash or Incident Procedure

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

5.6 Environmental Procedures.

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

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

6 Transport Impact Assessment

6.1 Construction Traffic Generation

As discussed above, the construction works are expected to generate up to 180 vehicle movements per day. Vehicle movements will be spread generally throughout the day; however, the majority of works will typically generate peak hourly traffic before and after the 'network peak' periods.

Following the above, it is expected that stages are to overlap and will therefore increase the demand during each Month. The below figure outlines the cumulative daily total for each month of the construction period.

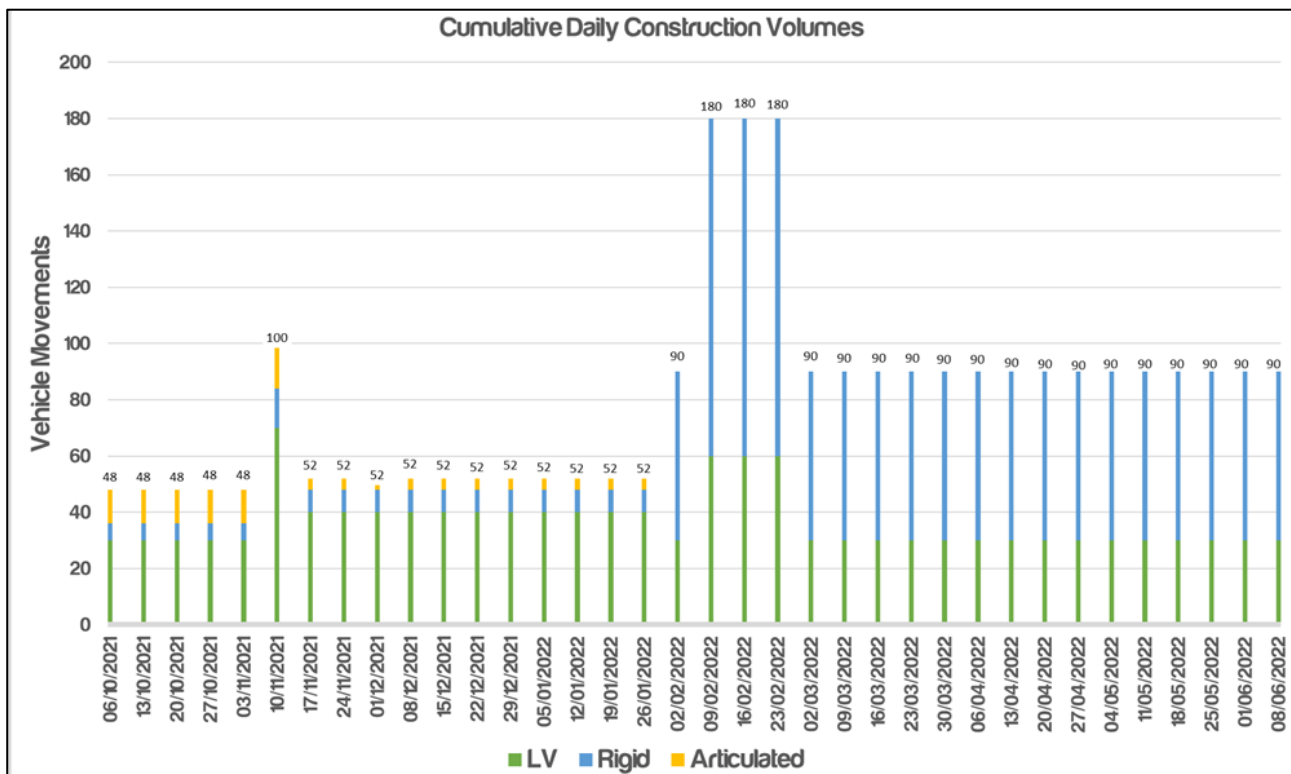


Figure 6: Construction Vehicle Volumes

6.2 Impacts on Surrounding Network

The impacts of construction traffic and the mitigating measures to be implemented are outlined below.

- **Construction Traffic within Compass Drive:** Construction traffic is substantially less than the approved future operational traffic volumes and will therefore not create any unacceptable impacts on the surrounding road network.
- **Safety During Construction:** Safety to motorists and pedestrians throughout the area will be maintained during construction through the preparation and execution of Traffic Guidance Schemes Plans (TGS's). A range of TGS's will be prepared for each access throughout construction, to identify all reasonably foreseeable hazards, assess the hazards, and manage the hazards as best possible by either eliminating or minimising the risks. TGS's shall be monitored and updated accordingly throughout the project.

- **Reporting:** Reporting and monitoring of movements is to be undertaken to ensure that drivers are adhering to approved construction hours, and to ensure that the approved traffic generation, and subsequent impacts on the road network, are in line with those approved.

In summary, based on the traffic numbers currently envisaged, the traffic impacts are considered acceptable.

6.3 Cumulative Impact

The above relates to construction traffic associated with Lot 3B works in isolation.

Noting that construction works for the remainder of the OWE infrastructure and Building works will still be underway, each contractor shall liaise regularly in order to avoid any conflict of large deliveries and to ensure that the cumulative construction impacts are minimised and do not exceed approved operational limits.

The following graphs outline that cumulative volumes of these projects against the approved daily volumes of the OWE (once fully operational). As you can see, the cumulative volumes are significantly lower than the approved volumes, which suggests that the cumulative construction shall not create any unacceptable traffic impacts to the road network.

Further to the above, it is not estimated that any other construction works shall commence until after the completion of the Compass Drive.

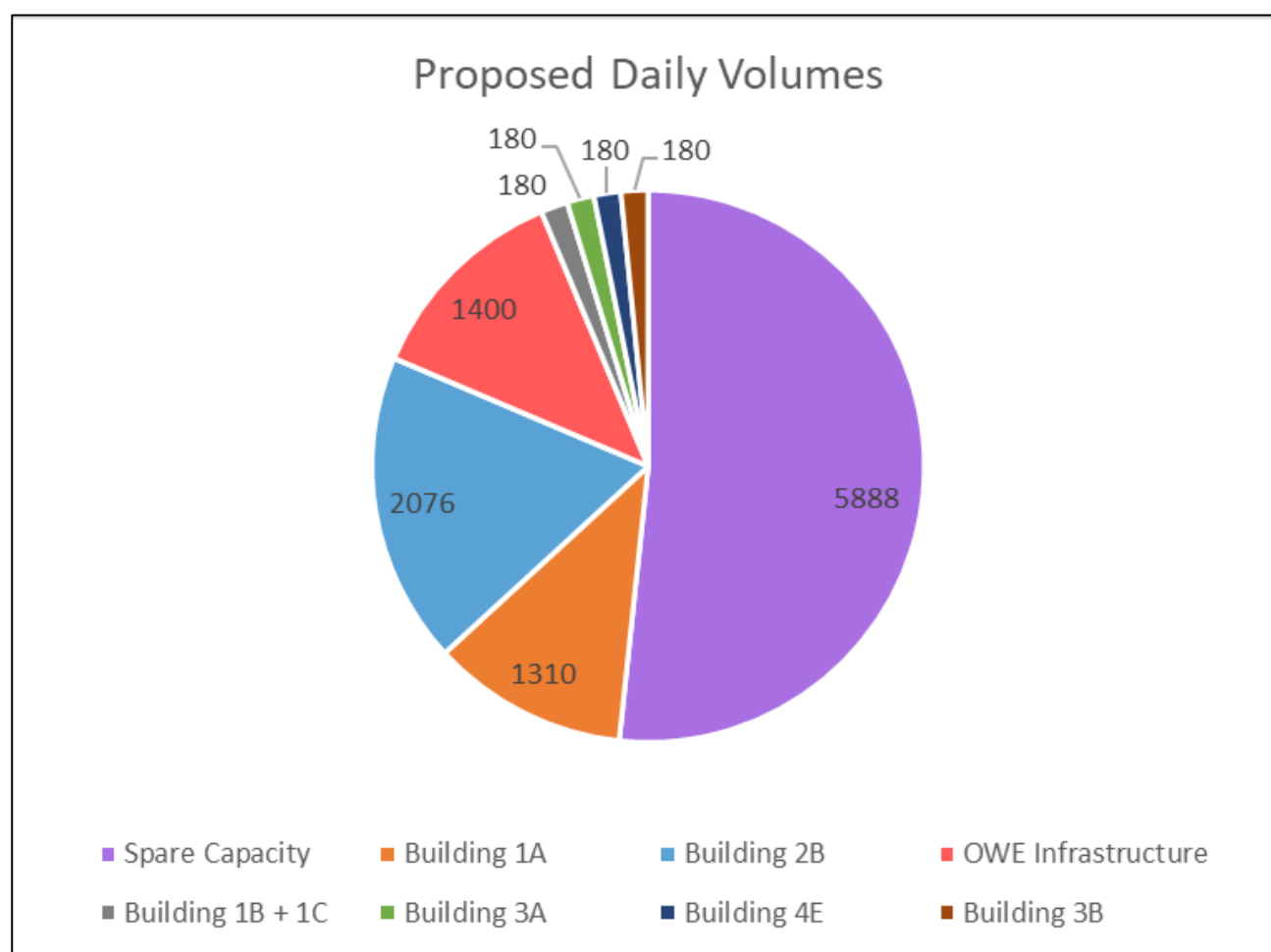


Figure 7: Cumulative Daily Construction Volumes

7 Plan Administration

7.1 Monitoring Program

This CTMP shall be subject to ongoing review and will be updated accordingly. Regular reviews will be undertaken by the on-site coordinator. As a minimum, review of the CTMP shall occur monthly. All and any reviews undertaken should be documented, however key considerations regarding the review of the CTMP shall be:

- Tracking deliveries against the volumes outlined within report. Deliveries will be tracked against approved volumes and will keep a vehicle log - including rego & time of entry - for the purpose of assessing the effectiveness of these monitoring programs.
- To identify any shortfalls and develop an updated action plan to address issues that may arise during construction (Parking and access issues)
- To ensure TGSs are updated (if necessary) by "Prepare a Work Zone Traffic Management Plan" card holders to ensure they remain consistent with the set-up on-site.
- Regular checks undertaken to ensure all loads are entering and leaving site covered as outlined within this CTMP.
- A Dilapidation report shall be undertaken every periodically to assess the condition of the road and note whether there has been any reduction in quality of the road as result of construction vehicles.

The development of a program to monitor the effectiveness of this CTMP shall be established by the Contractor. This process is expected to form part of the monitoring plan required to be included as part of the overarching Construction Environmental Management Plan (CEMP), of which this CTMP forms a part.

7.2 Contingency Plan

A contingency plan shall be established by the Contractor and is to be included in the overarching CEMP. Notwithstanding, Table 6 outlines an indicative plan to be undertaken by the builder in the event that the monitoring program identifies the management plan is not effective in managing the construction impacts.

TABLE 6: CONTINGENCY PLAN

Risk		Condition Green	Condition Amber	Condition Red
Construction Movements	Trigger	Construction traffic volume is in accordance with permissible and programmed volume and time constraints	Construction traffic volumes exceeds programmed volume but is within permissible volume constraints	Construction traffic volumes exceeds permissible volume and time constraints
	Response	No response required	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: <ul style="list-style-type: none">• Review CTMP and update where necessary• Provide additional training.	As with Condition Amber, plus; <ul style="list-style-type: none">• If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies.

				<ul style="list-style-type: none"> Stop all transportation into and out of the site.
	Trigger	Construction traffic does not utilise Bakers Lane during School Peaks	Construction traffic utilises Bakers Lane close to School Peaks	Construction traffic utilises Bakers Lane during School Peaks
	Response	No response required Continue monitoring program	Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: <ul style="list-style-type: none"> Review vehicles arriving to site and remind them of the no access to and from Bakers Lane. Provide additional training (including toolbox talks and further notification of Driver Code of Conduct) 	As with Condition Amber, plus; <ul style="list-style-type: none"> If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies. Stop all transportation into and out of the site. Review CTMP and update where necessary.
Queuing	Trigger	No queuing identified	Queuing identified within site	Queuing identified on the public road
	Response	No response required Continue monitoring program	Review the delivery schedule prepared by the builder. If drivers are not following the correct schedule, then they should be provided with additional training and an extra copy of the Driver Code of Conduct	As with Condition Amber, plus <ul style="list-style-type: none"> Review and investigate construction activities. If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies. Temporary halting of activities and resuming when conditions have improved. Stop all transportation into and out of the site. Review CTMP and update where necessary, provide additional training.
Noise	Trigger	Noise levels do not exceed imposed noise constraints	Noise levels in minor excess of imposed noise constraints	Noise levels greatly in excess of imposed noise constraints

	Response	No response required	Undertake all feasible and reasonable mitigation and management measures to minimise noise impacts.	As with Condition Amber If noise levels cannot be kept below applicable limits, then a different construction method or equipment must be utilised.
Traffic Control Plans	Trigger	No observable issues	Minor inconsistencies with TGS to onsite operations	Near miss or incident occurring regardless of / as a result of the TGS being implemented
	Response	No response required	Traffic Controller to amend TGS on site and to keep a log of all changes	Stop work until an investigation has been undertaken into the incident. There are to be changes made to the TGS to ensure that the safety of all workers, students and civilians are catered for.
Dust	Trigger	No observable dust	Minor quantities of dust in the air and tracking on to the road	Large quantities of dust in the air and tracking on to the road
	Response	No response required	Review and investigate construction activities and respective control measures, where appropriate. Implement additional remedial measures, such as: <ul style="list-style-type: none"> • Deployment of additional water sprays • Relocation or modification of dust-generating sources • Check condition of vibrating grids to ensure they are functioning correctly. • Temporary halting of activities and resuming when conditions have improved 	As with Condition Amber. <ul style="list-style-type: none"> • If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies. • Implement relevant responses and undertake immediate review to avoid such occurrence in future.

It is therefore proposed to incorporate the above items within the communications strategy. The contingency plan outlines the most effective methods to ensure that each item identified within the Monitoring Program is adhered to, resulting in the impacts to the wider community being minimised. It also represents the efforts undertaken to continually improve CTMP and ensure that the process being utilised are indeed best practice.

7.3 Communications Strategy

A communications strategy shall be established by the Contractor and is included in the overarching CEMP (refer to the community consultation strategy prepared by SLR). The contractor is to notify the community liaison representative when traffic is expected to exceed the parameters set within “Condition Green” of Table 6. Notwithstanding, Table 7 outlines an indicative communication strategy to ensure that adequate communication with key stakeholders have been met.

TABLE 7: COMMUNICATION STRATEGY

Risk	Impact	Comms Channel
Warehouse Specific Disruption	<ul style="list-style-type: none">TfNSWPenrith CouncilTransport Management Centre (TMC)NSW PoliceEmergency ServicesGoodman Construction Crews	Stakeholder meetings Stakeholder emails
Wider Traffic Specific Disruption	<ul style="list-style-type: none">TfNSWPenrith CouncilTransport Management Centre (TMC)NSW PoliceEmergency ServicesGoodmanConstruction CrewsSurrounding Residents / Tenants Schools and Aged Care Facilities in Bakers Lane	

Appendix A. Traffic Guidance Scheme

Installed as per TGS and in accordance with any changes, as shown on TGS.

Team leader (on site):

Signature:

Date:

Ticket: PWZTMP / ITMP (Please Circle)

Ticket No:

Reason for modification:

Heavy Vehicle access
to and from the Site

Emporium Ave

Future SLR currently dirt road and used
as an ancillary construction access route

NOTES

- All public roads (i.e. all roads except for the 'Mews') will have a speed limit of 50km/h
- Not all dimensions shown are to scale
- Location of signs are to be confirmed on-site to ensure appropriate visibility
- All signs are to be minimum size A
- All signs are to be Class 1 retroreflective
- All traffic control plans are to be implemented in accordance with TNSW's Traffic Control at Work Sites Technical Manual Issue 6 (released 2020) and Australian Standards AS1742.3:2019 Manual of Uniform Traffic Control Devices, Part 3: Traffic Control Devices for Works on Roads
- This Traffic Control Plan must be set up by a person holding an 'Implement Traffic Management Plan' ticket and TNSW's Traffic Control at Work Sites checklist shall be completed prior to implementation

- The accredited personnel shall implement the approved TCP before any physical work commences and ensure a copy of the TCP is kept on-site. The accredited personnel shall also drive through the site before works begin to ensure that the TCP has been implemented correctly and that it will warn, instruct and guide road users as designed. Any variations to the plan must be marked on the plan and initiated by the accredited personnel
- It is the responsibility of the accredited personnel with a 'Prepare a Work Zone Traffic Management Plan' to ensure the following:
 - * The integrity of all traffic control measures through to the final removal. This includes daily checks of all signs and devices. The corresponding records of checks shall be kept on file for auditing purposes.
 - * Vehicular access and servicing requirements are to be maintained at all times to adjacent properties affected by traffic control measures
 - * At all times an up-to-date copy of 'Traffic Control at Work Sites' shall be available for reference and implementation as required on-site

- All workers will be confined to the dedicated works area shown on the plan
- If the worksite is left unattended it is the contractor's duty to ensure that the appropriate measures are taken to provide a safe environment for vehicles and pedestrians to relevant Australian Standards
- Traffic controller (T1-34) and Prepare to Stop (T1-18) signs are to be covered or removed when traffic controller/s are not on site.
- All signage is to be clean, clearly visible and not obscured
- All workers must adhere to the applicable safe work distance as described in AS1742.3:2019
- All distances between signs are to be in accordance with Section 2.5.2 of AS1742.3:2019. However, modifications can be made to suit site conditions
- If required, a TGS must be selected, developed and implemented by a suitability qualified person (PWZTMP and ITCP qualifications)

Closure:

Trucks Turning

Client:

Goodman

Project:

Job No: 1670
Address: Lot 3B, OWE Kemps Creek

Drawing Title:

1670-SP-01-Lot 3B_Kemps Creek

Date:

07/07/2021

Scale @ A3:

Drawing Number:
AG.01

asongroup


DESIGNER: JAMES LAIDLER
CERT: 0034322012

James Laidler

Appendix B. TGS Verification Checklist

E.2 TGS verification checklist

TGS Verification must be undertaken after selecting or designing a TGS as a confirmation of appropriateness prior to approval for use. A PWZTMP or ITGS qualified person must undertake this verification.

Completed by:			
Name:	James Laidler	Signature:	
Qualification	Senior Traffic Engineer PWZTMP #0052158569		
TGS details:			
TMP Reference:	P1670r02 CC CTMP_Lot 3B, Oakdale West Industrial Estate	TGS Reference:	
Date:	06 July 2020	Review type	<input type="checkbox"/> Site Inspection <input checked="" type="checkbox"/> Desktop Review
Sources used for desktop review	Near Map, Dated 05/06/2021		
Site details			
Street name:	Compass Drive	Confirmed posted speed limits:	80km/h
Street name:	Emporium Ave	Confirmed posted speed limits:	50km/h
Street name:		Confirmed posted speed limits:	
List unique site specific Hazards / Risks identified on site.			
E.g., utilities, infrastructure, vegetation, schools,			
n/a - straight section of road with good sight distance. - low volume of traffic - no trees within the area - low speeds			

TGS details

Have the below been addressed on the TGS for this location?

Traffic volumes	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	Details	Still closed to public
Predicted queue length	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	Details	Still closed to public
Shoulder widths	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	Details	Roads Designed for B-doubles, therefore sufficient shoulder widths.
Sight distances	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	Details	Straight road with no obstructions and good sight distance
Existing infrastructure	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	Details	No trees, poles or other infrastructure
Transport services	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	Details	None within the vicinity of the Site
Pedestrian generators	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	Details	Still closed to public
Appropriate site access	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A	Details	Roads Designed for B-doubles, therefore appropriate site access.
Appropriate escape route for traffic controllers	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A	Details	No Traffic Controllers required for this TGS.

Confirmation	
Does TGS require adjustments within tolerances? If yes provide details TGS must include these adjustments with justification.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Comments or details of action taken:	
Does TGS require any additional changes or modifications? If yes provide details and return TGS to designer for additional changes or modifications	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Comments or details of action taken:	
Is TGS appropriate for use for works required at this location? If no provide details and, return TGS into file and select alternative, if design returned to designer for correction	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:	
Have key TTM risks been addressed on site? If no, provide details and return TGS to designer for correction, review and approval	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Comments or details of action taken:	

Additional comments:

Reset forms - pages 269 to 272

APPENDIX H

Soil and Water Management Plan

DRAFT

PROPOSED INDUSTRIAL DEVELOPMENT – OAKDALE WEST ESTATE – BUILDING 3B

SOIL & WATER MANAGEMENT PLAN

July 2021 - Revision 0

Prepared for:



Prepared by:

ANDREW LITTLEWOOD

CPESC & Senior Soil Conservationist

Document Status

Rev No.	Date	Revision Description	Prepared by	Reviewed		Approved	
				Name	Date	Name	Date
0	12/07/2021	Revision 0	A Littlewood				

Document Authorship Information

Project	Proposed Industrial Development – Oakdale West Estate – Building 3B, Lot 8 DP 1261030
Document	Soil & Water Management Plan – Construction of Building 3B
Document Author	Andrew Littlewood – Senior Soil Conservationist
Qualification	Certified Professional in Erosion and Sediment Control (CPESC No. 5988).
Relevant Training	<ul style="list-style-type: none"> SEEC and IECA (Australasia) – ‘Water Management on Construction sites’ & ‘Preparing and Reviewing Plans for Soil and Water Management’ – 2009 University of Western Sydney and Hawkesbury Global Ltd - Certificate of Attainment in Soil and Water Management for Urban Development - 2000
Experience – Years	21 years (2000 – 2021)
Current Employment	Director & Principal - Rubicon Enviro Pty Ltd (2016-2020)
Previous Employment	Senior Soil Conservationist & CPESC – TREES Pty Ltd (2008-2016)
Previous Employment	Erosion and Sediment Control Officer - Lake Macquarie City Council (2000 – 2007)
Professional Affiliations	Member of International Erosion Control Association (Australasia)

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Appendix A: Erosion & Sediment Control Plan

1.0 INTRODUCTION

1.1 Context

This Soil and Water Management Plan (SWMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the proposed construction of Building 3B, Lot 8 DP 1261030 (the Project) on the Stage 1 Development of Oakdale West Estate (OWE). Building 3B is being constructed for the purposes of warehousing and distribution uses.

Goodman Group as developer of the OWE is in the process of gaining the relevant Council development approvals and has elected to prepare a CEMP for the Project. The CEMP has been developed in preparation for the award of a Construction Contract to a suitably qualified building contractor (Contractor) to undertake the construction of the Project.

This SWMP is required to support the CEMP, and has been prepared to address the requirements of;

- Department of Planning, Industry and Environment Development Application - State Significant Development 7348, including subsequent Modifications of Development Consent No's 1 to. In addition, this SWMP is contingent upon, and anticipated to comply with, the conditions of the imminent Modification of Development Consent No. 7 (Mod 7). The SWMP will be revised as required in response to any relevant Mod 6 condition revisions.
- The anticipated Approval conditions of a Development Application submitted to Penrith City Council. It is expected that the DA Conditions will mirror the conditions detailed in the recent Development Approval (DA20/0843 – Consent granted on 15 April 2021 for the construction of Building 3A).

1.2 Background

Goodman Group received approval on 13 September, 2019 for the state significant development of Oakdale West Industrial Estate (OWE). OWE comprises a warehousing and distribution hub located at Kemps Creek in Western Sydney, NSW. The overall site a 154-hectare tract of land that comprises of the combined parcels of land known as Lot 3031 DP 1168407, Lot 6 DP 229784, Lot 2 DP 84578, Lot 3 DP 85393, Lot 11 DP 1178389 off Bakers Lane, at Kemps Creek, extending to Lenore Drive, Erskine Park.

As part of the staged development of OWE, Goodman is seeking Development Consent from Penrith City Council for the development of Lot 8 DP 1261030, which occupies a portion of 2 Aldington Road, Kemps Creek NSW 2178, with road frontage to the newly proclaimed public road known as Emporium Avenue. The relevant portion of the industrial development will entail the construction of Building 3B. The buildings comprise of 20 000m² of warehousing space, 1500m² of office facilities, loading docks, parking facilities for cars, trucks and motorcycles and associated landscaping.

The EIS produced for NSW DPI&E - DA SSD 7348 (Department of Planning, Industry and Environment Development Application - State Significant Development 7348) has assessed the impacts of the project on surface water and soils. The EIS prepared by Urbis noted at Section 2.3 that;

Topography & landform

- *'Landform is relatively uniform, with undulating rises and alluvial flats bisected by narrow, ridge running from the south-west to the north-east of the site.'*
- *No significant height variances with elevations from approximately 92m above AHD to approximately 50m at Ropes Creek in the east of the site.'*

Oakdale West Estate: Building 3B – Soil and Water Management Plan

Geology

- *‘Underlying geology of the site is the Wianamatta Group formation (Bringelly Shale) and alluvium associated with Ropes Creek. Surface and sub-surface conditions are as follows:*
 - *Topsoil: Clay, depth 0.0-0.04 m;*
 - *Natural Soil: Clay, depth 0.04-0.5 m;*
 - *Bedrock: Sandstone, Sandstone and shale, depth 0.7-5.0 m.*

Soils

- *‘Residual soils, characteristic of the Blacktown soil landscape, generally consist of shallow duplex soils over a clay base (OEH 2014).*
- *Overlying fluvial soils, part of the South Creek soil landscape, are associated with the alluvium across the low-lying terrain bordering Ropes Creek.*
- *No acid sulphate soils have been identified.’*

Surface Water, Hydrology and Flooding

- *‘The OWE is located within the Hawkesbury-Nepean catchment.*
- *Ropes Creek, a third order stream, flows along the eastern boundary of the site in a northerly direction into South/Wianamatta Creek approximately 13 km north of the OWE.*
- *The landscape is characterised by a series of ridgelines incised with drainage lines flowing into Ropes Creek. The drainage system within the development site is in relatively poor condition, due to erosion and trampling by cattle.*
- *An unnamed modified watercourse is to the west of the OWE.*
- *The eastern portion of the site is subject to flooding (associated with Ropes Creek) and is variably affected by the 100-year average recurrence interval (ARI) flood event.’*

Groundwater

- *‘Groundwater is expected to be relatively deep below the OWE site – no groundwater was encountered during geotechnical investigations which included boreholes drilled up to 15m below ground level.’*

Prior to the works commencing that are the subject of this SWMP, the site has had bulk earthworks undertaken by others under the approved SSD 7348 - Stage 1 Development. As a result of the preliminary bulk earthworks, the natural topography of the site has been altered, from having localised slopes to being a slightly graded, level pad with retaining wall on the southern and western boundaries.

The overall disturbance footprint of approximately 4.68 hectares would present a moderate risk of increased sediment and contaminant impacts on water quality of local waterways due to runoff from the Project.

The EIS concluded potential impacts would be minimised through the employment of safeguards and management measures stated in Section 7.1 of the EIS.

1.3 Environmental management systems overview

The overall Environmental Management System for the project is described in the Construction Environmental Management Plan (CEMP).

The SWMP will form part of the selected Contractor's environmental management framework for the project, as described in the CEMP. Management measures identified in this Plan will be incorporated into site or activity specific Environmental Work Method Statements (EWMS).

EWMS will be developed and signed off by environment and management representatives prior to associated works. Construction personnel will be required to undertake works in accordance with the identified mitigation and management measures. Works that are proposed in or near to identified Environmentally Sensitive Areas will have an EWMS prepared that details relevant environmental protection measures.

The Progressive Erosion and Sediment Control Plans (PESCPs) will be prepared in consideration of the Primary Erosion and Sediment Control Plan (ESCP) attached to this SWMP as Appendix A. The ESCP describes the intentions and fundamental principles for erosion and sediment control management for the duration of the entire project.

The PESCPs will be developed by the Project environmental team in consultation with construction personnel, and with the assistance of the Project Soil Conservationist (Certified Professional in Erosion & Sediment Control - CPESC) when required.

They will be developed prior to any construction works commencing in the work zone and will be modified as required when:

- Site conditions evolve.
- Flow paths change.
- Construction activities that affect the characteristics of ground conditions change.

A Project Soil Conservationist (CPESC) will be engaged and consulted throughout construction to provide advice on erosion and sediment control design, installation, maintenance, and the development of PESCPs.

Used together, the CEMP, strategies, procedures, EWMS and PESCP form management guides that clearly identify required environmental management actions for reference by the Contractor's personnel and sub-contractors.

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

2.0 PURPOSE & OBJECTIVES

2.1 Purpose

The purpose of this Plan is to describe how the Contractor will manage and minimise soil and water impacts during construction of the project.

2.2 Objectives

The key objective of the SWMP is to ensure that the potential impacts to soil and water quality are minimised. To achieve this objective, the Contractor will be required undertake the following:

- Ensure appropriate controls and procedures are implemented during construction activities to avoid or minimise erosion and sedimentation impacts and potential impacts to water quality in creeks, waterways and groundwater along the project corridor.
- Ensure compliance with the Project's Development Application SSD 7348 Secretary's Environmental Assessment Requirements (SEARS)
- Ensure appropriate measures are implemented to address the relevant mitigation measures detailed in the EIS.
- Ensure compliance with expected Approval Conditions of the Development Application currently being assessed by Penrith City Council. It is expected that the DA Conditions will mirror the conditions detailed in the recent Development Approval (DA20/0843 – Consent granted on 15 April 2021 for the construction of Building 3A).
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3.1 of this Plan.

2.3 Targets

The following targets have been established for the management of soil and water impacts during the project:

- Ensure compliance with the relevant legislative requirements and environmental safeguards.
- Meet New South Wales Environment Protection Authority (NSW EPA) water quality discharge parameters for all planned basin discharges.
- Manage downstream water quality impacts attributable to the project (i.e., maintain waterway health by avoiding the introduction of nutrients, sediment, and chemicals outside of that permitted by the NSW EPA and ANZECC guidelines).
- Ensure training on soil and water management is provided to all construction personnel through targeted training, site inductions and toolbox talks.

3.0 ENVIRONMENTAL REQUIREMENTS

3.1 Relevant legislation and guidelines

3.1.1 Legislation

Legislation and regulations relevant to soil and water management includes:

- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- *Environmental Planning and Assessment Regulation 2000*.
- *Protection of the Environment Operations Act 1997* (POEO Act).
- *Water Management Act 2000*.

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

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Section 120 of the NSW POEO Act states that it is illegal to pollute waters. Under the POEO Act, 'water pollution' includes introducing litter, sediment, oil, grease, wash water, debris, and flammable liquids such as paint etc. into waters or placing such material where it is likely to be washed or blown into waters or the stormwater system or percolate into groundwater. All practicable steps should be taken to minimise the risk of pollution of waters. The EPL regulates pollution of waters including discharge points for the project.

3.1.2. Guidelines and standards

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

- Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (EPA, March 2004).
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ 2000).
- Department of Environment and Conservation (DEC): Bunding & Spill Management. Insert to the Environment Protection Manual for Authorised Officers - Technical section "Bu" November 1997.
- Managing Urban Stormwater: Soils and Construction. Landcom, (4th Edition) March 2004 (reprinted 2006) (the "Blue Book"). Volume 1 and Volume 2.
- Volume 2A Installation of Services (DECCW 2008).
- Water quality guidelines for the protection of aquatic ecosystems for lowland rivers and estuaries. (ANZECC, 2000).

3.2 Environmental management measures

The environmental safeguards and management measures that are anticipated to be detailed in the Consent Conditions of the Development Application currently under assessment by Penrith City Council. This SWMP will be revised as necessary to address any changed or additional conditions imposed under DA Approval Conditions, that differ from those detailed in DA20/0843.

The environmental management measures relevant to this Plan are listed Table 3-1 below. This includes reference to required outcomes, the timing of when the commitment applies and the section of this Plan or other management system document which addresses the requirement.

Table 3-2: Management measures proposed for the Development Application currently under assessment by Penrith City Council that are relevant to construction soil and water management.

DA20/0843 Condition	Requirement	Timing	Mitigation & Management
Condition 13	Erosion and sediment control measures shall be installed prior to the commencement of works onsite	Commencement	• A SWMP and Primary ESCP will form part of the Contractors CEMP to be prepared for the Building 3B Development. The CEMP will detail the standard and specific management and mitigation measures.
Condition 13	The erosion and sediment control measures are to be maintained in accordance with the approved erosion	Commencement duration and completion	• A SWMP and Primary ESCP will form part of the Contractors CEMP to be prepared for the Building 3B Development. The CEMP will detail the

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DA20/0843 Condition	Requirement	Timing	Mitigation & Management
	and sediment control plans for the development and the Department of Housing's "Managing Urban Stormwater: Soils and Construction" 2004.		standard and specific management and mitigation measures.
Condition 13	Certification that the erosion and sediment control measures have been installed in accordance with the approved erosion and sediment control plans for the development and "Managing Urban Stormwater: Soils and Construction 2004" shall be obtained and issued a minimum 2 days before any other site works are to commence, including earthworks and clearing of the site	Commencement	The Contractor to ensure certification that the erosion and sediment control measures have been installed in accordance with Condition 13 a minimum 2 days before any other site works are to commence, including earthworks and clearing of the site.
Condition 13	The approved sediment and erosion control measures are to be installed prior to and maintained throughout the construction phase of the development until the land, that was subject to the works has been stabilised.	Commencement duration and completion	The Contractor to install, monitor and maintain sediment and erosion control measures as detailed in Table 6.1 of the SWMP and Table 9 of the ESCP.
Condition 14	Mud and soil from vehicular movements to and from the site must not be deposited on the road.	Commencement duration and completion	The Contractor to ensure that sediment tracking controls are installed, monitored and maintained as detailed in Table 9 of the ESCP.
Condition 17	All construction waste materials stored onsite are to be contained within a designated area such as a waste bay or bin to ensure that no waste materials are allowed to enter the stormwater system or neighbouring properties	Commencement duration and completion	The Contractor to ensure that waste management controls are installed, monitored and maintained as detailed in Table 9 of the ESCP.

Environmental safeguards and management measures are included in the EIS in Section 9. The environmental management measures relevant to this Plan are listed Table 3-1 below. The Table 3.1 includes reference to required outcomes, the timing of when the commitment applies and the section of this Plan or other management system document which addresses the requirement.

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Table 3-2: Management measures from the EIS relevant to construction soil and water management

Issue	SSDA Component	Mitigation & Management
General Construction Management	Stage 1 Development	<ul style="list-style-type: none"> A CEMP to be prepared for the OWE Stage 1 Development capturing standard and specific management and mitigation measures as described in the SSDA, EIS and supporting technical documents.
Earthworks	Stage 1 Development	<ul style="list-style-type: none"> Erosion and sediment controls included in SSDA package (Appendix E).
Soils & Water	Stage 1 Development	<ul style="list-style-type: none"> Erosion and sediment controls, as detailed in Appendix E and Appendix J of the EIS, to be implemented through CEMP. Stormwater to be treated to compliant levels prior to discharge. Gross Pollutant Trap (GPT) to be installed within each development site on the final downstream stormwater pit prior to discharge.
Groundwater	Stage 1 Development	<ul style="list-style-type: none"> Methods and management of any required dewatering required during construction works to be detailed in the CEMP.
Air Quality and Odour - Construction	Stage 1 Development	<ul style="list-style-type: none"> CEMP to include standard air quality control measures, contingency plans and response procedures and suitable reporting and performance monitoring procedures. CEMP to include standard odour mitigation measures for construction including keeping excavation surfaces moist covering excavation faces and/or stockpiles, use of soil vapour extraction systems and regular monitoring of discharges as appropriate

3.3 Construction Environmental Management Plan

The EIS Section 7.2 ‘Construction Environmental Management Plan’ outlines the requirements for the OWE CEMP to address construction methodology and associated management & mitigation measures, as follows;

‘The proposed OWE development would proceed in accordance with a detailed CEMP to be prepared for the site to capture both standard construction methodology, mitigation and management measures and specific measures recommended for the OWE proposal by technical assessments and studies.

The standard construction methodology to be followed in respect of the proposed development includes:

- *Diversion of “clean” water away from the disturbed areas and discharge via suitable scour protection.*
- *Provision of hay bale type flow diverters to catch drainage and divert to “clean” water drains.*
- *Diversion of sediment laden water into temporary sediment control basins to capture the design storm volume and undertake flocculation (if required).*
- *Provision of construction traffic shaker grids and washdown to prevent vehicles carrying soils beyond the site.*
- *Provision of catch drains to carry sediment-laden water to sediment basins.*
- *Provision of silt fences to filter and retain sediments at source.*
- *Where future construction and building works are not proposed, the rapid stabilisation of disturbed and exposed ground surfaces with hydroseeding.*

The above measures would remain in place for the duration of the total construction period (Stages 1, 2 and 3) until such time as the individual development lots are completed. Regular inspection of erosion and sediment control measures and other construction mitigations would be undertaken by the site contractor in accordance with the protocols established under the CEMP.

The Contractor CEMP for Building 3B will be prepared prior to the commencement of construction works on the site, and will detail measures that are in accordance with the OWE CEMP.

4.0 EXISTING ENVIRONMENT

The following sections summarise what is known about factors influencing soils and water quality within and adjacent to the project corridor. The key references in the Project EIS documents are Section 6.7 – Other Issues.

4.1 Topography and soil characteristics

Section 2.3 of the EIS for DA SSD 7348 describes the pre-existing topography and geology of the Project area as follows;

- *“Landform is relatively uniform, with undulating rises and alluvial flats bisected by narrow, ridge running from the south-west to the north-east of the site. No significant height variances with elevations from approximately 92m above AHD to approximately 50m at Ropes Creek in the east of the site.*

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- *“Underlying geology of the site is the Wianamatta Group formation (Bringelly Shale) and alluvium associated with Ropes Creek.*
- *Underlying geology of the site is the Wianamatta Group formation (Bringelly Shale) and alluvium associated with Ropes Creek. Surface and sub-surface conditions are as follows:*
- *Topsoil: Clay, depth 0.0-0.04 m;*
- *Natural Soil: Clay, depth 0.04-0.5 m;*
- *Bedrock: Sandstone, Sandstone and shale, depth 0.7-5.0 m.’*
- *Residual soils, characteristic of the Blacktown soil landscape, generally consist of shallow duplex soils over a clay base (OEH 2014).*
- *Overlying fluvial soils, part of the South Creek soil landscape, are associated with the alluvium across the low-lying terrain bordering Ropes Creek.*
- *No acid sulphate soils have been identified.’*

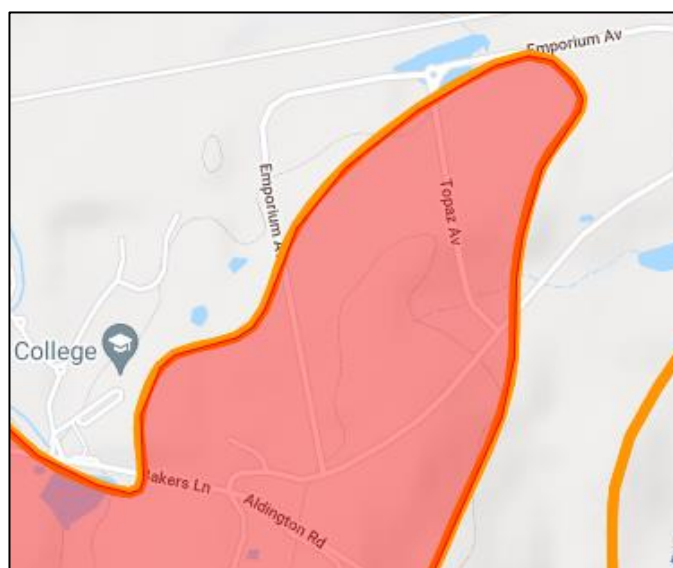
The predominant soil landscape characteristics are described in general terms in the EIS, however, further reference to NSW Office of Environment & Heritage website resource ‘eSPADE’, identified the presence of a natural soil landscape unit within the project footprint. The ‘Blacktown’ (bt) soil landscape unit occurs under the Project footprint and extends to the west and north of the Project

4.1.1. ‘Luddenham’ (lu) landscape unit

The ‘Luddenham’ (lu) soil landscape unit mainly occurs in the south and west in the Cumberland Lowland on the lesser isolated ridgelines. This soil landscape is also underlain by Wianamatta Group, Ashfield Shale and Bringelly Shale formations. The Ashfield Shale consists of laminite and dark grey shale. Bringelly Shale consists of shale, calcareous claystone, and laminite. Between these two shale members is the Minchinbury Sandstone consisting of fine to medium-grained lithic quartz sandstone. This soil landscape occurs on low rolling to steep low hills with slopes ranging from 5-20% grade. The main soils are shallow dark podzolic or massive earthy clays on crests and upper slopes loams ranging to Yellow Podzolic soils and prairie soils on lower slopes and drainage lines.

The erosion hazard of the soil type is rated as Moderate to Very High for non-concentrated flows and High to Very High for concentrated flows. Other physical limitations of the landscape unit include hard setting soil profiles, low wet strength, high shrink swell, mass movement hazard and moderately reactive soil materials. The chemical soil characteristics range from Strongly Acidic to Slightly Acidic (pH commonly ranging from 4.0 – 6.5), low fertility, and generally low available water capacity.

Figure 4.1.1 – Extract map of the occurrence of the ‘Luddenham’ (lu) soil landscape unit



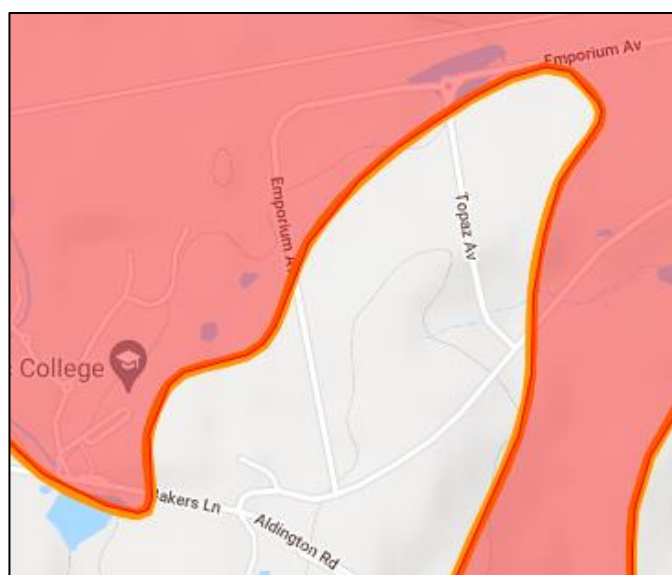
4.1.2. 'Blacktown' (bt) landscape unit

The 'Blacktown' landscape unit is the predominant soil landscape in the western Sydney area. The soil landscape occurs over the Wianamatta Group and Ashfield Shale which consists of laminite and dark grey siltstone, Bringelly Shale which consists of shale with occasional calcareous claystone, laminite and infrequent coal, and Minchinbury Sandstone consisting of fine to medium-grained quartz lithic sandstone.

The soils are characterised by Red and Brown Podzolic soils on mid to upper slopes grading to Yellow Podzolic soils on lower slopes and drainage lines.

The erosion hazard of the varying soil types is rated as Slight to Moderate for non-concentrated flows, ranging to Moderate to High for concentrated flows. Other physical limitations of the landscape unit include hard setting soil profiles, moderately reactive deep clays and High shrink-swell potential (localised). The chemical soil characteristics include generally acidic soils (pH commonly ranging from 5.0 – 7.0), low to moderate fertility, and localised sub-soil salinity.

Figure 4.1.1 – Extract map of the occurrence of the 'Blacktown' (bt) soil landscape unit



4.2 Acid Sulphate Soils

Potential Acid Sulfate Soils are soils that have concentrations of iron sulphide layers that can oxidise when exposed to oxygen generating sulphuric acid. In general, these soils occur less than 5 metres elevation above sea level and are predominantly restricted to low-lying coastal areas, adjoining estuarine areas. More recently, acid sulphate soils have been identified in long-term, drought-affected inland areas where water levels have dropped in waterways and wetlands, exposing acid sulphate material that has subsequently oxidised.

Given the general elevation and the soil types described within the Project area, acid sulphate soils are unlikely to occur in the area. A review of the relevant Acid Sulfate Soil Risk Map (ASSMAC – DLWC 1998) confirmed the Project area falls outside the study area of this resource.

Further reference to the online soil mapping resource 'eSpade' (NSW Department of Environment & Heritage) indicate that the site is not situated in an area at risk of Acid Sulphate soils. The map indicates the closest known occurrence is in the upper reaches of the Parramatta River and Georges River to the east and south east of the Project.

4.3 Surface water

The Project is located on a level pad with a retaining wall on the north and western boundaries. Preparatory earthworks by others have established cut off drains commencing on the southern boundary, draining to a temporary sediment basin in the north-western sector of the site. The drainage pattern is ephemeral with runoff generated in response to prolonged rainfall or storm events.

4.4 Water Quality and Receiving Environment Assessment

The Project activities that have the potential risk of negative impacts on water quality parameters include:

- Establishing or relocating 'dirty' water drains and 'clean' water diversions
- Installing erosion and sediment controls.
- Minor earthworks, site preparation and temporary access roads.
- Trenching and earthworks for service installation.
- In-situ concrete works and concrete curing.
- Stormwater construction and drainage stabilisation.
- Dewatering 'dirty' water from site areas and sediment basin operations.
- Spills & leaks of fuels & oils from mobile and static machinery.
- Storage of chemicals, fuels & oils.
- Generation of building and construction waste.
- Importing, handling, stockpiling and transporting materials & resources.
- Plant maintenance.
- General waste generation from compound/s & works areas.

The determination of the assessment of the drainage patterns, the heavily modified existing receiving environments, and the attributes of the receiving waters in the vicinity of the Project have been assessed as 'standard' in accordance with Blue Book Volume 1- Sect. 6.3.4 – (f) & Volume 2D – Table 6.1.

4.5 Groundwater

The presence of groundwater primarily impacts on erosion and sediment control during construction with regard to piling, foundation earthworks, trenching for drainage and services, culvert construction, and sediment basin construction. The EIS prepared for DA SSD 7348 at Section 2.3 describes the groundwater characteristics of the Project area as follows;

"Groundwater is expected to be relatively deep below the OWE site – no groundwater was encountered during geotechnical investigations which included boreholes drilled up to 15m below ground level."

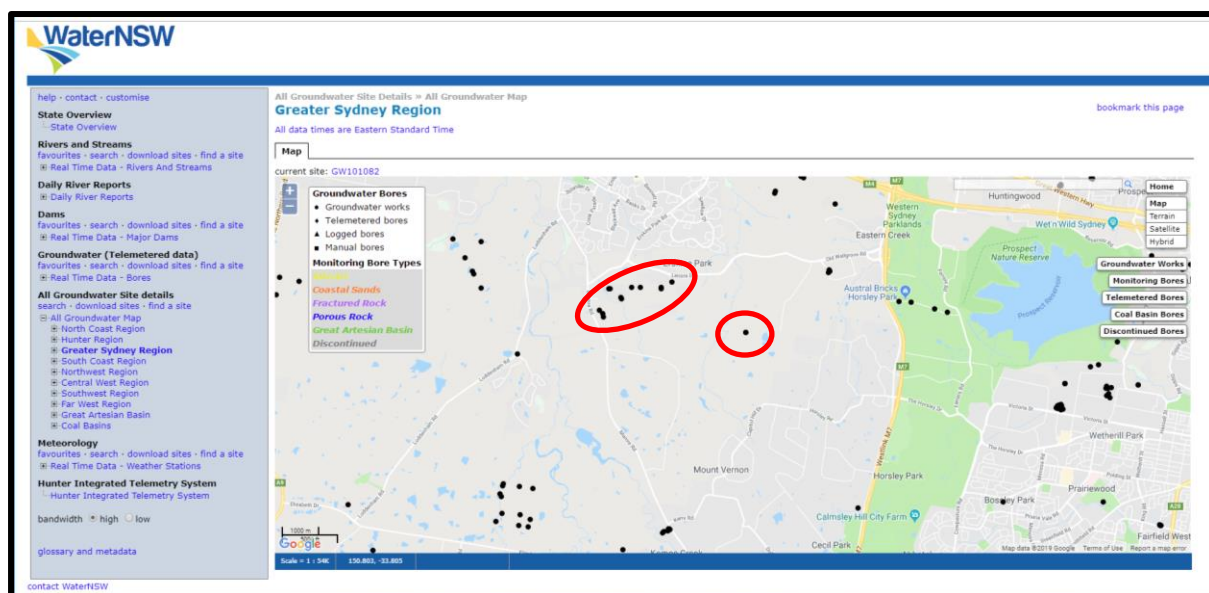
There are no obvious indicators of shallow groundwater sources, however the detectable presence of groundwater at or near the soil surface is highly dependent on seasonality and rainfall rates. Further assessment was undertaken the NSW Groundwater Bore Database (Department of Primary Industries – Water 2018).

The database was reviewed for information on existing groundwater bores in a three-kilometre radius of the Project area. Thirteen (13) groundwater sites were located in close proximity to the Project. Groundwater drill records for several sites were reviewed with final bore depths commonly being 50-60m below ground level. Groundwater table depths were not indicated.

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In summary, the assessment indicates that groundwater is not likely to impact on the scope of the Project works.

Figure 4.5 – Extract map of the occurrence of groundwater bores in the Project vicinity.
(Note the nearest groundwater bores indicated are circled in red)



4.6 Rainfall

Rainfall data was assessed from the Sydney Equestrian Centre Automatic Weather Station (AWS), located approximately 5 kilometres south-east of the Project at Horsley Park. This data was recorded between 1997 to 2021. (Bureau of Meteorology, 2021). The Sydney Equestrian Centre AWS was also selected for the Project as it will provide real time weather monitoring during the proposed construction period.

Rainfall data collected shows that typically rainfall is higher during summer and autumn. Winter and spring are generally drier periods during the year. February is the wettest month, with an average rainfall of 103.6 millimetres. Both the mean and median average annual rainfall totals are closely correlated at 757.3mm and 715.8 millimetres respectively.

Table 4-5 below provides a summary of climate data at the weather station.

Table 4-6 - Summary of rainfall records

Summary of climate records from 1997 - 2021													
Summer			Autumn			Winter			Spring			Summer	
Jan		Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Year
Mean rainfall (mm)	73.4	118.3	94.5	67.0	42.7	72.6	39.5	38.2	37.1	61.1	74.8	65.7	771.7
Mean of rain days >1mm	7.7	7.3	8.3	6.5	5.1	6.2	5.1	4.0	4.8	5.8	6.9	7.2	74.9

Red = highest value blue = lowest value

4.7 Rainfall erosivity factor and design rainfall depth


The rainfall erosivity factor is a measure of the ability of rainfall to cause erosion (referred to as “R” in the Revised Universal Soil Loss Equation - RUSLE). The rainfall erosivity factor is used to determine the soil loss in tonnes per hectare over one year and is used in calculations when sizing construction sediment basins.

The rainfall erosivity factor which is referred to as the ‘R’ Factor has been assessed from an Intensity Frequency Duration Table (see below) prepared for the site based on the 2-year, 6 hours storm event of 9.13mm/hour. The R Factor value of 1892 is calculated from the 0.5 Exceedances per Year (EY), 6 Hour storm of 9.13mm/hour being ‘S’, where $R = 164.74(1.1177)^S S^{0.6444}$, as per the Blue Book - Appendix A2 & B.

The nearest ‘Blue Book’ centre for detailed rainfall depths is Blacktown which is approximately 12kms north-east of The Project (Blue Book Volume 1- Table 6.3a). As noted above at Section 4.3, the Project was assessed as ‘standard’ in accordance with Blue Book Volume 1- Sect. 6.3.4 – (f) & Volume 2D – Table 6.1, however, we have elected to adopt the 5-day 85th percentile rainfall depth for Blacktown of 32.2mm.

Table 4.7 - Intensity Frequency & Duration Table

7/18/2021 Rainfall IFD Data System: Water Information: Bureau of Meteorology

 Australian Government
Bureau of Meteorology

Location

Label: Not provided

Latitude: -33.8287 [Nearest grid cell: 33.8375 (S)]

Longitude: 150.7973 [Nearest grid cell: 150.7875 (E)]

Very Frequent Design Rainfall Depth (mm) Issued: 18 July 2021

Rainfall depth for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).
[FAQ for New ARR probability terminology](#)

Duration	Exceedance per Year (EY)							
	12EY	6EY	4EY	3EY	2EY	1EY	0.5EY#	0.2EY*
1 min	0.817	0.942	1.17	1.33	1.58	2.03	2.57	3.31
2 min	1.39	1.63	2.01	2.28	2.66	3.32	4.15	5.24
3 min	1.89	2.21	2.75	3.14	3.68	4.61	5.79	7.33
4 min	2.32	2.72	3.41	3.90	4.59	5.80	7.31	9.30
5 min	2.70	3.17	3.98	4.57	5.41	6.87	8.69	11.1
10 min	4.11	4.83	6.13	7.07	8.44	10.9	13.9	18.0
15 min	5.09	5.97	7.57	8.75	10.5	13.6	17.3	22.5
20 min	5.83	6.84	8.67	10.0	12.0	15.6	19.9	25.7
25 min	6.44	7.55	9.55	11.0	13.2	17.1	21.8	28.2
30 min	6.96	8.15	10.3	11.9	14.2	18.4	23.4	30.2
45 min	8.18	9.57	12.0	13.8	16.5	21.4	27.0	34.6
1 hour	9.11	10.6	13.4	15.3	18.3	23.6	29.7	37.7
1.5 hour	10.5	12.3	15.4	17.6	20.9	26.9	33.7	42.5
2 hour	11.7	13.6	17.0	19.5	23.1	29.6	37.0	46.3
3 hour	13.4	15.6	19.5	22.4	26.5	34.0	42.3	52.7
4.5 hour	15.4	18.0	22.5	25.9	30.7	39.5	49.0	60.9
6 hour	17.0	19.9	25.0	28.7	34.2	44.1	54.8	68.1
9 hour	19.6	22.9	28.9	33.4	40.0	51.9	64.7	80.8
12 hour	21.5	25.3	32.1	37.2	44.7	58.4	73.1	91.9
18 hour	24.5	29.0	37.2	43.2	52.3	69.0	86.9	111
24 hour	26.8	31.8	41.0	47.9	58.2	77.5	98.1	127
30 hour	28.5	34.1	44.1	51.7	63.0	84.3	107	140
36 hour	29.9	35.9	46.6	54.8	67.0	90.1	115	151
48 hour	32.1	38.7	50.6	59.6	73.2	99.2	127	170
72 hour	34.7	42.2	55.7	66.0	81.6	111	144	194
96 hour	36.0	44.1	58.8	69.9	86.8	119	154	208
120 hour	36.8	45.0	60.7	72.5	90.3	124	160	215

www.bom.gov.au/water/designRainfalls/revise-ifd/?multi 1/2

4.8 Flooding

The Flood Impact Assessment was prepared for the approved SSD 7348 Concept Proposal and Stage 1 development EIS (at Appendix P), detailing the flooding risks and characteristics of the Project area. The EIS flood modelling concluded that flood impacts were mainly confined to the Ropes Creek flood plain and we note that Project site is elevated well above the 100-year ARI flood levels. The EIS does not propose any flood mitigation or management measures area during construction. We refer to the Figure 35, Page 145 of the EIS, partly reproduced below (Note the Project footprint is not shown on Figure 35, and it's approximate position is to the west of centre, far left of frame).

Figure 4.8 – Extract of Figure 35, Page 145 of the OWE EIS prepared by Urbis



5 ENVIRONMENTAL ASPECTS AND IMPACTS

5.1 Construction activities

Key aspects of the project that could result in adverse impacts to soils and water include:

- Installation of preliminary erosion and sediment controls and establishment of off-site water diversions.
- Establishment of compounds, exclusion zones, stockpile areas, and soils treatment area/s.
- Minor earthworks, site preparation and site access/temporary access roads.
- Trenching and earthworks for service installation.
- In-situ concrete works and concrete curing.
- Asphalt paving activities.
- Operation of internal haulage and access routes.
- Stormwater construction and drainage stabilisation, including temporary sediment basins.
- Dewatering 'dirty' water from site areas and sediment basin operations

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- Importing, handling, stockpiling and transporting materials & resources.
- Compound operation including fuel and chemical storage, refuelling and chemical handling.
- Storage of chemicals, fuels & oils.
- Spills & leaks of fuels & oils from mobile and static machinery.
- Plant maintenance.
- Generation of building and construction waste
- General putrescible waste from compound/s & works areas
- Noxious weed treatment including herbicide spraying.
- Topsoil replacement, revegetation, and landscaping
- Landscaping.

Refer also to the Aspects and Impacts Register included in the CEMP.

5.2 Impacts

The potential for impacts on soil and water will depend on a number of factors. Primarily, impacts will be dependent on the nature, extent and magnitude of construction activities and their interaction with the natural environment. Potential impacts attributable to construction might include:

- Exposure and disturbance of soils during earthworks, creating the potential for off-site transport of eroded sediments and pollutants.
- Alteration of surface and subsurface flows that could cause disturbances to hydrology and hydraulics.
- Off-site discharge of water containing sediment from dewatering activities.
- Contamination of soils, and surface and groundwater from accidental spills or oil leaks. This might include grease or fuel from machinery and vehicles, construction sites or compounds, or spills of other chemicals that may be used during the course of construction.
- Disturbance of unidentified contaminated land e.g. pesticide/chemical concentrations in soil from historical land use practices, and subsequent generation of contaminated runoff.
- Litter and gross pollutants from construction activities.
- Erosion and sedimentation of active construction zones during construction of the project as a result of a large rainfall event or storm event.

Some impacts on soil and water attributable to the Project are anticipated. Relevant aspects and the potential for related impacts have been considered in a risk assessment in the CEMP.

A full list of management measures associated with soil and water are detailed in Section 6 of this Plan below.

6 ENVIRONMENTAL CONTROL MEASURES

Specific measures and requirements to address soil and water management are outlined in in Table 6-1.

Table 6-1 - Management and mitigation measures

ID	Measure / Requirement	When to implement	Responsibility	Reference
General				
SW1	Training will be provided to all project personnel, including relevant sub-contractors on sound erosion and sediment control practices and the requirements from this plan through inductions, toolboxes and pre-start briefings.	Pre-construction Construction	Project Manager / Environmental Site Representative	Managing Urban Stormwater: Soils and Construction Volumes 1 & 2A
SW2	A Project Soil Conservationist (CPESC) will be engaged and consulted throughout construction to provide advice and review SWMP preparation, erosion and sediment control design, installation, maintenance and the development of PESCPs.	Pre-construction Construction	Project Manager / Environmental Site Representative	SSD Development Consent Condition D80 (a) Best Practice
SW3	EWMSs may be prepared and implemented to manage soil and water impacts that include but are not limited to: <ul style="list-style-type: none"> Activities assessed as having high environmental risk; Activities that impact on environmentally sensitive areas; Activities that pose a risk to receiving water quality; Earthworks including temporary stockpiling and disposal of excavated material and protocols for the management of contaminated material; Work around drainage lines and where construction water may be discharged into natural waterways; Construction and operation of sediment basins including connecting drainage for the associated catchment area; and drainage works. 	Construction	Project Engineer / Supervisor / Environmental Site Representative	Best Practice
SW4	Contaminated soils and Acid Sulfate Soils and / or Potential Acid Sulfate Soils are to be managed in accordance with the Erosion and Sediment Control Plan, which forms Appendix A of the this SWMP.	Pre-construction / Construction	Project Manager / Supervisor / Environmental Site Representative	Managing Urban Stormwater: Soils and Construction Volumes 1 & 2A
Erosion and sediment control				
SW5	A Primary Erosion and Sediment Control Plan (ESCP) has been prepared by the Soil Conservationist (CPESC) and are included in Appendix A of this Plan. The plan includes arrangements for managing wet weather events, including monitoring of potential high-risk events (such as storms) and specific controls and follow-up measures to be applied in wet weather. The Primary Erosion and Sediment Control Plan is to be referred to and considered when preparing progressive erosion and sediment control plans.	Pre-construction and construction	Environmental Site Representative / Project Soil Conservationist	SSD Development Consent Condition D80 (a) EIS Section 5.2 - Table 27: SEARs reference table & Section 7.1 – Table 43

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ID	Measure / Requirement	When to implement	Responsibility	Reference
SW6	Progressive Erosion and Sediment Control Plans (PESCPs) will be prepared and implemented in advance of construction. PESCPs will be updated as required.	Pre-construction and construction	Environmental Site Representative / Project Soil Conservationist	SSD Development Consent Condition D81 EIS Section 5.2 - Table 27: SEARs reference table & Section 7.1 – Table 43
SW7	Hardstand material, rumble grids or similar will be provided at exit points from construction areas onto public roads to minimise the tracking of soil and particulates onto public roads.	Pre-construction / Construction	Project Engineer / Supervisor	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2 Penrith City Council – Development Application DA20/0843 Condition 14
SW8	Site compounds, access tracks, stockpile sites and temporary work areas will be designed and located to minimise erosion.	Pre-construction / Construction	Project Manager / Supervisor / Environmental Site Representative	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table & Section 7.1 – Table 43 Penrith City Council – Development Application DA20/0843 Condition 13 & 14
SW9	Works will be programmed to minimise the extent and duration of unstabilised soil surfaces.	Pre-construction / Construction	Project Manager / Supervisor / Environmental Site Representative	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2 Penrith City Council – Development Application DA20/0843 Condition 13
SW10	Clean and dirty water runoff will be adequately separated to avoid mixing where possible through the use of diversions, clean water drains, and the early installation of permanent drainage infrastructure.	Pre-construction / Construction	Supervisor	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2

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ID	Measure / Requirement	When to implement	Responsibility	Reference
SW11	Stabilisation will be implemented for dormant areas exposed for four weeks or more (including stockpiles and batters); by providing soil surface protection (i.e. geotextile fabric, stabilised mulch, soil binder or spray grass)	Construction	Project Engineer / Supervisor	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2 Penrith City Council – Development Application DA20/0843 Condition 13
SW12	Drains, banks or diversions will be formed (and stabilised where required) to direct runoff from disturbed areas to sediment basins or to areas with adequate sediment control devices, and away from watercourses or tributary drainage lines. Lip berms and batter chutes with velocity dams will be progressively formed and maintained on fill formations.	Construction	Project Engineer / Supervisor	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2 Penrith City Council – Development Application DA20/0843 Condition 13
SW13	Staged re-vegetation and/or other permanent stabilisation will be implemented in Site areas as work proceeds.	Construction	Project Engineer / Supervisor / Environmental Site Representative	SSD Development Consent Condition D80 (c) EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2
Stockpiles				
SW14	Stockpiles will be: <ul style="list-style-type: none"> located in designated stockpile sites, above 10-year flood levels, located at least 5 m from likely areas of concentrated water flows and drainage lines, Topsoil stockpiles formed to heights to no greater than 2 m, and all other soil materials to be no higher than 5m, and batter slopes to be no steeper than 2:1, established so that any slump of the stockpile will not affect erosion and sediment control measures or infringe on specified minimum clearance requirement, covered or otherwise protected from erosion where stockpiles will be in place for more than 20 days, or temporary stockpiles that are susceptible to wind or water erosion, within 5 days of forming each stockpile. Managed to avoid contamination with noxious weeds and cross-mixing with other stockpiled materials. Weed growth on stockpiles will be monitored and suppressed as required. 	Construction	Project Engineer / Supervisor / Environmental Site Representative	SSD Development Consent Condition D80 (c) EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1

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ID	Measure / Requirement	When to implement	Responsibility	Reference
Sediment basins				
SW15	Construction sediment basins will be designed and constructed in accordance with the requirements and procedures detailed in the Blue Book Volume's 1 & 2D. The construction sediment basin design/s, restoration and revegetation methodology will be formulated and/or reviewed by the Project Soil Conservationist.	Pre-construction / Construction	Project Soil Conservationist / Supervisor	SSD Development Consent Condition D81 Managing Urban Stormwater: Soils and Construction Volume 1 & 2D
SW16	All sediment basins will have depth indicators installed that clearly show the sediment storage zone together with basin identification signage basin number.	Construction	Project Engineer / Supervisor / Environmental Site Representative	Managing Urban Stormwater: Soils and Construction Volume 1
SW17	Run-off from areas within catchments (that are controlled by sediment basins) is to be diverted to the sediment basins in stabilised drainage lines where possible.	Construction	Supervisor	SSD Development Consent Condition D81 EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
SW18	Suitable all-weather access will be constructed and maintained to sediment basins to allow for basin testing, treatment, discharge and maintenance.	Pre-construction / Construction	Project Engineer / Supervisor / Environmental Site Representative	Best Practice Managing Urban Stormwater: Soils and Construction Volume 1
SW19	Water quality basins shall be flocculated with an appropriate approved flocculant (eg. gypsum) using an early dosing system to minimise the settling time of suspended dispersible and small sediment particles and to maximise the efficiency of the basins.	Construction	Supervisor	SSD Development Consent Condition D81 & D82 EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
SW20	Prior to discharging any water from a sediment basin, representative water samples will be obtained and tested to ensure that it meets the NSW EPA water quality criteria.	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997 SSD Development Consent Condition D81 & D82 EIS Section 6.7.4. Managing Urban Stormwater: Soils and Construction Volume 1
SW21	Flocculant or coagulant (whether gypsum or another approved material) will be applied to settle suspended sediments within 24 hours of the conclusion of each rain event causing runoff. The cycle time to treat, dewater and return the maximum	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997

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ID	Measure / Requirement	When to implement	Responsibility	Reference
	storage capacity to any individual construction water quality basin prior to the next rainfall event shall not exceed 5 days.			SSD Development Consent Condition D81 & D82 EIS Section 6.7.4. & Section 7.1 – Table 43 Managing Urban Stormwater: Soils and Construction Volume 1
SW22	Subsequent to the initial series of basin sample tests, where a statistical correlation can be demonstrated between turbidity and Total Suspended Solids (TSS), an application will be made to the Principal to allow for the discharge of supernatant waters based on turbidity measurements before confirmatory laboratory data is available.	Construction	Environmental Site Representative	Managing Urban Stormwater: Soils and Construction Volume 1
SW23	A sediment basin management register will be maintained for each sediment basin that records; <ul style="list-style-type: none"> personnel approving the dewatering activities; time & date; water quality test results and estimated volumes for each discharge. 	Construction	Environmental Site Representative / Project Engineer	SSD Development Consent Condition D81 & D82 Best Practice Managing Urban Stormwater: Soils and Construction Volume 1
Dewatering				
SW24	Personnel responsible for approval and/or carrying out dewatering activities will be adequately trained and inducted on the dewatering procedures and requirements.	Construction	Environmental Site Representative / Supervisor	Best Practice Managing Urban Stormwater: Soils and Construction Volume 1
SW25	Water to be discharged from site will be discharged in accordance with a Site Dewatering Procedure. In accordance with NSW EPA water quality criteria, the water quality parameters for discharge from site discharge points will be: <ul style="list-style-type: none"> Total Suspended Solids <50mg/L pH 6.5 - 8.5 Oil & grease – not visible. 	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997 SSD Development Consent Condition D81 & D82 Managing Urban Stormwater: Soils and Construction Volume 1
SW26	A site dewatering register will be maintained for site areas (other than sediment basins) that require treatment, dewatering and discharge to off-site areas. The register will record; <ul style="list-style-type: none"> dewatering procedure; date and time for each discharge at each location; water quality test results for each discharge; personnel approving the dewatering activities 	Pre-construction / Construction	Environmental Site Representative / Project Engineer	NSW POEO Act 1997 SSD Development Consent Condition D81 & D82 Managing Urban Stormwater: Soils and Construction Volume 1

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ID	Measure / Requirement	When to implement	Responsibility	Reference
	<ul style="list-style-type: none"> evidence of discharge monitoring, or risk assessment and mitigation measures used to eliminate the risks of pollution or erosion. 			
SW27	Water captured in sediment basins and other site works areas will be reused for dust suppression, compaction, or other construction activities where possible. If a proposed source, other than a town water supply or natural water source, procedures will be developed for regular testing to ensure that the water is suitable for the purpose and is not hazardous to health and the environment.	Construction	Environmental Site Representative / Project Engineer / Supervisor	EIS Section 7.1 – Table 43 Managing Urban Stormwater: Soils and Construction Volume 1
SW28	<p>All dewatering activities will be subject to prior approval from relevant project personnel. The dewatering activities will be monitored to ensure:</p> <ul style="list-style-type: none"> intake suction devices are positioned to prevent extraction or disturbance of settled sediments, no erosion is occurring at discharge locations and/or downstream areas, no inadvertent or intentional controlled discharge of untreated waters occurs. 	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997 SSD Development Consent Condition D81 & D82 Managing Urban Stormwater: Soils and Construction Volume 1
Site stabilisation and restoration				
SW29	Management and procedures for site stabilisation will be in accordance with the primary Erosion and Sediment Control Plan at Appendix A of this SWMP.	Construction	Environment Manager / Project Soil Conservationist	EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
SW30	The rehabilitation of disturbed areas will be undertaken progressively as construction stages are completed and in accordance with procedures detailed in the Blue Book Volume's 1 & 2D.	Construction / Post construction	Environmental Site Representative / Supervisor	SSD Development Consent Condition D80 (c) EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
SW31	<p>Restoration of these areas includes;</p> <ul style="list-style-type: none"> topsoiling of the areas; seeding, planting, watering and maintenance; removal of temporary erosion control devices and of accumulated sediments removal of unused construction materials and waste materials. 	Construction / Post construction	Environmental Site Representative / Supervisor	EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
Spill prevention and response				
SW32	Management for spill prevention and response will be in accordance with the CEMP. An Emergency Spill Response Procedure has been developed in the CEMP.	Pre-construction / Construction	Environmental Site Representative / Supervisor / Project Manager	NSW POEO Act 1997 SSD Development Consent Condition D82 & D109
SW33	Emergency wet and dry spill kits will be kept on site at locations described within the Emergency Spill Response Management Procedures (ie at compounds). All personnel will be made aware of the spill kit locations and will be trained in their use.	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997 SSD Development Consent Condition D82

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ID	Measure / Requirement	When to implement	Responsibility	Reference
SW34	A schedule of all hazardous materials kept on site during construction will be maintained for the duration of the project.	Construction	Environmental Site Representative / Supervisor	Best Practice
SW35	<p>The ancillary facilities will be managed within the ESCP. The following measures will be included to limit sediment and other contaminations entering receiving waterways:</p> <ul style="list-style-type: none"> Chemicals will be stored within a sealed or bunded area not within 5 m of any aquatic habitat, any areas of concentrated water flow, flood prone or poorly drained areas, or on slopes steeper than 1:10 Vehicle movements will be restricted to designated pathways where feasible and appropriate controls will be in place where plant is stored Areas that will be exposed for extended periods, such as car parks and main access roads, will be stabilised where feasible. 	Contractor	Construction	NSW POEO Act 1997 SSD Development Consent Condition D82 & D110
SW36	All spills and associated environmental incidents are to be reported in accordance with the CEMP, and where applicable, in accordance with Section 148 of the NSW POEO Act 1997.	Construction	Environmental Site Representative / Supervisor	NSW POEO Act 1997

ID	Measure / Requirement	When to implement	Responsibility	Reference
Monitoring and inspections				
SW37	Nominated project personnel will conduct site inspections of erosion and sedimentation controls at least weekly.	Construction	Environmental Site Representative / Supervisor	EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
SW38	<p>All disturbed areas, revegetated/stabilised areas and all permanent and temporary erosion and sediment control works will be inspected:</p> <ul style="list-style-type: none"> At least weekly Immediately before extended site shut down At the conclusion of all rainfall events exceeding 10mm and during periods of prolonged rainfall as soon as practicable. 	Construction	Environmental Site Representative / Supervisor	EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1
SW39	<p>Any rectification measures which are identified will be addressed and / or recorded to ensure appropriate rectification within the nominated timeframe. The timeframe for rectification works is based on a risk assessment of deficiencies in controls, being;</p> <ul style="list-style-type: none"> High: within 24 hours of inspection Medium: within 3 working days of inspection; and Low: within 3 working days of inspection. 	Construction	Environmental Site Representative / Supervisor	EIS Section 7.2 Managing Urban Stormwater: Soils and Construction Volume 1

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ID	Measure / Requirement	When to implement	Responsibility	Reference
SW40	Monitoring of rainfall events (with observations of rainfall in millilitres) will be undertaken daily during normal work days.	Construction	Environmental Site Representative	Best Practice Managing Urban Stormwater: Soils and Construction Volume 1

7 COMPLIANCE MANAGEMENT

7.1 Roles and responsibilities

The Contractor's Project Team's organisational structure and overall roles and responsibilities are outlined in CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 6 of this Plan.

7.2 Training

All employees, contractors and utility staff working on site will undergo site induction training relating to soil and water management issues. The induction training will address elements including:

- Existence and requirements of this sub-plan.
- Relevant legislation.
- Incident response, management and reporting.
- Roles and responsibilities for soil and water management.
- Water quality management and protection measures.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in soil and water management. Examples of training topics include:

- ERSER control installation methodology.
- Sediment basin construction.
- Sediment basin operation.
- Sediment basin maintenance.
- Working near or in drainage lines.
- Emergency response measures in high rainfall events.
- Preparedness for high rainfall events.
- Lessons learnt from incidents and other event e.g. high rainfall/flooding.
- Spill response.
- Stockpile location criteria.

Further details regarding staff induction and training are outlined in the CEMP.

7.3 Monitoring and inspection

Regular monitoring and inspections will be undertaken during construction. Monitoring and inspections will include, but not be limited to:

- Immediate areas and drainage lines adjacent to the Project area
- Construction sediment basin water quality prior to discharge.
- Weekly and post rainfall inspections to evaluate the effectiveness of erosion and sediment controls measures in accordance with Table 6-1.

Oakdale West Estate: Building 3B – Soil and Water Management Plan

Table 7-3 Inspection Schedule

Activity	Frequency	Location	Responsibility	Record
Environmental Site Inspection	Weekly	Site wide	Environmental Site Representative	Site inspection log
Rainfall Inspection (10mm or greater rainfall).	Prior to rainfall event, during event, within 24 hours after the event	Site wide	Environmental Site Representative	Site inspection log

Additional requirements and responsibilities in relation to inspections, in addition to those in Table 6-1, are documented in the CEMP.

7.4 Licences and permits

The water quality discharge criteria for the project are listed below, in Table 7-4.

Table 7-4 Discharge water quality criteria

Parameter	Criteria	Sampling method	Frequency
pH	6.5 –8.5	Probe	Daily during any discharge
Turbidity	TBA following correlation with TSS results	Probe or Grab Sample	Likely to be required daily during any discharge
Total Suspended Solids*	50 mg/L	Grab Sample	Daily during any discharge
Oil and Grease*	No visible	Visual inspection	Daily during any discharge

Any other relevant licences or permits will be obtained in the lead up to and during construction as required.

7.5 Weather monitoring

A rain gauge to be installed in the main compound will be used in the monitoring of rainfall events. The Wet Weather Contingency Procedure is detailed in the Project ESCP at Annexure E.

7.6 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental mitigation and management measures, compliance with this plan and other relevant approvals, licences and guidelines. Audit requirements are detailed in the CEMP.

7.7 Reporting

Reporting requirements and responsibilities are documented in the CEMP.

8 REVIEW AND IMPROVEMENT

8.1 Continuous improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

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

8.2 SWMP update and amendment

The processes described in the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Any revisions to the SWMP will be in accordance with the process outlined in the CEMP.

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

Appendix A

Erosion and Sediment Control Plan

PROPOSED INDUSTRIAL DEVELOPMENT – OAKDALE WEST ESTATE – BUILDING 3B

EROSION AND SEDIMENT CONTROL PLAN

July 2021 – Revision 1

Prepared for:



Prepared by:

ANDREW LITTLEWOOD

CPESC & Senior Soil Conservationist

Document Status

Rev No.	Date	Revision Description	Prepared by	Reviewed		Approved	
				Name	Date	Name	Date
0	12/07/2021	Revision 0	A Littlewood				

Document Authorship Information

Project	Proposed Industrial Development – Oakdale West Estate – Building 3B, Lot 8 DP 1261030
Document	Erosion and Sediment Control Plan – Construction of Building 3B
Document Author	Andrew Littlewood – Senior Soil Conservationist
Qualification	Certified Professional in Erosion and Sediment Control (CPESC No. 5988).
Relevant Training	<ul style="list-style-type: none"> SEEC and IECA (Australasia) – ‘Water Management on Construction sites’ & ‘Preparing and Reviewing Plans for Soil and Water Management’ – 2009 University of Western Sydney and Hawkesbury Global Ltd - Certificate of Attainment in Soil and Water Management for Urban Development - 2000
Experience – Years	21 years (2000 – 2021)
Current Employment	Director & Principal - Rubicon Enviro Pty Ltd (2016-2020)
Previous Employment	Senior Soil Conservationist & CPESC – TREES Pty Ltd (2008-2016)
Previous Employment	Erosion and Sediment Control Officer - Lake Macquarie City Council (2000 – 2007)
Professional Affiliations	Member of International Erosion Control Association (Australasia)

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Appendices

- Appendix A** Site Characteristics & Revised Universal Soil Loss Equation Assessment ()
- Appendix B** RUSLE Catchment Assessment & Sediment Basin Calculations
- Appendix C** Sediment Basin Management & Dewatering Procedure
- Appendix D** Wet Weather Contingency Procedure
- Appendix E** Progressive Erosion & Sediment Control Plans
- Appendix F** Standard drawings

Oakdale West Estate: Building 3B – Erosion and Sediment Control Plan

1 Introduction

This Primary Erosion and Sediment Control Plan (Sub-plan) has been prepared as Appendix A in accordance with the Project Soil and Water Management Plan (SWMP).

The Sub-plan has been prepared to reduce the potential for risk of environmental impacts caused by erosion and sedimentation associated with project activities.

2 Purpose

The purpose of this Sub-plan is to outline the planning, methodologies, techniques and monitoring to minimise the potential environmental impacts of erosion and sedimentation arising from the Project construction activities.

3 Scope

The scope of the Primary ESCP will;

- Provide a strategy and framework for construction to be planned, implemented and maintained to mitigate any adverse environmental impacts,
- Propose control measures and management procedures to be implemented during construction, to avoid or minimise potential adverse impacts to soils, surface water and groundwater,

This Primary ESCP has been prepared in accordance with the requirements of the 'Blue Book' being a collective of;

- Managing Urban Stormwater: Soils and Construction 4th Edition Volume 1 – Landcom, reprinted 2006
- Volume 2A: Installation of Services – NSW Department of Environment & Climate Change (DECC), 2007
- Volume 2C: Unsealed Roads – NSW Department of Environment & Climate Change (DECC), 2007
- Volume 2D: Main Road Construction – NSW Department of Environment & Climate Change (DECC), 2007

4 Objectives

The key objectives of the Primary ESCP is to;

- Identify potential impacts to soil and water quality such as erosion and sedimentation arising from construction activities,
- Outline the soil and water management strategy for the construction phase of the development,
- Promote the adoption of sound principles and criteria for planning and implementation of erosion and sediment controls,
- Ensure the design and construction of controls is undertaken in accordance with the relevant guidelines,
- Minimise the adverse risks to soils and water by detailing mitigation measures and strategies,
- Provide an outline of a monitoring, inspection and reporting framework for the ongoing assessment of adherence to the ESCP.

Oakdale West Estate: Building 3B – Erosion and Sediment Control Plan

5 Performance Criteria & SSD Development Approval Condition Compliance

The performance criteria for the ESCP are to:

- Limit potential for adverse environmental impacts on downstream waterways, riparian zones, and other identified sensitive areas,
- Minimise the risk and subsequent occurrence of erosion and sedimentation, to mitigate the impacts on project areas, sensitive areas, and downstream environments,
- Prevent the occurrence of pollution incidents causing environmental harm,
- Maintain existing downstream waterway attributes and water quality parameters,
- Manage erosion and sedimentation with sound management practices of effective planning and formation of relevant controls
- Ensure compliance with legislative & regulatory requirements, and to maintain liaison and communication with statutory authorities and/or delegates.

5.2 SSD Development Approval Condition Compliance and Penrith City Council - Development Application DA20/0843 Compliance

The following Table 5.2 details this ESCP's compliance with the State Significant Development (SSD) Consent Condition requirements for SSD 7348 Development Consent, and also anticipated Conditions of Consent of a Development Application submitted to Penrith City Council.

Table 5.2

SSD 7348 Development Consent Condition	ESCP Section & Page
D80(a) – ' <i>Erosion and Sediment Control Plan must.... be prepared by a suitably qualified and experienced person(s);</i> '	See ' <i>Document Authorship Information</i> ' – Page 2
D80(b) – ' <i>Erosion and Sediment Control Plan must....be generally consistent with the Erosion and Sediment Control Plans in the RTS and those prepared by the contractor for each sequence of the works, as approved by the PCA.</i> '	See Section 3 - ' <i>Scope of ESCP</i> ' – Page 4. The ESCP has been prepared in accordance with the requirements of the Managing Urban Stormwater - Soils and Construction 4th Edition, Volumes 1, 2A & 2D, known as the 'Blue Book'
D80(c) – ' <i>Erosion and Sediment Control Plan must.... include detailed erosion and sediment controls developed in accordance with the relevant requirements of Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book (Landcom, 2004) guideline;</i> '	<ul style="list-style-type: none"> • See Section 8 – '<i>Erosion Control Measures and Sediment Control Methods</i>' – Table 8 – Page 10, and; • See Section 9 – '<i>Soil & Water Management Activities & Controls</i>' Table 9 – Page 13
D80(d) – ' <i>Erosion and Sediment Control Plan must.... include procedures for maintaining erosion and sediment controls in efficient working order for the duration of construction, to ensure Stage 1 complies with Condition D82.</i> '	<ul style="list-style-type: none"> • See Section 7.6 '<i>Erosion and Sediment Control Training for Site Personnel</i>' – Page 8, and; • See Section 7.7 '<i>Inspection and Maintenance</i>' – Page 8
Anticipated Conditions of Consent of the Development Application with Penrith City Council	ESCP Section & Page
Condition 13 – ' <i>Erosion and sediment control measures shall be installed prior to the commencement of works onsite.</i> '	See Section 9 – ' <i>Soil & Water Management Activities & Controls</i> ' - Table 9 – Page 13: ' <i>Planning, permits & personnel</i> ' - Point 1,3 & 5.

Oakdale West Estate: Building 3B – Erosion and Sediment Control Plan

Anticipated Conditions of Consent of the Development Application with Penrith City Council	ESCP Section & Page
Condition 13 – <i>'The erosion and sediment control measures are to be maintained in accordance with the approved erosion and sediment control plans for the development and the Department of Housing's "Managing Urban Stormwater: Soils and Construction" 2004.'</i>	<ul style="list-style-type: none"> • See Section 7.7 – 'Inspection and Maintenance' • See Section 9 – 'Soil & Water Management Activities & Controls' Table 9 – Page 13
Condition 13 <i>'Certification that the erosion and sediment control measures have been installed in accordance with the approved erosion and sediment control plans for the development and "Managing Urban Stormwater: Soils and Construction 2004" shall be obtained and issued a minimum 2 days before any other site works are to commence, including earthworks and clearing of the site.'</i>	See Section 9 – 'Soil & Water Management Activities & Controls' - Table 9 – Page 13: 'Planning, permits & personnel' - Point 1,3 & 5.
Condition 14 <i>'Mud and soil from vehicular movements to and from the site must not be deposited on the road.'</i>	See Section 9 – 'Soil & Water Management Activities & Controls' - Table 9 – Page 13: 'Clearing, site establishment, topsoil stripping & stockpiling' - Point 6, 14, 15, 16, 17, & 18.
Condition 17 <i>'All construction waste materials stored onsite are to be contained within a designated area such as a waste bay or bin to ensure that no waste materials are allowed to enter the stormwater system or neighbouring properties.'</i>	See Section 9 – 'Soil & Water Management Activities & Controls' - Table 9 – Page 13: <ul style="list-style-type: none"> • 'Clearing, site establishment, topsoil stripping & stockpiling' - Point 21. • 'Soil & Water pollution control' – Points 2-4

6. Guidelines, Standards and Procedures

Name of Document/Publication	Author	Published
Acid Sulfate Soil Manual	ASSMAC	1998
Approved Methods for the Sampling and Analysis of Water Pollutants in NSW	NSW EPA	2004
Australian and New Zealand Guidelines for Fresh and Marine Water Quality	ANZECC and ARMCANZ	2000
Bunding & Spill Management	NSW DEC	1997
Environmental Best Management Practice Guideline for Concreting Contractors	NSW DEC	2004
Guidelines for the Management of Acid Sulphate materials: Acid Sulphate Soils, Acid Sulphate Rock and Monosulphidic Black Ooze	NSW RTA	2005
Guideline for Environmental Management - Spraying Bituminous Materials	VIC EPA	2002
Guideline for Handling Liquids	NSW DECCW	2007
Managing Urban Stormwater ('Blue Book'): Soils and Construction Volume 1, 4 th Edition	NSW Landcom	2004
'Blue Book' - Volume 2A Installation of Services	NSW DECCW	2008
'Blue Book' - Volume 2D Main Roads Construction	NSW DECCW	2008
Noxious and environmental weed control handbook	NSW DPI	2014

7. Environmental Planning

Erosion and sediment control planning is based on the principle that preventing erosion where possible provides the best environmental outcomes, is more economical, and effective than controlling the capture of sediment. This is a significant goal, given the Project topography, drainage patterns and soils that have a significant proportion of sodic soils that are highly erodible.

7.1 Construction Activities

The scope and anticipated duration of the Project works present risks of environmental impacts to the environment. Key aspects of the project that could result in adverse impacts to soils and water include:

- Installation of preliminary erosion and sediment controls and establishment of off-site water diversions.
- Establishment of compounds, exclusion zones, stockpile areas, and soils treatment area/s.
- Minor earthworks, site preparation and site access/temporary access roads.
- Trenching and earthworks for sub-soil services & utility installation.
- In-situ concrete works and concrete curing.
- Asphalt & concrete paving activities.
- Operation of internal haulage and access routes.
- Stormwater construction and drainage stabilisation, including temporary sediment basins.
- Dewatering 'dirty' water from site areas and sediment basin operations
- Importing, handling, stockpiling and transporting materials & resources.
- Compound operation including fuel and chemical storage, refuelling and chemical handling.
- Storage of chemicals, fuels & oils.
- Spills & leaks of fuels & oils from mobile and static machinery.
- Plant maintenance.
- Generation of building and construction waste
- General putrescible waste from compound/s & works areas
- Noxious weed treatment including herbicide spraying.
- Topsoil replacement, revegetation, and landscaping
- Landscaping.

7.2 Impacts

The possible impacts on soil and water from the activities described include;

- Unnecessary disturbance of existing areas outside the Project footprint,
- Erosion of soils that degrade the water quality of runoff to downstream receivers, dependant flora and fauna, and sensitive areas,
- Degraded soil or water quality from exposure to contaminated soils or ASS material, or runoff from these soils,
- Contamination of soils, and surface and groundwater from accidental spills or oil leaks
- Disturbance or degradation of groundwater aquifers,
- Litter and gross pollutants from construction activities
- Atmospheric dust pollution affecting air quality of areas surrounding the Project.

7.3 'Blue Book' receiving waters classification and design criteria

The recommended minimum design criteria for temporary erosion and sediment control measures are based upon an assessment of the sensitivity of receiving environments. Reference to Project EISs describes the surrounding environmental sensitivity and land uses. In accordance with the REF and SWMP assessment, the attributes of the receiving waters in the vicinity of the Project have been assessed as 'sensitive'. The design criteria adopted will be in accordance with Blue Book Volume 1- Sect. 6.3.4 – (f) & Volume 2D – Table 6.1. however, we have elected to adopt the 5-day - 85th percentile rainfall depth for Blacktown of 32.2mm.

7.4 Key Management Strategies

The following list outlines the Key Management Strategies that will be implemented to mitigate potential erosion and sediment impacts;

- Specialist expertise and advice will be sought from an accredited Project Soil Conservationist (CPESC) in regards to the broad spectrum of erosion and sediment control issues, including but not limited to site establishment, temporary access routes, off-site water diversion, on-site drainage, sediment basin construction/operation/decommissioning, soil handling and storage, water management, stabilisation and rehabilitation/revegetation of Project areas.
- Implementation of structured erosion and sediment control training program for all relevant site personnel in the form of inductions, toolbox talks and workshops/training presentations.
- Minimising the extent and duration of construction disturbance.
- Control and diversion of off-site water flows around or across site.
- Control and diversion of on-site flows to installed sediment controls and sediment basins.
- Conservation of topsoils for site rehabilitation and revegetation.
- Implementation of progressive erosion methods & techniques throughout various work stages.
- Construction and management of suitable sediment controls including sediment filters, traps, sumps and basins.
- A thorough inspection and maintenance program to monitor, record and schedule actions for maintenance and upgrades of controls, rectification works, and sediment removal and handling.
- Establishing a procedure to monitor forecast weather events and implementing response plans for significant wind or rainfall events and flooding.
- Timely and progressive stabilisation of disturbed areas prior to final landscaping.
- Monitoring stabilisation measures and promoting prompt & effective revegetation and permanent stabilisation.

7.5 Preparation of Progressive Erosion and Sediment Control Plans (PESCP's)

This ESCP will be supplemented with Progressive Erosion and Sediment Control Plans (PESCP's) prepared as required for the relevant work areas. The PESCP's illustrate the strategy for erosion and sediment control and provides detail on structures and controls to be implemented in concert with construction activities. The PESCP's will outline structural and non-structural measures to;

- Intercept and divert clean water runoff around worksites
- Prevent erosion
- Limit the movement of sediment
- Remove or filter sediment from runoff

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- Detain or control the discharge of runoff from site
- Promote timely rehabilitation or stabilisation of disturbed areas.

There are a number of control measure options available for selection and use. The selection of controls will be in accordance with sound management practices to achieve the desired outcomes.

The PESCP's will be revised as necessary to address changes in the site conditions and nature of works. The PESCP's will be formulated in conjunction with construction personnel prior to the commencement of specific onsite activities. The plans will be prepared to manage the various works or construction stages such as:

- Compound, access, stockpile operations, and construction facilities
- Bulk earthworks for road formation, drainage, services, etc.
- Major off-site and on-site water drainage works or structures such as diversions, drains, outfalls and treatment/sediment basins
- Construction activities such as paving, kerbing/guttering, stormwater drainage and outlets, etc.
- Stabilisation of disturbed areas, access and works areas, and perimeter areas
- Decommissioning of temporary erosion and sediment controls.

The formulation of Environmental Work Method Statements (EWMS) will be sub-ordinate to the requirements of the primary ESCP, supplement the PESCP's, and will outline methods and strategies for works in critical areas such as clearing & grubbing, topsoil stripping & earthworks, works around watercourses & culvert works, construction & operation of sediment basins, drainage works and dewatering.

7.6 Erosion and Sediment Control Training for Site Personnel

Prior to the commencement of onsite activities, all site personnel will be instructed to observe site constraints and be made aware of environmental controls, in particular;

- Avoidance of disturbing or damaging 'No-Go' zones
- Effects of erosion and sedimentation and off-site or downstream impacts
- Environmental legislation, responsibilities, and 'due diligence'
- Correct establishment and maintenance of erosion and sediment controls
- 'End-of-day' site maintenance, emergency procedures, and spill response
- Personnel to monitor, review and improve controls as appropriate.

Key construction personnel would undertake additional environmental training including a specific training session for erosion and sediment control addressing:

- Environmental impacts
- Relevant legislation
- Principles and techniques of erosion and sediment control
- Preparation of PESCP's.

The structure and content of the Erosion and Sediment Control training would be developed in conjunction with Project management and construction personnel.

7.7 Inspection and Maintenance

A self-auditing program will be established for erosion and sediment control based on a check sheet developed for the site. A site inspection using the developed check sheet will be undertaken by relevant Project personnel:

- At least weekly
- Immediately before extended site shut down or prior to forecast rainfall exceeding 10mm
- At the conclusion of all rainfall events exceeding 10mm 20mm. and during periods of prolonged rainfall as soon as practicable).

The self-audit will include:

- Noting the condition of installed erosion and sediment controls onsite
- Detailing maintenance requirements (if any) for installed erosion and sediment controls
- Recording the volumes of sediment removed from sediment controls and sediment traps, where applicable
- Recording the location to where extracted sediments are disposed.

8. Erosion Control Measures and Sediment Control Methods

The formulation of the ESCP is based on the assumption that controls will generally be installed in the following progression;

- Installation of preliminary erosion and sediment controls and exclusion fencing to nominated areas of initial works and establishing exclusion zones
- Establishing any temporary roads and machinery access points in addition to those existing
- Installation of stabilised site access, site compound and facilities
- Forming temporary drains or banks to maximise diversion of off-site flows away from works area to watercourses, existing drainage lines or to temporary drainage diversion structures
- Construction of on-site water diversion drains or banks to direct runoff to the installed sediment controls
- Installation of diversion drains/banks upslope and sediment controls down slope of proposed topsoil and spoil stockpile areas
- Bulk earthworks such as cut excavations, filling, trenching, and engineered formation are controlled with a suite of erosion controls such as exclusion bunding, surface stabilisation treatments, trench stops, batter berms/chutes, contour banks, check dams, etc.
- Drainage and run-off from site areas directed to adequately designed and constructed sediment controls with regular maintenance and repair as required
- Completed areas are progressively stabilised as soon as practical with emphasis on critical areas such as drainage outlets, batters, etc.
- Sediment controls are to be maintained until adequate soil surface protection levels (>70% ground cover) are achieved in the catchment.

The erosion and sediment control measures required for Project areas during the various construction areas will be determined by reference to the guidance and measures detailed in Appendix D – in the Blue Boook Volumes 2A - 2D:– DECC 2007. Commonly employed methods and techniques that may be likely to be utilised on the Project are detailed in the following table;

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Table 8

Erosion Control – Raindrop Impact	
Situation	Control measure or method
Soil surface protection - Vegetation	<ul style="list-style-type: none"> • Temporary vegetation (cover crop only) • Permanent vegetation – introduced (exotic) pasture species or native (endemic) species
Soil surface protection - Batter protection	<ul style="list-style-type: none"> • Organic rolled erosion control products (RECP's) such as jute mesh, jute mat, coir fibre blankets • Non-organic RECP's such as non-woven geotextile membrane or heavy grade plastic sheeting. •
Soil surface protection - Mulching	<ul style="list-style-type: none"> • Hydromulch or hydraulic bonded-fibre matrix • Straw mulching with bitumen tack • Rock or gravel mulch
Soil surface protection - geobinders	<ul style="list-style-type: none"> • Organic tackifiers • Co-polymer emulsions • Bitumen emulsion •
Erosion control - Concentrated Water Flow	
Up-slope diversions	<ul style="list-style-type: none"> • Excavated channel-type bank • Back push-type bank or windrow • Catch drains •
Soft armour channels	<ul style="list-style-type: none"> • Trapezoidal or parabolic shape design drain cross sections • Organic rolled erosion control products (RECP's) such as jute mesh, jute mat, coir fibre blankets • Non-organic RECP's such as non-woven geotextile membrane or heavy grade plastic sheeting • Organic tackifiers & co-polymer emulsions • Bitumen emulsion • Hydro mulch • Standard or reinforced turf
Hard armour channels	<ul style="list-style-type: none"> • Loose rock – hard quarry rock • Rock-filled wire mattresses • Grouted rock • Cast in-situ concrete • Underlays utilising heavy grade plastic lining or geotextile lining
Check dams	<ul style="list-style-type: none"> • Stacked rock • Sandbags and aggregate filter bags • Geotextile covered straw bales • Coir logs

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Table 8

Situation	Control measure or method
Batter drainage	<ul style="list-style-type: none"> • Geotextile lined or heavy grade plastic chutes • Pipes and Half pipes • Loose-rock rip rap • Concrete (pre-cast or on-site) • Rock-filled wire mattresses
Grade control structures and flumes	<ul style="list-style-type: none"> • Geotextile lined or heavy grade plastic chutes • Pipes and Half pipes • Concrete chutes • Loose-rock rip rap • Gully pits and field inlets • Sandbag drop structures • Rock-filled wire gabions and mattress structures
Outlet dissipation structures	<ul style="list-style-type: none"> • Loose-rock rip-rap apron diffusers • Rock-filled wire mattresses • Pinned geotextile aprons • Level spreaders
Revetments and retaining walls	<ul style="list-style-type: none"> • Rip rap • Rock-filled wire gabions and mattresses
Sediment control - Sheet Flows	
Vegetative filters	<ul style="list-style-type: none"> • Turf strips
Sediment barriers/filters	<ul style="list-style-type: none"> • Sediment fencing • Topsoil berms stabilised with vegetation or geotextile with filter outlets at intervals • Excavated and geotextile lined sediment traps • Geotextile covered rock or gravel windrows • Coir logs
Site exit points	<ul style="list-style-type: none"> • Shaker grids with paved or rock aprons and sediment sumps • Wheel wash equipment and designated/controlled areas
Sediment control - Concentrated Flows	
Sediment traps	<ul style="list-style-type: none"> • Sediment basins • Stacked rock with geotextile • Excavated and geotextile lined sediment traps • Straw bale or sand bag structures • Gully pit, field inlet and kerb inlet traps

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9 Soil & Water Management Activities & Controls

The following table outlines the environmental management and mitigation measures proposed to be implemented, together with responsibilities and frequency of actions;

Table 9

Planning, permits & personnel		
Environmental Management Controls	Person Responsible	Timing / Frequency
1. All necessary licences, permits and approvals required by legislation will be obtained prior to works commencing.	Project Manager / Supervisor / Environmental Site Representative	Duration
2. Copies of any relevant licences, permits and approvals will be kept on site for inspection upon request or otherwise, as required.	Project Manager / Supervisor / Environmental Site Representative	Site establishment
3. All works and site activities will comply with the explicit requirements of any relevant licence, permit or approval.	Project Manager / Supervisor / Environmental Site Representative	Duration
4. Recordings and data from site inspections, testing, audits, and monitoring will be retained, with associated documentation maintained to demonstrate remedial action/s have occurred.	Project Manager / Supervisor / Environmental Site Representative	Duration
5. Erosion and sediment control planning is required prior to the commencement of works. The approved CEMP & SWMP is supplemented by concept Progressive Erosion & Sediment Control Plans (PESCP's) which have been developed in accordance with the requirements of ' <i>Soils and Construction: Managing Urban Stormwater</i> ' 4 th Edition. - Landcom 2006.	Project Manager / Supervisor / Environmental Site Representative	Site establishment & duration
6. The CEMP & SWMP & construction PESCP's may be supplemented by site-specific Environmental Management Plans (EMP's) which would be developed in response to a significant environmental issue emerging. The EMP's would outline the relevant environmental risks and issues, mitigation of potential risks, and detail strategies for remediation and/or management.	Project Manager / Supervisor / Environmental Site Representative	Site establishment & duration
7. The induction of employees and contractors to include a component promoting environmental awareness, legislative requirements & penalties, and basic erosion and sediment control tasks	Project Manager / Supervisor / Environmental Site Representative	Site establishment & duration
8. Toolbox talks will regularly focus on specific works, associated risks, potential impacts and mitigation measures. Specific erosion and sediment control awareness training and workshops will be undertaken by personnel with direct involvement with erosion and sediment control.	Supervisor / Environmental Site Representative	Site establishment & duration

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Environmental Management Controls	Person Responsible	Timing / Frequency
9. Promote planning for seasonal restrictions for high-risk areas and/or activities ((i.e., late summer/autumn rainfall events for culvert works or cold winter temperatures affecting revegetation)	Project Manager / Supervisor / Environmental Site Representative	Site establishment & duration
Clearing, site establishment, topsoil stripping & stockpiling		
1. Exclusion areas ('No Go' zones) to be identified, delineated where practical, and personnel instructed to avoid disturbance in these areas.	Supervisor / Environmental Site Representative	Site establishment
2. Temporary fencing or barricading such as parawebbing or perimeter tape is to be utilised on the perimeter with accompanying signage as required.	Supervisor / Environmental Site Representative	Site establishment
3. Areas of proposed works with identified noxious weed infestations to be treated with appropriate herbicide, in accordance with product directions. The weed treatment will occur in sufficient time prior to disturbance to ensure complete 'die back' prior to topsoil handling.	Supervisor / Environmental Site Representative	Site establishment
4. In areas requiring weed control, spray drift will be mitigated by conducting spraying activities in calm weather and application by hand sprayer unit where practical.	Supervisor / Environmental Site Representative	Site establishment
5. The extent of earthworks will be demarcated to the footprint necessary for the proposed works.	Supervisor / Environmental Site Representative	Site establishment & duration
6. Construct erosion resistant access routes, site access/egress points, and compound roads to be formed and stabilised as early works. Car parking areas and frequently utilised areas should be stabilised (e.g. geotextile with asphaltic millings, rock aggregate overlay, bitumen chip seal or similar) to prevent soil churning, where required. Any rock or aggregate required for vehicle access should be clean and free from soil or other contaminants.	Supervisor / Environmental Site Representative	Site establishment & duration
7. Temporary drains, banks or diversions are to be formed and stabilised to divert concentrated 'clean' flows around disturbed works areas.	Supervisor / Environmental Site Representative	Site establishment & duration
8. The installation of preliminary sediment controls such as perimeter sediment fencing, excavated sediment traps, check dams, coir log/straw bale filters, etc, will be implemented prior to disturbance within the catchment.	Supervisor / Environmental Site Representative	Site establishment
9. The stockpile locations are to avoid concentrated surface flows or areas subject to inundation during wet weather.	Supervisor / Environmental Site Representative	Site establishment & duration
10. The long-term soil stockpile locations are to be located 5 metres away from major drainage lines. The stockpiles will not be established in areas subject to concentrated surface flows, waterlogging or prolonged inundation during wet weather.	Supervisor / Environmental Site Representative	Site establishment & duration

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Environmental Management Controls	Person Responsible	Timing / Frequency
11. Stockpiles should be stabilised if they are to remain in place for more than 20 days. Rolled Erosion Control Products (RECP's such as geotextile, jute mesh, coco fibre mat, etc) or soil binders can be used on smaller stockpiles, however, larger stockpiles should be formed into crowned structures to minimise erosion and be subsequently stabilised with cover crop seeding or applied geobinders. Plastic covers should only be utilised for short term cover for wind or storm protection.	Supervisor / Environmental Site Representative	Site establishment & duration
12. Maintain minor benches or contour berms on fill batter formations until profiling for topsoiling is imminent	Supervisor / Environmental Site Representative	Duration
13. Temporary scour protection lining for major 'dirty' drains for steep or long drains to sediment basins or other controls.	Supervisor / Environmental Site Representative	Duration
14. Access to the works area, and movements on the site during construction will be limited to the defined access and project areas, where possible. Minimise vehicle movements & speed on unsealed areas and access tracks.	Supervisor / Environmental Site Representative	Duration
15. Earthworks and hauling, and vehicular movements to be limited in wet conditions.	Supervisor / Environmental Site Representative	Duration
16. Appropriate sediment tracking controls such as an aggregate/geotextile apron, shaker grid, etc will be installed at exit points from the site, where required.	Supervisor / Environmental Site Representative	Duration
17. The adjoining local road network to be regularly monitored for tracked sediments with affected areas cleaned as soon as possible in a safe manner.	Supervisor / Environmental Site Representative	Duration
18. Vehicles transporting bulk materials such as soils and fill are to correctly cover loads to prevent loss of load and/or dust generation on public roads.	Supervisor / Environmental Site Representative	Duration
19. Imported quarry product and fill materials required for construction are to be clean, and free of contaminants (ie. weeds, waste, liquids, etc).	Supervisor / Environmental Site Representative	Duration
20. Water carts are to regularly spray access tracks, works areas, & temporary stockpiles, during dry weather conditions.	Supervisor / Environmental Site Representative	Duration
21. Bunded or controlled areas for re-fuelling, material stockpiling, (and contaminated soil treatment area if required) are to be formed prior to commencement of those works in the relevant risk areas.	Supervisor / Environmental Site Representative	Site establishment & duration
22. The progress of earthworks will minimise slope lengths and gradients where practical utilising contour berms, batter berms, diversion banks, etc.	Supervisor / Environmental Site Representative	Duration
23. Personnel to ensure visual dust monitoring is maintained during works, and dust suppression is undertaken regularly.	Supervisor / Environmental Site Representative	Duration

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Environmental Management Controls	Person Responsible	Timing / Frequency
24. Minimise earthworks, soil handling and general disturbance during periods of strong and/or gusty winds.	Supervisor / Environmental Site Representative	Duration
25. Apply water sprays for dust suppression where works, soil handling and/or potentially contaminated soils are generating dust.	Supervisor / Environmental Site Representative	Duration
Drainage and water management		
1. Construct diversion drains or banks upslope of proposed works to direct off-site water flows to existing drainage or adequately stable vegetated areas.	Supervisor / Environmental Site Representative	Duration
2. Immediately line any constructed off-site water diversion with appropriate RECP's, OFM's and/or geobinders. Temporary spillways and associated structures to be suitably stabilised for the volume and turbulence of flows.	Supervisor / Environmental Site Representative	Duration
3. Sheet flows in work areas have erosion measures such as surface roughening, scribed drains and/or contour banks to reduce slope lengths. Flows from diversions to have velocities controlled and directed to sediment controls.	Supervisor / Environmental Site Representative	Duration
4. Temporary 'dirty' water drainage will be adjusted progressively to maximise flows to sediment filters and traps.	Supervisor / Environmental Site Representative	Duration
5. Permanent storm water drains and outlet structures will be stabilised as soon as possible following completion.	Supervisor / Environmental Site Representative	Duration
6. Check dams are to be constructed from geotextile/aggregate bags, sandbags, staked coir logs/straw bales or geotextile/rock formations to reduce flow velocities in unlined drains and other areas of concentrated flow (i.e. against diversion banks). Check dams are to be installed at the required intervals in drains with the frequency of the dams increasing as the grade increases	Supervisor / Environmental Site Representative	Duration
7. Trenching works on grade will be controlled with methods detailed in the 'Blue Book' – Volume 2A' - Section 6	Supervisor / Environmental Site Representative	Duration
8. Flooded excavations, ponded water, etc will be extracted as required and utilised for site purposes or treated to achieve acceptable water quality prior to discharge.	Supervisor / Environmental Site Representative	Duration
9. Flooded excavations and groundwater encountered in ASS areas or potentially contaminated areas will be tested and assessed prior to being extracted for treatment & subsequent discharge, or conveyed to a licensed liquid waste facility.	Supervisor / Environmental Site Representative	Duration
10. Site water that is to be discharged directly to a flow line, drain, watercourse, etc, will be tested, treated, and recorded prior to discharge.	Supervisor / Environmental Site Representative	Duration
11. Water quality should meet the following minimum criteria prior to discharge to any waterway or drainage line: <ul style="list-style-type: none"> • Total suspended solids (TSS) – less than 50 mg/L • pH – 6.5 to 8.5 • oil and grease – not visible and less than 10 mg/L 	Supervisor / Environmental Site Representative	Duration

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Environmental Management Controls	Person Responsible	Timing / Frequency
12. Dewatering devices or transfer pumps will be positioned to ensure that settled sediments are not disturbed or extracted. Discharge of concentrated, treated flows to lands will occur in well vegetated areas with diffusers or level spreaders to prevent erosion. Flows transferred from in-stream works to downstream areas be released in a diffused manner.	Supervisor / Environmental Site Representative	Duration
13. The appearance of water quality at the discharge outlet will be regularly monitored for any increase in turbidity, and dewatering suspended until acceptable water quality levels are regained	Supervisor / Environmental Site Representative	Duration
14. Adequately designed and constructed concrete washout facilities will be constructed in a suitable location away from drainage lines and 40m from waterways. Concrete wash down to occur directly into lined receptacles or formed washouts.	Supervisor / Environmental Site Representative	Duration
Sediment Controls		
1. Commonly used sediment control devices are outlined in Section 8 – Table 8, and some construction details are shown in the Standard Drawings shown at Appendix F. Alternative controls or methods may be employed in certain circumstances for practicality or efficiency purposes. Alternative controls or methods must demonstrate efficacy and be in accordance with the intent and objectives of the 'Blue Book'.	Supervisor / Environmental Site Representative	Duration
2. Substitute materials may be utilised in the construction of erosion or sediment controls where functionality is not affected.	Supervisor / Environmental Site Representative	Duration
3. Sediment fencing, non-woven geotextile, mulch berms, etc, will be installed on down slope work boundaries, down slope of stockpiles, cut/fill batters, access tracks, etc, to filter sheet flows.	Supervisor / Environmental Site Representative	Duration
4. Sediment filters will be formed from rock & shade cloth/geotextile structures, aggregate & geotextile filter bags, coir logs, etc, to control concentrated on-site water flows as required	Supervisor / Environmental Site Representative	Duration
5. Excavated sediment traps may be utilised at critical locations at the toe of the contributing catchment. They will be desilted at 60% capacity and are to be dewatered prior to the onset of further rainfall.	Supervisor / Environmental Site Representative	Duration
6. The excavated sediment traps should be regarded as a secondary control, relying on retention of coarse sediment in upslope controls within the construction area.	Supervisor / Environmental Site Representative	Duration
7. Aggregate filter bags or sandbag inlet traps are to be deployed on roadside pit inlets or other inlets to the drainage system.	Supervisor / Environmental Site Representative	Duration
8. Gully pit inlets will be protected with filter inlet controls formed from sediment fence, filter bags, straw bales & geotextile, coir logs, etc.	Supervisor / Environmental Site Representative	Duration
9. The sediment captured by control devices is to be removed when 30% of capacity is reached. Regular desilting is also to maintain catchment and settling capacity, and to reduce re-entrainment of settled materials in subsequent rain events.	Supervisor / Environmental Site Representative	Duration

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Soil Contamination		
Environmental Management Controls	Person Responsible	Timing / Frequency
10. Excavation of sub-soils to be inspected and monitored as works proceeds, to identify potential contamination. Any potentially contaminated soils to be stripped or excavated separately and transported directly to the designated stockpile, treatment area or licensed waste facility.	Supervisor / Environmental Site Representative	Duration
11. Potentially contaminated soils are to be stored within an appropriately bunded area and covered with heavy grade plastic or other impermeable covers for the duration of rainfall.	Supervisor / Environmental Site Representative	Duration
12. Potentially contaminated excavated material that are required to be removed from site are to be assessed and classified in accordance with the Protection of the Environment Operations Act 1997 and ' <i>Waste Classification Guidelines: Parts 1 and 2</i> ' (DECC 2008)'.	Supervisor / Environmental Site Representative	Duration
13. Excavated soils and materials (that have been assessed, classified, treated and re-assessed on site) will be re-used as fill material on site where appropriate.	Supervisor / Environmental Site Representative	Duration
14. Vehicles transporting potentially contaminated soils both on internal access tracks and public roads will correctly cover loads to mitigate dust generation or spillage.	Supervisor / Environmental Site Representative	Duration
15. The ground disturbance and machinery/vehicle movements in potentially contaminated areas will be minimised to essential works.	Supervisor / Environmental Site Representative	Duration
16. Earthworks, soil handling and general disturbance in potentially contaminated areas are to be avoided during periods of strong and/or gusty winds.	Supervisor / Environmental Site Representative	Duration
17. Water sprays are to be utilised to mitigate dust from contaminated soils in works areas, contaminated soil handling or temporary stockpile areas.	Supervisor / Environmental Site Representative	Duration
Soil & Water pollution control		
1. All waste will be handled, stored and disposed of in accordance with the ' <i>Waste Classification Guidelines: Parts 1 and 2</i> ' (DECC 2008)'.	Supervisor / Environmental Site Representative	Duration
2. Waste construction materials such as steel, concrete, etc will be removed to an appropriate recycling facility, to a suitable location for appropriate re-use, or to a licensed waste disposal facility.	Supervisor / Environmental Site Representative	Duration
3. All putrescible, construction, and food wastes are to be immediately captured and stored correctly, prior to removal to a licensed waste facility. Putrescibles and food wastes will be removed from site on a least a weekly basis.	Supervisor / Environmental Site Representative	Duration
4. The effluent from concrete wash down is to be captured by an excavated wash out pit lined with an impervious membrane at least 5 metres away from any waterway or major drainage lines. The pit is to be protected by a diversion bund to prevent entry of site run-off that may subsequently displace alkaline water/slurry. Concrete washouts to be covered for the duration of significant or prolonged rainfall.	Supervisor / Environmental Site Representative	Duration

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Environmental Management Controls	Person Responsible	Timing / Frequency
5. The water levels in concrete washout pits will be monitored and dewatered regularly. The water pH will be tested and treated where it is outside the parameters of pH 6.5-8.5. Where suitable pH is attained, the water can then be used site purposes.	Supervisor / Environmental Site Representative	Duration
6. The site machinery 'lay-up' area, re-fuelling areas and chemical storage areas are to be located at least 5 meters away from major drainage line.	Supervisor / Environmental Site Representative	Duration
7. The re-fuelling and servicing of machinery is to be undertaken at approved premises off-site where possible. Onsite refuelling and servicing only to occur with appropriate spill control measures at hand, or where established or temporary bunded areas are available.	Supervisor / Environmental Site Representative	Duration
8. Mobile plant, machinery and vehicles are to be regularly inspected and maintained to manufacturer's specifications.	Supervisor / Environmental Site Representative	Duration
9. Appropriate spill kits are to be kept on site at all times and any spillage is to be immediately cleaned up. In the event of a large or hazardous spill, contact will be made with emergency and relevant authorities, where required.	Supervisor / Environmental Site Representative	Duration
10. All site personnel will be instructed about emergency spill procedures, spill kit locations and requirements. The location of spill response kits will be established close to works or operations areas.	Supervisor / Environmental Site Representative	Duration
11. Storage of liquid construction materials (chemicals, fuels, oils, etc) will be provided in appropriately bunded areas on site to prevent leaching into soils, leaking or other transfer of material into waterways.	Supervisor / Environmental Site Representative	Duration
12. Containment bunds are to be monitored regularly and captured materials removed as required to ensure bund capacity is maintained.	Supervisor / Environmental Site Representative	Duration
13. Bunded areas will satisfy requirements of the relevant Australian Standards and 'Bunding and Spill Management (DEC, 1997)'	Supervisor / Environmental Site Representative	Duration
14. The requirements of the Australian Dangerous Goods Code will be observed for storage and transport of any hazardous materials. The compatibility of all chemicals, pesticides and fuels transported and stored will be assessed to avoid potential risk from reactions, explosion, etc.	Supervisor / Environmental Site Representative	Duration
15. All chemicals, pesticides and fuel will be stored and transported in approved containers. Chemicals, pesticides and fuels are to be labelled correctly and clearly; including using approved warning symbols etc.	Supervisor / Environmental Site Representative	Duration
16. A MSDS register and will be maintained and be readily accessible on site for all hazardous chemicals transported, handled or applied.	Supervisor / Environmental Site Representative	Duration
17. An adequate record or log of all environmentally hazardous chemicals received, used and/or disposed of will be maintained.	Supervisor / Environmental Site Representative	Duration

Oakdale West Estate: Building 3B – Erosion and Sediment Control Plan

Environmental Management Controls	Person Responsible	Timing / Frequency
18. Substitution of less hazardous materials or chemicals, or modifying methods of use/storage etc. will be implemented where possible.	Supervisor / Environmental Site Representative	Duration
19. The quantities of hazardous materials and chemicals stored or used will be minimised as far as practical.	Supervisor / Environmental Site Representative	Duration
20. Sensitive areas (ie. drainage lines) will be identified before utilising or applying chemicals. Where sensitive areas are identified, appropriate guidance and relevant restrictions will be formulated for chemical use or applications.	Supervisor / Environmental Site Representative	Duration
21. The application methods and dilution ratios specified in manufacturer's directions and/or associated MSDS will be observed by personnel.	Supervisor / Environmental Site Representative	Duration
Stabilisation		
1. Promote efficient staging planning for early stabilisation of perimeter or completed areas. (i.e. stabilisation of permanent drains, batters, Sealing & paving, and decommissioning of temporary controls)	Supervisor / Environmental Site Representative	Duration
2. Stabilisation of areas is to occur progressively in conjunction with the completion of earthworks.	Supervisor / Environmental Site Representative	Duration
3. Suitable design and construction techniques are to be selected for stabilisation of relevant areas such as drain linings, batter treatments, etc.	Supervisor / Environmental Site Representative	Duration
4. Completed earthworks areas will be backfilled and compacted in a staged manner as soon as possible. Adjacent disturbed areas will be suitably trimmed and stabilised as required.	Supervisor / Environmental Site Representative	Duration
5. Erosion and sediment controls are to be maintained until the relevant catchments are stabilised, re-vegetated, or sealed adequately to achieve soil surface protection factors as per the 'Blue Book', SWMP & ESCP requirements.	Supervisor / Environmental Site Representative	Duration
6. Any aggregate placed for vehicle access or as a work platform should be removed to a suitable location for recycling, appropriate re-use, or to a licensed waste disposal facility.	Supervisor / Environmental Site Representative	Duration
7. Cover crop seeding to occur dependent on the seasonal conditions and timing of final landscaping.	Supervisor / Environmental Site Representative	Duration

Appendix A

Site Characteristics & Revised Universal Soil Loss Equation Assessment

Site Characteristics Table & Revised Universal Soil Loss Equation (Rusle) Data

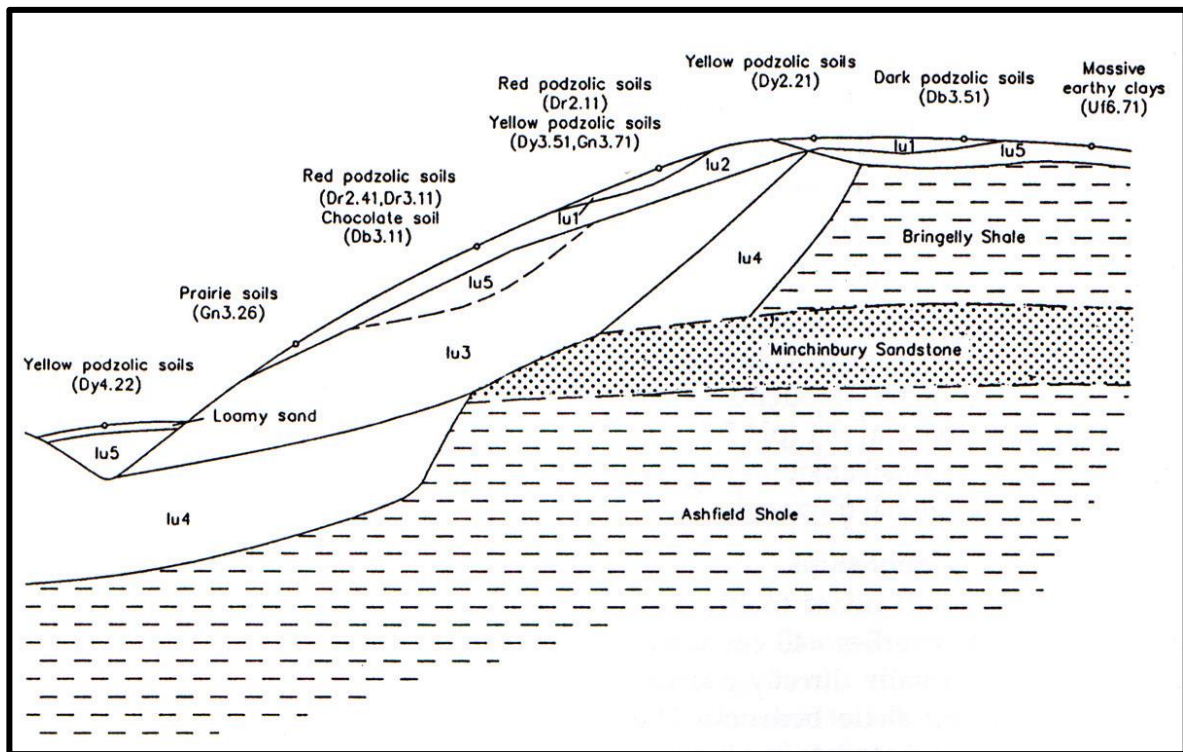
Location	Oakdale West Estate -Building 3B
Construction duration	<12 months earthworks – 85 th ile adopted (Sect. 6.3.4 – (f). Blue Book)
Erosion Hazard	High (On slopes >11%) (Sect 4.4.1 & Figure 4.6 – Blue Book)
Soil Loss Class	Class 1-2 (Very Low on slopes <6% ranging to Moderate on slopes <15%) (Sect 4.4.2. & Table 4.2 – Blue Book)
Batter Restrictions	Yes Generally, >20m batter length @ 2H:1V ranging to >30m @ 3H:1V (Sect 4.4.2 – (a) & Figure 4.7 – Blue Book)
Seasonal erosion hazard	No (Sect 4.4.2 – (c), Figure 4.9 & Table 4.3 – Blue Book)
Soil texture group	
Luddenham (lu) Soil Landscape: High to Very High Hazard landscape	lu1—Friable dark brown loam.
	lu2—Hard setting brown clay loam.
	lu3—Whole coloured, strongly pedal clay.
	lu4—Mottled grey plastic clay.
	lu5—Apedal brown sandy clay.
Blacktown (bt) Soil Landscape: Moderate to High Erosion Hazard landscape	bt1—Friable brownish black loam.
	bt2—Hard setting brown clay loam.
	bt3—Strongly pedal, mottled brown light clay.
	bt4—Light grey plastic mottled clay.
USCS Class	Blacktown: ML (Low Plasticity Silts) to CL (Low Plasticity Clays) Luddenham: CL (Low Plasticity Clays)
Soil erodibility factor – K factor	Blacktown (bt) Soil Landscape: 0.038 Luddenham (lu) Soil Landscape: 0.038 (0.050 Adopted) (Appendix C – Table 19 – Penrith Soil Landscapes – Blue Book)
Sediment Type	Luddenham (lu) Soil Landscape: Type F & D Blacktown (bt) Soil Landscape: Type F & D (Type D Adopted) (Appendix C – Table 19 – Penrith Soil Landscapes – Blue Book))

Site Characteristics Table & Revised Universal Soil Loss Equation (RUSLE) Data

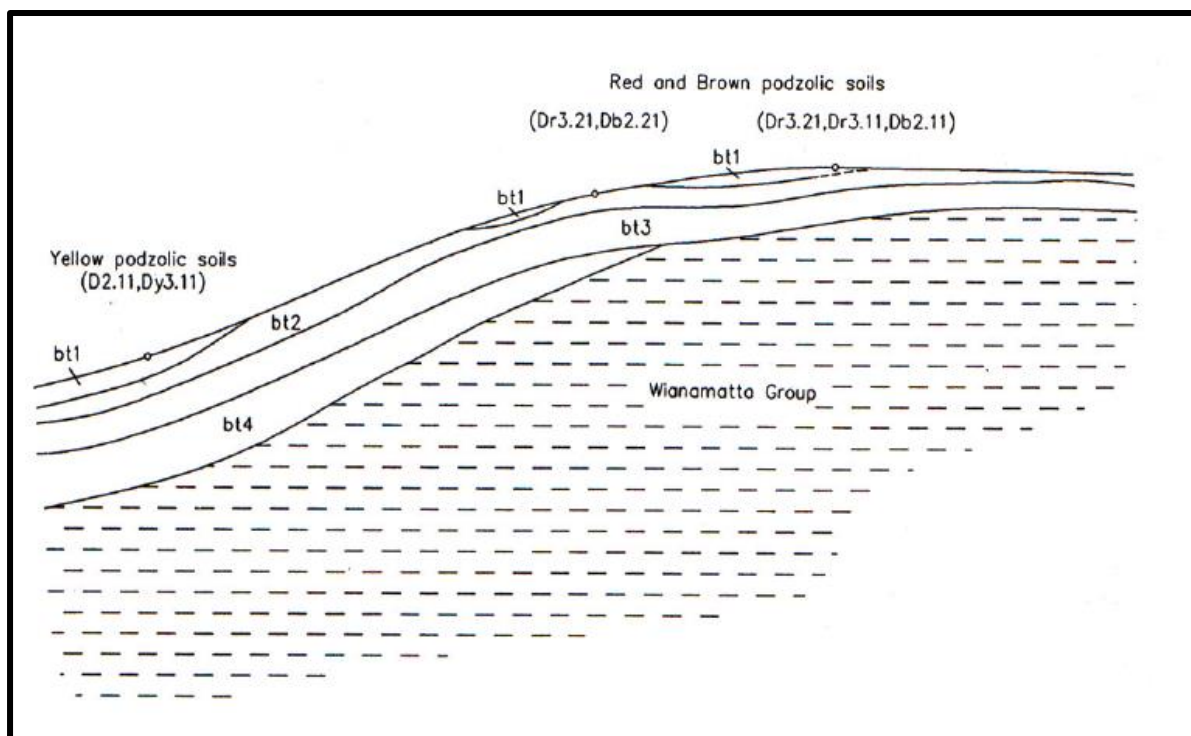
Location	Oakdale West Estate -Building 3A
Soil hydrologic group	Luddenham (lu) Soil Landscape: Group C Blacktown (bt) Soil Landscape: Group C (Group C Adopted) (Appendix C – Table 19 – Penrith Soil Landscapes – Blue Book))
85th %ile, 5-day rainfall event	32.2 mm - Blacktown (Sect 6.3.4 – Table 6.3a - Blue Book)
Rainfall Intensity - millimetres per hour	10.0mm/hour (2 Year, 6 Hour storm – BOM IFD Table)
Rainfall Erosivity – R factor	1892 (Calculated from 2-year EY, 6 Hour storm, where S=9.13mm/hour and where $R = 164.74(1.1177)^S S^{0.6444}$ Blue Book - Appendix A2 & B)
Volumetric runoff coefficient - Cv	0.51 (Blue Book – Appendix F: Table F2)
Grade	Luddenham (lu) Soil Landscape – 5-20% (commonly 10 -15%) Blacktown (bt) Soil Landscape - commonly 5% occasionally ranging to 10%)
Slope Length	80 metres adopted
LS Factor	Variable
Erosion control practice factor – P factor	1.3
Ground cover – C Factor	1.0
Sediment Storage Zone Volume design	2 months soil loss (Sect 6.3.4.- I (ii) - Blue Book)

Typical Soil Profile diagrams

Luddenham (lu) Soil Landscape



Blacktown (bt) Soil Landscape



Appendix B

RUSLE Catchment Assessment & Sediment Basin Calculations

1. Erosion Hazard and Sediment Basins

Site Name: Oakdale West Estate

Site Location: Building 3B

Precinct/Stage: Stage 5

Other Details: Calculations for the 80th%ile & 85th%ile rain events at grades ranging from 1% to 2%

Site area	Sub-catchment or Name of Structure						Notes
	1%/80	2%/80	1%/85	2%/85			
Total catchment area (ha)	4.68	4.68	4.68	4.68			
Disturbed catchment area (ha)	4.68	4.68	4.68	4.68			

Soil analysis (enter sediment type if known, or laboratory particle size data)

Sediment Type (C, F or D) if known:	D	D	D	D			From Appendix C (if known)
% sand (fraction 0.02 to 2.00 mm)							Enter the percentage of each soil fraction. E.g. enter 10 for 10%
% silt (fraction 0.002 to 0.02 mm)							
% clay (fraction finer than 0.002 mm)							
Dispersion percentage							E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							See Section 6.3.3(e). Auto-calculated
Soil Texture Group	D	D	D	D			Automatic calculation from above

Rainfall data

Design rainfall depth (no of days)	5	5	5	5			See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25.
Design rainfall depth (percentile)	80	80	85	85			
x-day, y-percentile rainfall event (mm)	24.6	24.6	32.2	32.2			
Rainfall R-factor (if known)	1892	1892	1892	1892			Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)	9.13	9.13	9.13	9.13			

RUSLE Factors

Rainfall erosivity (R-factor)	1892	1892	1892	1892			Auto-filled from above
Soil erodibility (K-factor)	0.05	0.05	0.05	0.05			RUSLE LS factor calculated for a high nli/interim ratio.
Slope length (m)	80	80	80	80			
Slope gradient (%)	1	2	1	2			
Length/gradient (LS-factor)	0.19	0.41	0.19	0.41			
Erosion control practice (P-factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (C-factor)	1	1	1	1	1	1	

Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins)

Storage (soil) zone design (no of months)	2	2	2	2			Minimum is generally 2 months
Cv (Volumetric runoff coefficient)	0.51	0.51	0.51	0.51			See Table F2, page F-4 in Appendix F

Calculations and Type D/F Sediment Basin Volumes

Soil loss (t/ha/yr)	24	50	24	50			
Soil Loss Class	1	1	1	1			See Table 4.2, page 4-13
Soil loss (m ³ /ha/yr)	18	39	18	39			Conversion to cubic metres
Sediment basin storage (soil) volume (m ³)	14	30	14	30			See Sections 6.3.4(i) for calculations
Sediment basin settling (water) volume (m ³)	587	587	769	769			See Sections 6.3.4(i) for calculations
Sediment basin total volume (m ³)	601	617	783	799			

NB for sizing of Type C (coarse) sediment basins, see Worksheet 3 (if required).

Appendix B

Sediment Basin Management & Dewatering Procedure

1.1 Purpose

The purpose of the Sediment Basin Management & Dewatering Procedure (the Procedure) is to detail the actions to be taken in regard to site dewatering in general and specific measures for the construction and maintenance of sediment basins including steps to be taken prior to any discharge.

Adherence to the methodology outlined in procedure will ensure that works are carried out in accordance with industry standard and environmental conditions.

1.2. Scope

The Procedure applies to the following works:

- Sediment basin management and maintenance; and
- Dewatering of excavations and construction water generally, and
- Acid sulfate leachate ponds in the event that acid sulfate soils or rock is encountered.

1.3. Objectives

The objectives of this Procedure are to:

- Ensure all Project personnel are aware of the requirements of this procedure
- Detail personnel responsible for undertaking actions relating to sediment basin, construction dewatering and acid sulfate leachate management on the site;
- Providing a uniform, controlled methodology and clear criteria for water releases from the site;
- Implement industry standard methods for managing sediment basins and dewatering in accordance with best practice guidelines such as Managing Urban Stormwater Soils and Construction (Landcom 2004) and Acid Sulfate Soil Manual (ASSMAC 1998);
- Ensure water discharges from site are compliant with:
 - the NSW EPA Water Quality Criteria;
 - Managing Urban Stormwater Soils and Construction (Landcom 2004)
 - Approved Erosion and Control Plan; and
- Comply with environmental requirements of the Project, including all legal requirements and contractual obligations.

The procedure shall ensure appropriate environmental protection measures are in place relating to sediment basins, construction water management (dewatering of excavations, culverts, etc) and management of leachate collected in ponds from acid sulfate material stockpiles.

2. Sediment Basin Management & Dewatering Procedure

Environmental Management Controls	Person Responsible	Timing / Frequency
Planning		
A copy of this Sediment Basin Management and Discharge Procedure will be kept on site and be made available to all relevant project personnel	Supervisor / Environmental Site Representative	Site Establishment / Duration
All relevant project personnel will be made aware of this document during the site induction and again in Toolbox Talks and targeted training sessions.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Training and Awareness		
Training, instruction and equipment familiarisation for environmental personnel undertaking water quality monitoring, equipment calibration and maintenance will be the responsibility of the Environmental Site Representative. This will be completed prior to the initial use of equipment or as new equipment arrives on site.	Environmental Site Representative	Site Establishment / Duration
Training sessions will be conducted with Supervisors, Foreman, and Environmental Work Crew and relevant personnel. The training will address <ul style="list-style-type: none"> • Construction of Sediment Basins • Preliminary post-rainfall inspections • Testing and recording • Treatment methods and recording • Details of the Water Discharge Permit • Dewatering requirements, methods and recording • Maintenance requirements, methods and recording • Storage, Handling and Application of Flocculants 	Supervisor / Environmental Site Representative	Site Establishment / Duration
Any personnel that are responsible for monitoring pumps during dewatering activities, and that have not undertaken training described above, will undertake a specific toolbox talk to ensure awareness of requirements.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Construction of Sediment Basins		
Refer to the relevant PESCPs for the location of the sediment basin/s.	Supervisor / Environmental Site Representative	Site Establishment / Duration
The location and design criteria (volume – length, width & depth) for the sediment basin/s will be outlined in the relevant PESCP. The following criteria will be observed: <ul style="list-style-type: none"> • All requirements of Landcom's - Managing Urban Stormwater: Soils and Construction Volume 1 (the Blue Book). Refer to Section 6.3.3 volume 1 of the Blue Book for detailed design of the sediment basin. • Impervious clay to be used where required in construction of the internal basin invert and embankments. • Inlet and outlet structures will be appropriately constructed to cater for the nominated rainfall event. • Markers will be present to indicate sediment storage volume and to ensure adequate capacity levels are available. 	Supervisor / Environmental Site Representative	Site Establishment / Duration
Sediment basins will be constructed in a way that predominantly only site run-off is collected, and clean water is diverted around them. Earthworks will be conducted in a way so as to avoid ponding of water.	Supervisor / Environmental Site Representative	Site Establishment / Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
The sediment basin/s to be constructed prior to any earthworks or topsoil stripping in the catchment being undertaken. Necessary clearing to access the basin location and associated earthworks will occur with appropriate erosion and sediment controls installed.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Where applicable, the formation of operational sediment basins will be partially or fully constructed in early stages of works and managed as a temporary sediment basin to capture construction runoff.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Effective diversions such as drains and berms will be implemented to ensure that the diversion of site runoff is maximised to basins during all stages of construction.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Water Quality Testing, Treatment & Criteria for Discharge		
<p>Captured water to be discharged from sediment basins must meet the following criteria:</p> <ul style="list-style-type: none"> • pH between 6.5 – 8.5 • TSS < 50mg/L and • Oil and grease - no visible trace. 	Supervisor / Environmental Site Representative	Duration
<p><u>Correlation between TSS and Turbidity</u></p> <p>A correlation between TSS and turbidity may be developed for the basin/s to allow discharge based on turbidity levels. This correlation will be submitted to the relevant Approval Authority for approval prior to implementation.</p> <p>If approved, a TSS sample will be taken from every tenth discharge and tested to confirm compliance with required criteria. These results will be used to check and revise the correlation. If these tests indicate an exceedance of TSS criteria, discharges on the basis of turbidity measurements will be suspended until the correlation can be re-established and approved.</p>	Environmental Manager/ Environmental Site Representative	Duration
Potential contamination of any basin or ponded waters will be considered prior to discharge. Where the main source is from storm water, TSS and oil and grease are considered to be the likely pollutants. Where groundwater is a significant contributing source, influence from ASS/PASS, or other contaminants will be considered as potential pollutants and additional testing in the form of pH and metals may be undertaken.	Supervisor / Environmental Site Representative	Duration
Water Treatment		
The drain inverts upslope from sediment basin inlets will be pre-dosed with suitable flocculants/coagulants (Gypsum or Calcium Chloride broadcast in the drain invert and/or Anionic Polyacrylamide gel blocks suspended in cages in locations of turbulent water flow.) to pre-treat run-off before it enters the basin during rainfall	Supervisor / Environmental Site Representative	Duration
The implementation of rain-activated, passive dosing units will deploy suitable liquid flocculants/coagulants during prolonged rainfall events to promote rapid coagulation/flocculation of sediment laden water in the treatment forebay of sediment basins.	Supervisor / Environmental Site Representative	Duration
Onsite reuse of ponded stormwater or infiltrated groundwater should always be the first dewatering option considered. Onsite reuse may include application for dust suppression, earthworks compaction and vegetation establishment.	Supervisor / Environmental Site Representative	Duration
If water is to be used for construction purposes (e.g. compaction, dust control) no treatment is required. However, the water should be removed to re-secure design capacity of sediment basins within 5 days.	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
All sediment basins to be inspected for capacity and water quality daily on work days and within 24 hours (out of site hours) following cessation of a rain period.	Supervisor / Environmental Site Representative	Duration
<p>Before any de-watering of site areas, excavations, etc, the parameters of pH, T.S.S. and oil and grease are to be tested and meet the following criteria:</p> <ul style="list-style-type: none"> • pH between 6.5 – 8.5 • TSS < 50mg/L; and • Oil and grease < 10mg/L (and no visible trace). <p>Treatment should commence as soon as practical following cessation of a rain to allow enough time for settlement of suspended solids.</p>	Supervisor / Environmental Site Representative	Duration
<p>Records of water quality management must be maintained and the required records include:</p> <ul style="list-style-type: none"> • The date(s) on which the sample was taken; • The time(s) at which the sample was collected; • The name of the person who collected the sample. 	Supervisor / Environmental Site Representative	Duration
<p>pH</p> <p>Treatment should be undertaken as follows:</p> <ul style="list-style-type: none"> • Test basin water with a suitable pH meter. No action is required if the pH reading is between 6.5 and 8.5 • Lime to be added if pH below 6.5 or Hydrochloric Acid (32% Muriatic) or Sulfuric Acid to be added if pH above 8.5 • Determine volume of water to be treated in the sediment basin. • Determine the percentage of lime or acid required by taking a 10-litre sample of basin water and adding a known amount of lime or acid (initially 0.004%). If the pH is still not acceptable, vary the amount of lime or acid until within the limits. • Once the required percentage has been determined, calculate the actual amount of lime or acid to be added by multiplying the volume of water in the basin by the determined percentage. • Add the required amount of lime or acid to the basin and mix the water in the sediment basin well • Treat for pH prior to T.S.S. 	Supervisor / Environmental Site Representative	Duration
<p>Total Suspended Solids</p> <ul style="list-style-type: none"> • Test the sediment basin water initially for NTU using a turbidity tube, nephelometer (Turbidity tester) or by comparing with water samples contained in jars with representative readings up to 100mg/l. • When the comparative NTU readings indicate T.S.S. levels are <50mg/l obtain a grab sample in accordance with approved sampling methods. The water sample to be promptly analysed by a laboratory that is NATA certified in T.S.S. testing. • No further treatment action is required if T.S.S. results are <50mg/l. 	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
<p><u>Total Suspended Solids</u></p> <ul style="list-style-type: none"> • Test the sediment basin water initially for NTU using a turbidity tube, nephelometer (Turbidity tester) or by comparing with water samples contained in jars with representative readings up to 100mg/l. • When the comparative NTU readings indicate T.S.S. levels are <50mg/l obtain a grab sample in accordance with approved sampling methods. The water sample to be promptly analysed by a laboratory that is NATA certified in T.S.S. testing. • No further treatment action is required if T.S.S. results are <50mg/l. • If basins require flocculation (e.g. T.S.S. >50mg/l), a flocculant/coagulant is to be utilised at the determined dosage initially, then treated with incremental doses should more flocculant be required. • Basins should be monitored daily after flocculation until desired TSS is achieved and to assist in determination of optimal dosage levels. <p>Methods of application to include:</p> <ul style="list-style-type: none"> • broadcast by shovels on small sumps and excavations is acceptable. This method requires spreading powdered coagulants (i.e. gypsum, calcium chloride, etc) evenly and thinly (i.e. "dusting") over as much of the water surface as possible. • For sediment basins or areas with a large water surface area. The powdered or flake style coagulants should be pre-mixed thoroughly in a drum with clean water and sprayed over the maximum surface area of water as possible. • When spraying coagulant mixtures, the mixture should hit the water at between 10 to 20 degrees to increase surface areas exposure to the water column. • Alternative water treatment utilising liquid flocculants/coagulants will require the assessed dosage to be pre-mixed and discharged into the basin. Following dosing, the basin water is to be gently re-circulated for a suitable period (2-4 hours) to allow chemical reaction time, and to keep precipitated flocculant/coagulant in suspension a sufficient time to collect the maximum quantity of fine suspended particles into floc clusters. • The process outlined may need to be repeated if acceptable water quality is not achieved initially. <p><u>Oil and Grease</u></p> <ul style="list-style-type: none"> • Examine surface of water for evidence (e.g. sheen, discoloration). • No action if no visual contamination. • Oil absorbent material to be spread if there is contamination (e.g. cell-u-sorb). Leave basins to compensate for 24 to 48 hours. 	<p>Supervisor / Environmental Site Representative</p>	<p>Duration</p>

Environmental Management Controls	Person Responsible	Timing / Frequency
After retesting, and once the above field tests indicate, the water quality is acceptable, pumping or siphoning can commence with the water extraction inlet protected to prevent extraction of sediment.	Supervisor / Environmental Site Representative	Duration
Discharging Water		
Where possible ponded water and sediment basin water will be reused on site for compaction, dust suppression, and irrigation.	Supervisor / Environmental Site Representative	Duration
The whole process of water quality management in sediment basins will be completed within 5 days of cessation of a rain period.	Supervisor / Environmental Site Representative	Duration
Water may be discharged from site where the tested water quality meets NSW EPA criteria and the Site Representative gives approval. The discharge outlet will be constructed to prevent erosion and scour.	Supervisor / Environmental Site Representative	Duration
The Supervisor is to ensure that treated water has been re-tested for pH and turbidity (NTU) in-situ immediately prior to discharge.	Supervisor / Environmental Site Representative	Duration
The preferred method for dewatering a sediment basin is by the use of a static siphon system with sufficient flow capacity to discharge the volume of supernatant water within a reasonable timeframe (i.e. 12 to 24 hours). The siphon inlet is to be positioned so that settled sediments are not extracted during dewatering. The siphon system is to be installed above the sediment basin embankment and <u>not</u> within the basin spillway.	Supervisor / Environmental Site Representative	Duration
Where sediment basins are to be <u>dewatered by pump</u> , suitable inlet protection devices (i.e. float & housing or extraction tube) will be provided to prevent the extraction of settled sediments within the basin. The flows from the pump outlet and basin are to be constantly monitored during discharge.	Supervisor / Environmental Site Representative	Duration
Only personnel who have undertaken the relevant training and been approved by the Supervisor may operate pumps and discharge sediment basins. During dewatering <u>pumps</u> must be monitored at all times to ensure that settled sediment is not disturbed or extracted, and that water is discharged in a diffused manner to prevent erosion.	Supervisor / Environmental Site Representative	Duration
A Sediment Basin Management Register will be maintained for each basin that details discharge volumes, dates, water treatment. The Sediment Basin Management Register will be updated when treated water is discharged from the basin.	Supervisor / Environmental Site Representative	Duration
Maintenance		
<p>Maintenance of the sediment basins will be ongoing for the duration of the Project and will comprise the following:</p> <ul style="list-style-type: none"> The sediment storage capacity limit will be defined through the installation of a marker inside the basin. Sediment will be removed from the basin in accordance with the maintenance schedule, or when the accumulated sediment exceeds 60% of the sediment storage zone. Sediment removed from basins may be reused on site by incorporating into spoil. All sediment that will not be reused on site will be disposed of in locations that it will not be conveyed back into the construction areas or watercourses. Maintenance inspections will be undertaken and the results incorporated into the Weekly Environmental Inspection Checklist. 	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
The stormwater capacity of sediment basins will be reinstated within 5 days of the cessation of a rainfall event that causes runoff to occur	Supervisor / Environmental Site Representative	Duration
Assessment and use of Coagulants & Flocculants		
<p>Coagulation is the neutralisation and/or destabilisation of electrical charge on suspended soil colloids, whereas flocculation utilises bridging type interactions involving polyelectrolyte chains adsorbing to multiple colloid particles and aggregates through electrostatic charge interactions.</p> <p>The following procedure will be implemented to determine the suitability and effectiveness of the various water treatment products.</p> <ul style="list-style-type: none"> The product will be sourced from a reputable and traceable supplier together with MSDS and any other supporting documentation. Controlled 'jar testing' will be undertaken using site sourced water from the sediment basin. The jar testing will establish the site-specific dosing rates for any given products. Initial dosing will be undertaken incrementally up to the site specific/determined dosing rate in the event that the basin water responds to a lower dose in the 'real world' application. Settling rates in the basin will be assessed to determine the efficiency of each product. On site water sampling and testing will progressively assess the water's pH and turbidity in NTU's prior to lab testing. NATA certified lab testing for TSS, NTU & pH will be completed prior to any dry weather/controlled discharge to downstream waterways. 	Supervisor / Environmental Site Representative	Duration
<p>The range and type of suitable flocculants/coagulants (including typical dosing rates described as product required to water volume) that may be utilised include;</p> <ul style="list-style-type: none"> Calcium Sulphate (Gypsum - powder) – 300ppm (30kg/100m3) Anionic Polyacrylamide (gel blocks) – 200ppm (20kg/100m3) Calcium Chloride (solid - flakes), – 200ppm (20kg/100m3) Aluminium Chlorohydrate (liquid) – 40ppm (4L/100m3) PAC23 (poly aluminium chloride 23% - solution) - 50ppm (12.5L/100m3) 	Supervisor / Environmental Site Representative	Duration
Storage and Handling of Flocculants		
Environmental Management Controls	Person Responsible	Timing / Frequency
Gypsum and agricultural lime will be stored on site as either bagged or bulk product. Storage of bulk gypsum and agricultural lime will be covered, within erosion and sediment controls in a position where run on water will not erode the stockpiles.	Supervisor / Environmental Site Representative	Duration
All treatment chemicals particularly acids and basics will be stored in appropriately bunded and covered locations that are locked to prevent unauthorised access.	Supervisor / Environmental Site Representative	Duration
All chemicals on site will be stored with MSDSs for ease of reference in the event of a spill or irritation/injury to handlers.	Supervisor / Environmental Site Representative	Duration
Requirements of the Material Safety Data Sheets (MSDSs) will be met to ensure compatible storage with other chemicals to ensure safety.	Supervisor / Environmental Site Representative	Duration

Monitoring and Record Keeping		
Environmental Management Controls	Person Responsible	Timing / Frequency
<p>All sediment basins will be inspected on a weekly basis as a minimum, with any defects or maintenance requirements reported immediately.</p> <p>Sediment basins will be inspected immediately after rainfall events to assess:</p> <ul style="list-style-type: none"> • Water Storage capacity and water quality treatment requirements prior to discharge • Following treatment and discharge from the sediment basin the sediment storage capacity and requirement for clean out will be assessed. 	Supervisor / Environmental Site Representative	Duration
Records to be kept of the rainfall events, inspections undertaken, field tests undertaken, dosage rates and when basin water is released etc.	Supervisor / Environmental Site Representative	Duration
The results of all inspections, including inspection reports will be retained in the site environmental inspection register	Supervisor / Environmental Site Representative	Duration
<p>All discharges will be recorded on a discharge permit which will include:</p> <ul style="list-style-type: none"> • Volume to be discharged • Treatment details (e.g. Coagulant/ flocculant used, dosage, duration and treatment date) • Water quality monitoring results (including date and time of testing) • Discharge water quality results • Date and time of discharge 	Supervisor / Environmental Site Representative	Duration
Pumped discharge of any water off site will be monitored regularly to ensure that tested water quality meets all applicable criteria.	Supervisor / Environmental Site Representative	Duration
Decommissioning Construction Sediment Basins		
Construction sediment basins will remain in place until all upstream areas have been stabilised to achieve a 'C' Factor of 0.05 which equates to 70% groundcover as per Blue Book 7.1	Supervisor / Environmental Site Representative	Duration
All operational sediment basins will be desilted and reformed as per design requirements prior to completion of major works within the catchment.	Supervisor / Environmental Site Representative	Duration
<p>Construction Sediment basins will be removed by restoring the ground disturbed by the construction of the basin similar to pre-existing conditions. This will be achieved by:</p> <ul style="list-style-type: none"> • Removing all redundant basin equipment such as basin markers, siphons, spillway linings, etc. • Spreading and compacting the embankment material in the basin area • Disturbed ground will be compacted to at least the relative density of the material in the ground adjacent to it. 	Supervisor / Environmental Site Representative	Duration

3. Procedure Review

The procedure will be regularly reviewed as part of the CEMP audit requirements. This document will be updated when needed in response to audit findings or changes to site conditions. The Environmental Site Representative will modify the procedure where improvements are identified.

Appendix C

Sediment Basin Management and Discharge Record

Sediment Basin Management and Discharge Record

Date Inspected		Basin/discharge point ID:	
Date of last rainfall event:		Amount of rainfall received:	
Estimated basin level in %?		Approximate volume of water in basin prior to treatment:	
Initial turbidity reading of the basin in NTU's		Initial pH of the basin? (range of 6.5 -8.5 required)	
The initial amount of acid/lime used if pH correction is required.		Date & time of acid/lime dosing	/ / am/pm
Subsequent amount of acid/lime used if pH correction is required.		Date & time of acid/lime dosing	/ / am/pm
Type of flocculant or coagulant product used (and typical dosing volume)	Yes	No	Flocculant or coagulant product used Date & time of flocculant or coagulant dosing
Calcium Sulphate (Gypsum - powder) 300ppm (30kg/100m3)			/ / am/pm
Anionic Polyacrylamide (gel blocks) 200ppm (20kg/100m3)			/ / am/pm
Calcium Chloride (solid - flakes) 200ppm (20kg/100m3)			/ / am/pm
Aluminium Chlorohydrate (liquid) 40ppm (4L/100m3)			/ / am/pm
PAC23 (poly aluminium chloride 23% - solution) 50ppm (12.5L/100m3)			/ / am/pm
Aluminium Sulphate (crystals) 200ppm (20kg/100m3)			/ / am/pm
Turbidity reading of the basin in NTU's		Laboratory TSS Result: (if applicable)	
Time and Date of dewatering (i.e. siphon valve opened for discharge or commencement of pump operation)			/ / am/pm
Supervisor responsible for discharge:	Name:		
Date:	Signed:		
Comments? (E.g. next rainfall predicted – slight, moderate, severe?) Was rainfall received during treatment period affecting basin (start a new sheet)			

Appendix D

Wet weather contingency procedure

1.1 Purpose

The purpose of the Wet Weather Contingency Procedure (the Procedure) is to detail the actions to be taken by construction personnel in response to an imminent severe rainfall event as forecast by the Australian Government - Bureau of Meteorology (BOM). The procedure provides guidance for monitoring BOM rainfall & storm event forecasts and other resources, to assist with Project preparations to minimise adverse site impacts where practical.

Adherence to the methodology outlined in procedure will ensure that works for wet weather contingency planning & implementation will be carried out in accordance with contract specifications and to maximise adherence to environmental obligations.

The purpose of the Wet Weather Contingency Procedure is to;

- Identify rainfall events which may cause significant precipitation over the site areas which would result in flash flooding and/or exacerbate erosion and sediment impacts;
- Include monitoring procedures of the Bureau of Meteorology (BOM) weather forecasts to predict severe rainfall events;
- Ensure emergency procedures are developed for the management of work areas, facilities and materials in a severe rainfall event that has the potential to impact areas of the Site;
- Ensure hazardous chemical & fuel/oil storage and stockpile areas are positioned in locations to limit the potential for adverse impacts from major runoff flows and/or flash flooding;
- Outline control measures for the protection of water quality in the event of a flood over the site;
- Ensure progressive stabilising methods for areas that may be potentially affected by flash flooding and/or significant scouring & erosion are implemented.

1.2. Scope

The Procedure applies to the following:

- Weather forecast monitoring and works planning,
- Implementation, monitoring and maintenance of erosion and sediment controls,
- Stockpile and hazardous materials storage,
- Sediment basin management, dewatering and maintenance.

1.3. Objectives

The objectives of this Procedure are to:

- Ensure all Project personnel are aware of the requirements of this procedure
- Detail personnel responsible for undertaking actions relating to works planning, erosion and sediment control management, sediment basin management & construction dewatering on the site;
- Comply with environmental requirements of the Project, including all legal requirements and contractual obligations.

2. Wet Weather Contingency & Management

Environmental Management Controls	Person Responsible	Timing / Frequency
Planning		
A copy of this Wet Weather Contingency Procedure will be kept on site and be made available to all relevant project personnel	Supervisor / Environmental Site Representative	Site Establishment / Duration
All relevant project personnel will be made aware of this document during the site induction and again in Toolbox Talks and targeted training sessions.	Supervisor / Environmental Site Representative	Site Establishment / Duration
Training and Awareness		
Training & instruction of site personnel will be the responsibility of the Environment Manager/ Environmental Site Representative.	Environmental Site Representative	Site Establishment / Duration
Training sessions will be conducted with Supervisors, Foreman, Environmental Work Crew and relevant personnel. The training will address <ul style="list-style-type: none"> • Weather forecast monitoring procedures and interpretation of forecasting by BOM and other sources • Site erosion and sediment control status and high-risk areas • Roles and responsibilities for wet weather preparation • Temporary measure selection for augmentation or additional ERSED measures • Pre & post-rainfall inspections and recording • Dewatering requirements, methods and recording • Identification of stabilisation and rectification works required. 	Supervisor / Environmental Site Representative	Site Establishment / Duration
Identification of significant rainfall events		
The daily BOM forecasts for the local area are issued each morning and late afternoon. The forecasts will be monitored daily, at the start of the shift and prior to shut down. The BOM three-day forecast outlook will be reviewed daily.	Supervisor / Environmental Site Representative	Duration
BOM forecasts indicating a high likelihood of storm fronts or rainfall events of >10mm with an occurrence probability of more than 50% will be regarded as a potential rainfall event.	Supervisor / Environmental Site Representative	Duration
In periods of forecast storm weather or likely rainfall events, the tracking and intensity of approaching weather fronts is to be monitored regularly (where possible) to anticipate the time of the onset of wet weather.	Supervisor / Environmental Site Representative	Duration
Wet Weather Management Procedures		
Where a potential rainfall event is deemed likely in the BOM three-day outlook, Project personnel are to review the scope and progress of existing and imminent site works to determine high risk areas and prioritise works to stabilise the nominated areas. High risk works include culvert works, scour protection installation, permanent drainage installation, trenching on grade, and sediment basin construction or maintenance.	Project Manager / Senior Engineer / Supervisors / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
Wet Weather Management Procedures		
<p>The high-risk work areas that are identified will be managed by;</p> <ul style="list-style-type: none"> • Completion and temporary/permanent stabilisation of the high-risk work areas where time & resource constraints allow, prior to the onset of the potential rainfall event. • Re-allocating resources from low-risk activities to assist with completion of high risk works prior to the onset of a rainfall event. • Implementation of erosion controls in high-risk areas to minimise sediment control requirements. Erosion controls will be employed such as; <ul style="list-style-type: none"> ○ temporary geotextile linings or soil binders will be installed around culverts, scour protection works and drain junctions, ○ sandbag check dams, rock baffles, trench stops, etc will be utilised in open trenching on grade, temporary diversion drains, or concentrated flow paths over unstabilised areas. 	Project Manager / Senior Engineer / Supervisors / Environmental Site Representative	Duration
<p>The site sediment controls and sediment basins are to be inspected and any necessary rectification works undertaken such as;</p> <ul style="list-style-type: none"> • Sediment basins are to be managed in accordance with Sediment Basin Management Procedure to regain the maximum runoff capacity parameters, where possible, • Sediment traps and filters to be desilted where more than 60% storage capacity is exceeded, • Spillways and discharge points from sediment traps to be inspected and reinstated as required. • Sediment fences, mulch bunds, earth berms to be inspected and repairs or reinstatement implemented as required. 	Supervisor / Environmental Site Representative	Duration
The chemical, fuel and other hazardous material storage areas to be inspected to ensure their location is protected from the ingress of rainfall or concentrated overland flows. Bund controls to be inspected and accumulated liquids or other residues removed to a controlled waste location on site or for offsite disposal at licensed premises.	Supervisor / Environmental Site Representative	Duration
Following the onset of a significant storm event or rainfall event, the site controls to be inspected as soon as site conditions and safety requirements allow. The inspection to focus on high-risk areas to review the function and status of the installed erosion and sediment controls.	Supervisor / Environmental Site Representative	Duration
Post-Rainfall/Storm Procedure		
The Post Rainfall Inspection will be conducted in accordance with the PESCP. The identified high-risk areas will be prioritised for any rectification or maintenance works, followed by areas with lower risk.	Supervisor / Environmental Site Representative	Duration
Records detailing the necessary works to reinstate the controls will be conducted in accordance with the PESCP.	Supervisor / Environmental Site Representative	Duration
Sediment basins are to be managed in accordance with Sediment Basin Management Procedure. Flocculation of the sediment basins may occur soon after the cessation of a rainfall event to improve the water quality parameters in circumstances where further significant rainfall is anticipated.	Supervisor / Environmental Site Representative	Duration

Environmental Management Controls	Person Responsible	Timing / Frequency
High risk work areas that are inundated will be prioritised for dewatering by; <ul style="list-style-type: none"> • Dewatering to a sediment basin where sufficient capacity is available, • Flocculated in-situ and discharged at a licensed discharge point when EPL water quality parameters are attained, • Dewatered by water cart and utilised for construction purposes. 	Supervisor / Environmental Site Representative	Duration
Repair and reinstatement of erosion and sediment controls to be implemented as site conditions allow, proceeding from high-risk areas to lower risk areas on site.	Supervisor / Environmental Site Representative	Duration

3. Procedure Review

The procedure will be regularly reviewed as part of the CEMP audit requirements. This document will be updated when needed in response to audit findings or changes to site conditions. The Project Environmental Representative in consultation with the Client will modify the procedure where improvements are identified.

Appendix E

Progressive Erosion and Sediment Control Plan

Oakdale West Estate– Building 3B - Progressive Erosion & Sediment Control Plan

NOTES - Administration & General

1. This progressive plan is to be read in conjunction with the SWMP, CEMP, relevant specifications, and procedures.
2. Works programming to maximise the mitigation of erosion by the early implementation of permanent drainage measures, temporary and permanent soil surface stabilisation measures, and minimising the area and duration of soil disturbance.
3. Bureau of Meteorology weather forecasting to be monitored daily for the local 7-Day weather outlook. Site management measures to be planned for imminent storm/rainfall/flood/wind events include, but are not limited to;
 - avoiding additional soil disturbance immediately prior to an event,
 - provision of additional erosion and sediment controls in critical locations,
 - installing, repairing, and/or adjusting ‘clean’ (off site water) and ‘dirty’ (on site) water drainage measures,
 - desilting and re-instating sediment controls as required,
 - implementing stockpile protection measures,
 - stabilising and sealing disturbed soil surfaces,
 - minimising dry soil handling in windy conditions,
 - evacuating or protecting erodible materials in lower lying area.
4. The plan is to be revised as necessary (i.e. progression of works, altered site conditions or weather). **The controls depicted are subject to staging and the controls may be progressively implemented or removed according to progression of works. The symbols depicting controls are not to scale and are only indicative of the general location and type of control selected.**
5. All erosion and sediment controls generally to be constructed in accordance with ‘Blue Book’ specifications and standard drawings & RMS Specifications being
 - MANAGING URBAN STORM WATER: SOILS AND CONSTRUCTION - 4th EDITION, LANDCOM, MARCH 2004;
 - MANAGING URBAN STORM WATER: SOILS AND CONSTRUCTION – VOLUME 2D MAIN ROAD CONSTRUCTION, DEC, 2008;
6. Substitute materials may be utilised in the construction of erosion or sediment controls where functionality is not affected, i.e. compacted mulch bunds in place of sediment fences, stabilised earth Berms in place of excavated drains near underground services or timber pegs in place of star pickets where electrical or gas.
7. Personnel constructing controls to have demonstrated competence and experience. Specific awareness training and workshops to be undertaken by personnel with direct involvement with erosion and sediment control. Toolbox talks to regularly focus on erosion and sediment control for specific works, associated risks, potential impacts and mitigation measures.
8. All existing vegetated or undisturbed areas outside of the works area to be regarded as “No Go” zones and to be delineated with fencing, tape or other markers, as required. All site personnel to be instructed to avoid “No Go” zones or damaging installed controls.

Erosion Control

9. Prior to commencement of significant works, install surface drains, sediment traps, sumps & filters, and other surface runoff control measures to control runoff onto, across, and from the works zones to prevent the loss of sediment from the site.
10. Construction zones in constrained areas to be managed in smaller, defined sub-catchments to reduce slope lengths and minimise sediment loads to boundary controls.
11. Stripped topsoil to be stripped and stockpiled generally as per SD 4-1. Any viable stripped topsoil to be stored in stockpiles, preferably less than two metres in height.
12. Short term on-site stockpiles to be located away from drains and flow lines and be controlled with sediment fence or storm covers.
13. Any significant (long & steep) cut/fill batters should be progressively overlaid with Rolled Erosion Control Products (RECP’s such as jute mesh, coir fibre mesh, etc), mulching, Organic Fibre Mulches (OFM’s) or geobinders to reduce erosion and rilling, prior to permanent stabilisation with cover crops, mulching or other long-term surface protection
14. Vehicles transporting bulk materials on public roads are to correctly cover loads to prevent loss of load and/or dust generation.
15. Temporary controls in addition to those shown may be required at strategic locations as required by the progression of works or weather conditions

Water Management (Cont’d)

16. Maximise the interception and diversion of ‘clean’ (off site water) away from works areas. The ‘clean’ flows to be conveyed in stabilised drainage lines to suitable discharge points. The flows to be discharged to off-site areas at non-erosive velocities with adequate diffusers, level spreaders, etc. Ensure drainage paths and controls are adjusted as required to maximise the separation of ‘clean’ (off site) and ‘dirty’ (on site) water flows through/off site.
17. Flows paths with high velocity flows over unstabilised areas to be controlled with
 - applied soil surface stabilisers i.e. geotextile lining, applied soil binders, coarse rock lining, etc
 - suitably constructed check dams placed at intervals to maximise flow suppression and settling of coarse sediment.
18. Where possible, provide sand bag or other bunding controls at on-site collection points & pit inlets to prevent flows bypassing controls to downslope areas.
19. Protect all existing and constructed inlets to pits & culverts from sediment ingress.
20. Where practical, maintain and/or improve existing stabilised drains to assist in the diversion of ‘clean’ (off site) flows.
21. Flooded excavations, ponded water, etc. to be extracted where required and utilised for site purposes, or treated to achieve acceptable water quality prior to discharge.

Sediment Control

22. The installation of preliminary sediment controls such as perimeter sediment fencing, excavated sediment traps, check dams, coir log filters, etc, will be implemented prior to soil disturbance within the catchment.
23. Accumulated water in sediment traps/sumps cannot be pumped, discharged or released from site without completing a dewatering checklist or approval by an authorised Site Manager.
24. Appropriate sediment tracking controls such as an aggregate/geotextile apron, shaker grid, etc. will be installed at exit points from the site. Personnel to monitor roadways & tracked sediments to be removed as required.
25. Personnel to ensure visual dust monitoring is maintained during works, and dust suppression is undertaken regularly. Dust control to be regularly conducted with water carts and soil stockpiles to suitably covered. Additional dust suppression measures to be utilised to minimise dust pollution during periods of high winds.
26. Temporary ‘dirty’ water drainage will be adjusted progressively to maximise flows to sediment control devices.

Contamination

29. Excavation of sub-soils to be inspected and monitored as works proceeds, to identify potential contamination. Any potentially contaminated soils to be stripped or excavated separately and transported directly to the designated stockpile, treatment area or licensed waste facility.
30. Potentially contaminated soils are to be stored within an appropriately bunded area and covered with heavy grade plastic or other impermeable covers for the duration of rainfall.
31. Ground disturbance and machinery/vehicle movements in potentially contaminated areas will be minimised to essential works.

Monitoring & Reporting and Inspection & Maintenance

32. Inspections of erosion and sediment controls will occur following rainfall events >10mm (daily on work days or as soon as practical during site shutdown periods), with any necessary repairs implemented as soon as possible.
33. Relevant checklists and records to be maintained noting details such as rainfall received, repairs to controls and amounts of sediments cleaned from controls.
34. Sediment traps, sumps and filters are to be desilted when 60% of storage capacity is reached.
35. All site personnel to report any spill, leaks, or other failure to relevant response staff as soon as possible.

Stabilisation

36. Erosion and sediment controls are to be maintained until the relevant catchments are stabilised, re-vegetated, or sealed adequately to achieve soil surface protection factors as per the ‘Blue Book’ and SWMP requirements.
37. Completed earthworks areas will be backfilled and compacted in a staged manner as soon as possible. Adjacent disturbed areas will be suitably trimmed and stabilised as required.
38. Stabilisation of areas is to occur progressively in conjunction with the completion of earthworks.
39. Areas subject to heavy compaction and disturbance from vehicle movements and machinery to be scarified to a depth >100mm prior to topsoiling and seeding.

Version	Drawn by	Date	Signed	Reviewed by	Date
01	A. Littlewood	17/07/2021			

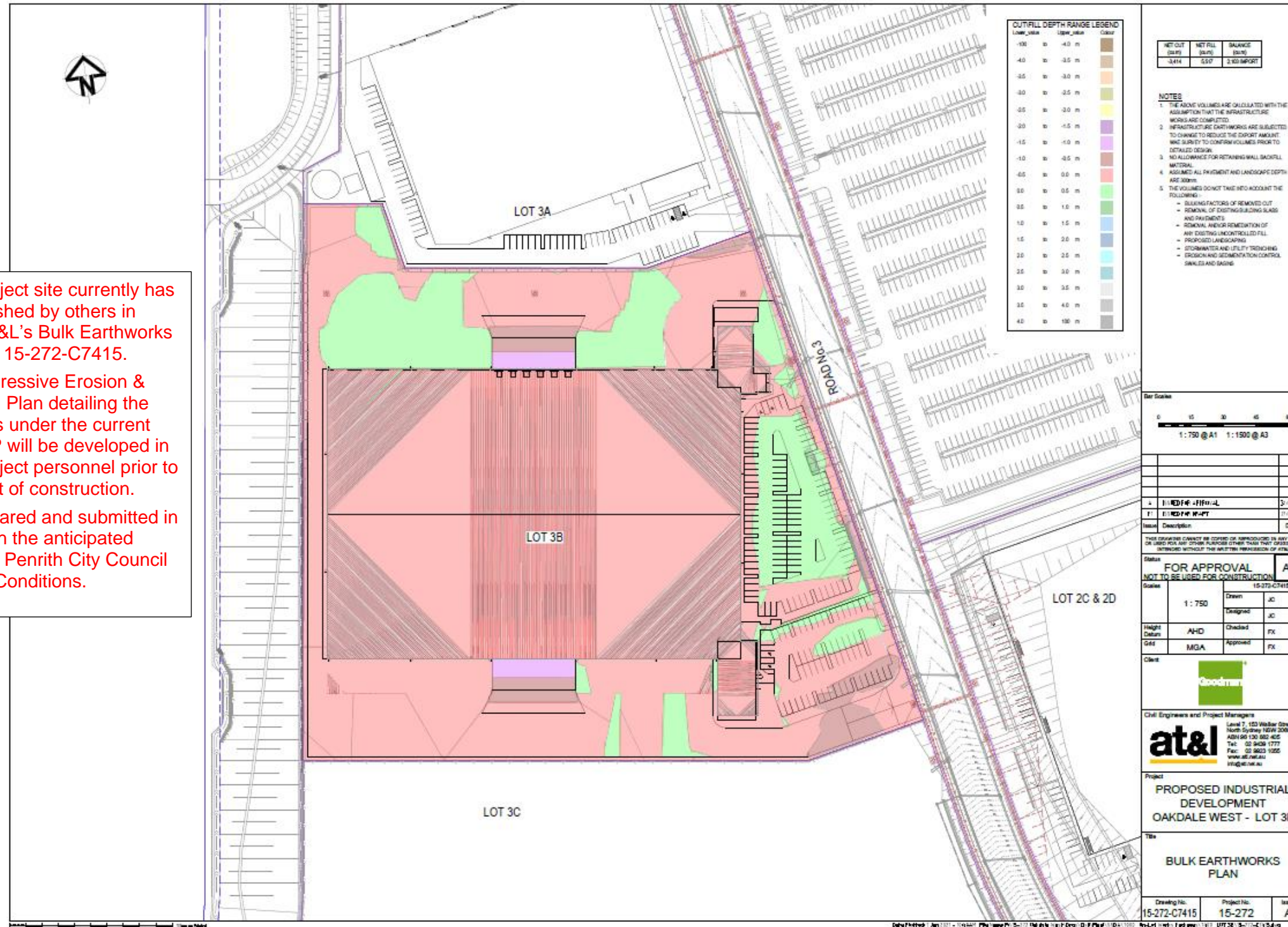
Oakdale West Estate– Building 3B - Progressive Erosion & Sediment Control Plan

The drawing partially reproduced below is Drawing 15-272-C7415 extracted from AT&L's Bulk Earthworks Plan - issued 31/05/2021.

Please note that Project site currently has controls established by others in accordance with AT&L's Bulk Earthworks Plan Drawings 15-272-C7415.

An updated Progressive Erosion & Sediment Control Plan detailing the proposed controls under the current SWMP & this ESCP will be developed in consultation with Project personnel prior to commencement of construction.

The plan will be prepared and submitted in accordance with the anticipated requirements of the Penrith City Council Consent Conditions.

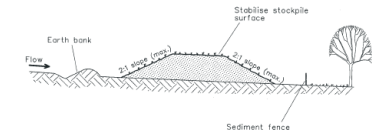


Legend											
Off Site Water – Sheet Flows		Piped Drainage		Stabilised Topsoil Berm (geo/jute/seed)		Sediment basin / large sump		Sediment Fence Geotextile Apron		Vegetated filter	
Off Site Water – Concentrated Flow/Drain		Off-site & onsite water cross-over		Geo-lined drain		Filter bag sediment trap		Mulch bund		Stabilised site access / Shaker / Wheel wash	
On Site Water - Concentrated Flow/Drain		'Off site' water exclusion bank		Rock lined drain		Compacted Mulch / Rock & Geotextile / topsoil sediment trap		Coir Log / Straw bale filter		Stabilised Haul Road/Access Track/ Piling pad/Piped crossing	
On Site Water – Sheet Flows		Level Spreader / Diffuser/ Geo spillway		Coarse rock / sandbag check dam		Excavated sediment trap with spill weir		Filter bag or sediment fence inlet filter		Temporary Traffic Barriers	

Appendix F

Standard drawings

Standard Drawings

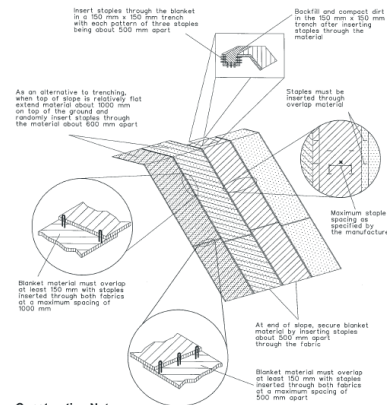


Construction Notes

- Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
- Construct on the contour as low, flat, elongated mounds.
- Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
- Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
- Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

STOCKPILES

SD 4-1

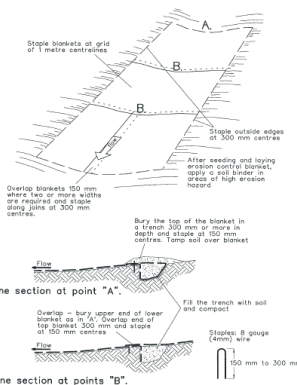


Construction Notes

- Remove any rocks, clods, sticks or grass from the ground surface before laying the matting.
- Spread topsoil to at least 75 mm depth.
- Where appropriate, complete fertilising and seeding on a properly prepared seedbed (Standard Drawing 7-1) before laying the matting.
- Ensure the fabric can be continuously in contact with the soil by grading the surface carefully first.
- Lay the matting in "shingle-fashion" with the ends of each upstream roll overlapping the next roll downslope.
- Ensure sufficient staples are used to maintain a good contact between the roll and the matting.

RECP : SHEET FLOW

SD 5-2

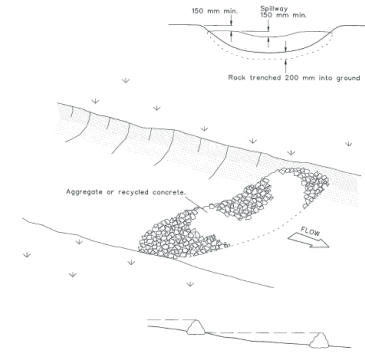


Construction Notes

- Remove any rocks, clods, sticks or grass from the surface before laying matting.
- Ensure that topsoil is at least 75 mm deep.
- Complete fertilising and seeding before laying the matting.
- Ensure fabric will be continuously in contact with the soil by grading the surface carefully first.
- Lay the fabric in "shingle-fashion", with the end of each upstream roll overlapping those downstream. Ensure each roll is anchored properly at its upslope end (Standard Drawing 5-7b).
- Ensure that the full width of flow in the channel is covered by the matting up to the design storm event, usually in the 10-year ARI time of concentration storm event.
- Divert water from the structure until vegetation is stabilised properly.

RECP : CONCENTRATED FLOW

SD 5-7

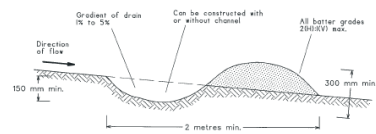


Construction Notes

- Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
- Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
- Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
- Space the dams so the top of the upstream dam is level with the spillway of the next downstream dam.

ROCK CHECK DAM

SD 5-4



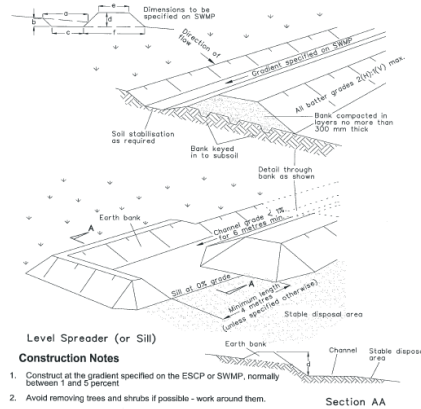
NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

Construction Notes

- Build with gradients between 1 percent and 5 percent.
- Avoid removing trees and shrubs if possible - work around them.
- Ensure the structures are free of projections or other irregularities that could impede water flow.
- Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped.
- Ensure the banks are properly compacted to prevent failure.
- Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW)

SD 5-5



Level Spreader (or Sill)

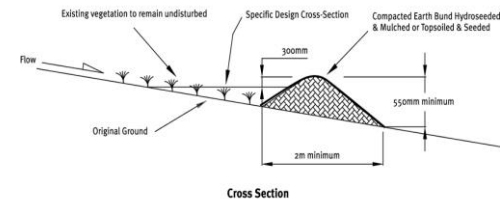
Construction Notes

- Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent.
- Avoid removing trees and shrubs if possible - work around them.
- Ensure the structures are free of projections or other irregularities that could impede water flow.
- Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
- Ensure the banks are properly compacted to prevent failure.
- Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landon (2004).
- Where discharging to erodible lands, ensure they outlet through a properly constructed bank spreader.
- Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
- Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

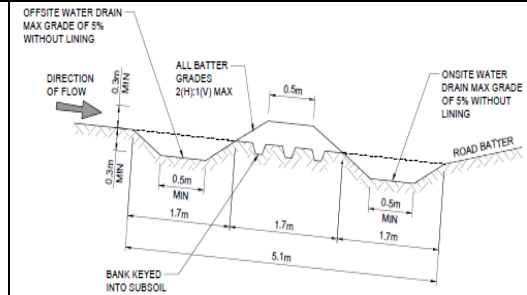
EARTH BANK (HIGH FLOWS)

SD 5-6

Stabilised topsoil diversion bank



Cross Section

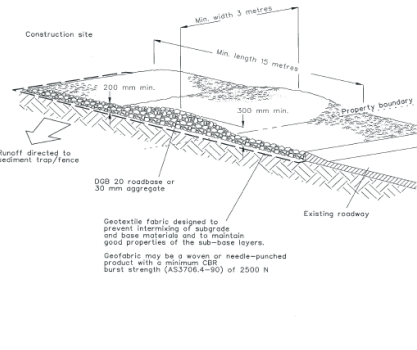


EARTH BANK (ONSITE & OFFSITE COMBINED)
N.T.S.

GENERAL CONSTRUCTION NOTES

- CONSTRUCT WITH GRADIENT OF 1% TO 5%.
- AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
- DRAINS TO BE CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTION NOT V-SHAPED.
- EARTH BANK TO BE ADEQUATELY COMPACTED IN ORDER TO PREVENT FAILURE.
- PERMANENT OR TEMPORARY STABILISATION OF THE EARTH BANK TO BE COMPLETED WITHIN 10 DAYS OF CONSTRUCTION.
- ALL OUTLETS FROM DISTURBED LANDS ARE TO BE FED INTO A SEDIMENT BASIN OR SIMILAR.
- DISCHARGE RUNOFF COLLECTION FROM UNDISTURBED LANDS ONTO EITHER A STABILISED OR AN UNDISTURBED DISPOSAL SITE WITHIN THE SAME SUBCATCHMENT AREA FROM WHICH THE WATER ORIGINATED.
- COMPACT BANK WITH A SUITABLE IMPLEMENT IN SITUATIONS WHERE THEY ARE REQUIRED TO FUNCTION FOR MORE THAN FIVE DAYS.
- EARTH BANK TO BE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT WILL IMPEDE NORMAL FLOW.

Standard Drawings

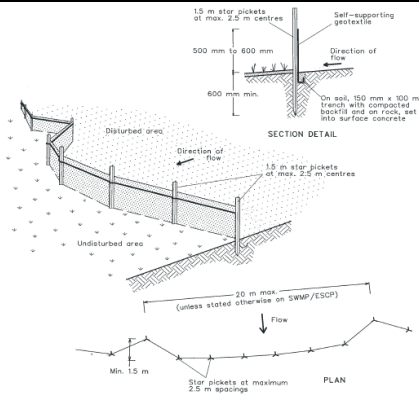


Construction Notes

- Strip the topsoil, level the site and compact the subgrade.
- Cover the area with needle-punched geotextile.
- Construct a 200-mm thick pad over the geotextile using road base or 30-mm aggregate.
- Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
- Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence.

STABILISED SITE ACCESS

SD 6-14

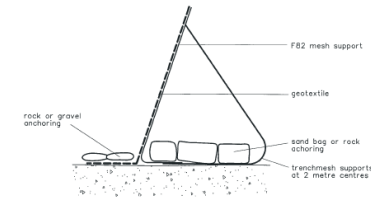


Construction Notes

- Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
- Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
- Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
- Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
- Join sections of fabric at a support post with a 150-mm overlap.
- Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE

SD 6-18

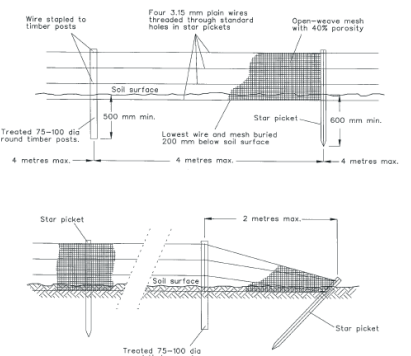


Construction Notes

- Install this type of sediment fence when use of support posts is not desirable or not possible. Such conditions might apply, for example, where approval is granted from the appropriate authorities to place these fences in highly sensitive estuarine areas.
- Use bent trench mesh to support the F82 welded mesh facing as shown on the drawing above. Attach the geotextile to the welded mesh facing using UV resistant cable ties.
- Stabilise the whole structure with sandbag or rock anchoring over the trench mesh and the leading edge of the geotextile. The anchoring should be sufficiently large to ensure stability of the structure in the design storm event, usually the 10 year event.

ALTERNATIVE SEDIMENT FENCE

SD 6-9

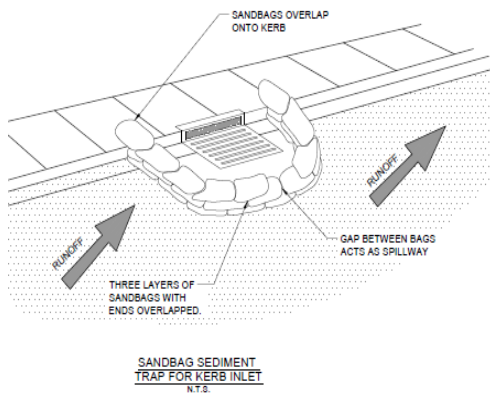


Construction Notes

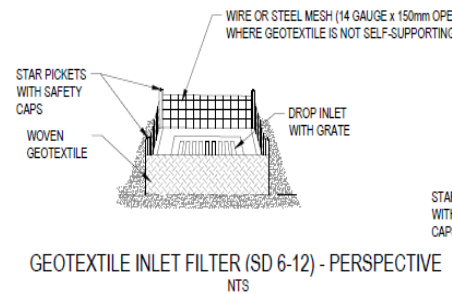
- Install the fence to the height specified in the ESCP/SWMP.
- Cut a channel 200 mm deep along the fence line.
- Place wire and light resistant, open-weave polymer mesh with 40 percent porosity on the prevailing wind side of fence.
- Fasten the mesh to all wires using ring fasteners at 100 mm to 150 mm intervals on top wire and 300 mm intervals on other wires.
- Use one 75-mm to 100-mm diameter treated round timber post every 20 metres.
- Where star pickets are used, ensure they are fitted with safety caps.

CONTROL OF WIND EROSION

SD 6-15

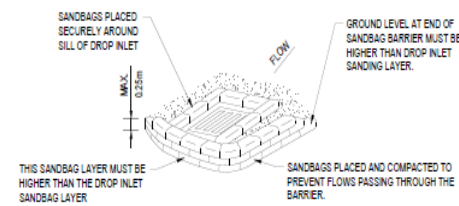


SANDBAG SEDIMENT TRAP FOR KERB INLET
N.T.S.



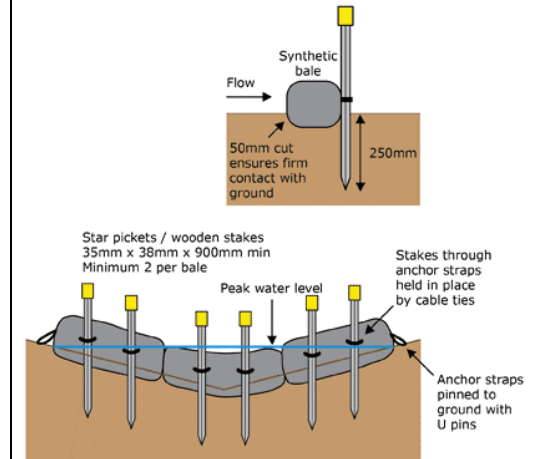
GEOTEXTILE INLET FILTER (SD 6-12) - PERSPECTIVE
NTS

STAI
WITH
CAP



SEDIMENT BARRIER (SD 5-4) DETAIL

Coir Log Filter



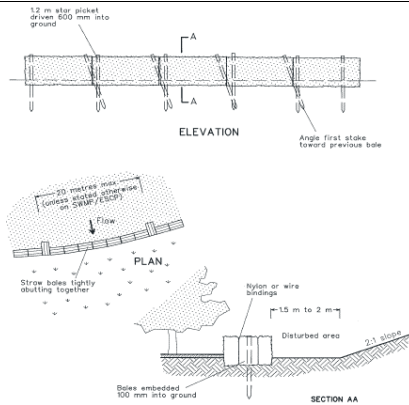
Star pickets / wooden stakes
35mm x 38mm x 900mm min
Minimum 2 per bale

Peak water level

Stakes through
anchor straps
held in place
by cable ties

Anchor straps
pinned to
ground with
U pins

Standard Drawings

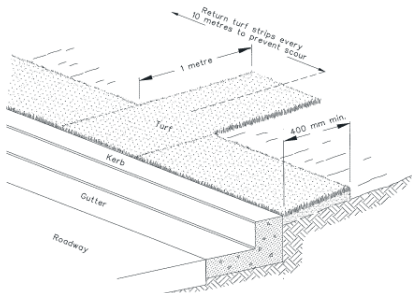


Construction Notes

1. Construct the straw bale filter as close as possible to being parallel to the contours of the site.
2. Place bales lengthwise in a row with ends tightly abutting. Use straw to fill any gaps between bales. Straws are to be placed parallel to ground.
3. Ensure that the maximum height of the filter is one bale.
4. Embed each bale in the ground 75 mm to 100 mm and anchor with two 1.2 metre star pickets or stakes. Angle the first star picket or stake in each bale towards the previously laid bale. Drive them 600 mm into the ground and, if possible, flush with the top of the bales. Where star pickets are used and they protrude above the bales, ensure they are fitted with safety caps.
5. Where a straw bale filter is constructed downslope from a disturbed batter, ensure the bales are placed 1 to 2 metres downslope from the toe.
6. Establish a maintenance program that ensures the integrity of the bales is retained - they could require replacement each two to four months.

STRAW BALE FILTER

SD 6-7

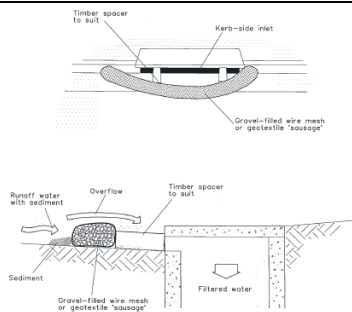


Construction Notes

1. Install a 400-mm minimum wide roll of turf on the footpath next to the kerb and at the same level as the top of the kerb.
2. Lay 1.4 metre long turf strips normal to the kerb every 10 metres.
3. Rehabilitate disturbed soil behind the

KERBSIDE TURF STRIP

SD 6-13



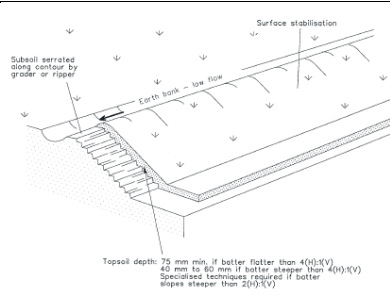
NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

Construction Notes

1. Install filters to kerb inlets only at sag points.
2. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fill it with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 150 mm high x 400 mm wide.
4. Place the filter at the opening leaving at least a 100-mm space between it and the kerb inlet. Maintain the opening with spacer blocks.
5. Form a seal with the kerb to prevent sediment bypassing the filter.
6. Sandbags filled with gravel can substitute for the mesh or geotextile providing they are placed so that they firmly abut each other and sediment-laden waters cannot pass between.

MESH AND GRAVEL INLET FILTER

SD 6-11

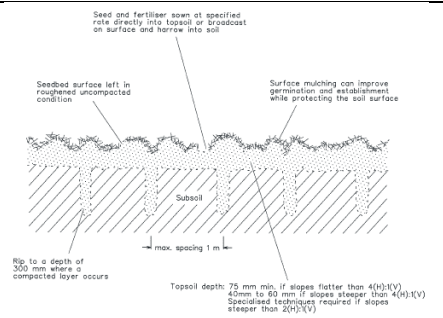


Construction Notes

1. Scarify the ground surface along the line of the contour to a depth of 50 mm to 100 mm to break up any hardsetting surfaces and to provide a good bond between the respread material and subsoil.
2. Add soil ameliorants as required by the ESCP or SWMP.
3. Rip to a depth of 300 mm if compacted layers occur.
4. Where possible, replace topsoil to a depth of 40 to 60 mm on lands where the slope exceeds 4(H):1(V) and to at least 75 mm on lower gradients.

REPLACING TOPSOIL

SD 4-2



Construction Notes

1. Loosen compacted soil before sowing any seed. If necessary, rip the soil to a depth of 300 mm. Avoid rotary hoe cultivation.
2. Work the ground only as much as necessary to achieve the desired tillth and prepare a good seedbed.
3. Avoid cultivation in very wet or very dry conditions.
4. Cultivate on or close to the contour where possible, not up and down the slope.

SEEDBED PREPARATION

SD 7-1

APPENDIX I

Fill Import Protocol

DRAFT

Lot 3B Fill Importation Protocol

Oakdale West Estate

20-Aug-2021
Doc No. 60599325-OWE-Lot 3B-FIP-20210820_0

Lot 3B Fill Importation Protocol

Oakdale West Estate

Client: Goodman Property Services (Aust) Pty Ltd

ABN: 40 088 981 793

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Job No.: 60599325

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Quality Information

Document Lot 3B Fill Importation Protocol

Ref 60599325

Date 20-Aug-2021

Prepared by Stephen Randall

Reviewed by Brad Eismen

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Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
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0	20-Aug-2021	Final	Stephen Randall Principal Environmental Scientist	

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Glossary

General Terms	
ACM	Asbestos Containing Material
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure (2013)
ASS	Acid Sulfate Soil
BTEXN	Benzene, toluene, ethylbenzene, xylenes and naphthalene
CC	Construction Contractor
CoPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
DQI	Data Quality Indicators
DQO	Data Quality Objectives
ENM	Excavated Natural Material
EPA	Environment Protection Authority
FIP	Fill Importation Protocol
HIL	Health Investigation Level
HSL	Health Screening Level
LOR	Limit of Reporting
LNAPL	Light Non-Aqueous Phase Liquid
m bgs	Metres below ground surface
mg/kg	milligrams/kilogram
NATA	National Association of Testing Authorities
NEPM	National Environment Protection Measure
OCP	Organochlorine Pesticides
OPP	Organophosphorus Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PASS	Potential Acid Sulfate Soil
PCB	Polychlorinated Biphenyls
PFAS	Per and poly-fluoroalkyl substances
PID	Photoionisation detector
POEO	Protection of the Environment Operations (Regulation)
Priority metals	Arsenic, cadmium, copper, chromium, lead, mercury, nickel, zinc
QA/QC	Quality Assurance/Quality Control
RRO	Resource Recovery Order
TPH/TRH	Total Petroleum Hydrocarbons / Total Recoverable Hydrocarbons
VENM	Virgin Excavated Natural Material
VHC	Volatile Halogenated Compound (or Chlorinated Hydrocarbons [CHC])
VOC	Volatile Organic Compound

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by Goodman Property Services (Aust) Pty Ltd (Goodman) to prepare this Fill Importation Protocol (FIP) for Lot 3B at the Oakdale West Estate (OWE), Kemps Creek, NSW.

Lot 3B is approximately 4.62 hectares (Ha) and will be constructed by bulk cut to fill earthworks. The earthworks plan for Lot 3B indicates that approximately 2 m of cut and up to 12 m of filling will occur.

A FIP was prepared by AECOM in October 2019¹ for the OWE development and formed a condition of consent for State Significant Development 7348 (SSD 7348). The October 2019 FIP related to the bulk earthworks at OWE, including Lot 3B. It is understood that no importation of fill material from non-OWE sources will be required for construction of Lot 3B, except for the possible use of engineered materials for construction of in-ground services and a retaining wall. As required by the October 2019 FIP, fill materials that are imported to Lot 3B will undergo compliance sampling and analysis to confirm their suitability for commercial/industrial land use.

Goodman requires a FIP for the development of Lot 3B, effective after the completion of bulk earthworks and implemented during construction activities. This FIP has therefore been prepared for the development phase of Lot 3B (i.e. construction of above ground assets). It is understood that the development of Lot 3B will be undertaken under conditions of consent for SSD 7348 and PCC DA consent when issued.

This FIP only relates to the contamination status of fill materials to be imported to Lot 3B during construction. Proposed construction drawings for Lot 3B are shown in **Appendix A**.

1.1 SSD 7348 Mod 6 Conditions of Consent

The Conditions of Development Consent have been issued. Goodman will require the implementation of this FIP to comply with the Conditions of Development Consent to ensure that materials imported to the Site are suitable for commercial/industrial land use. Based on the SSD 7348 conditions of consent, the materials imported to Lot 3B must meet any of the following:

- Excavated Natural Material (ENM).
- Virgin Excavated Natural Material (VENM).
- Other material approved in writing by the New South Wales Environment Protection Authority (EPA). AECOM notes that this may include but not be limited to the following:
 - Recycled concrete aggregate that meet the requirements of the NSW EPA Resource Recovery Order under part 9, clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – the Recovered Aggregate Order 2014.
 - Basalt fines (maximum particle size of 9.5 mm) that meet the requirements of the NSW EPA Resource Recovery Order under part 9, clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – the Basalt Fines Order 2014.
 - Recycled glass sands that meet the requirements of the NSW EPA Resource Recovery Order under part 9, clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – the Recovered Glass Sand Order 2014.

1.2 ENM

ENM is defined in the Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – The excavated natural material order 2014 - as naturally occurring rock and soil that has:

- Been excavated from the ground.

¹ Fill Importation Protocol, Oakdale West Estate. 31-October-2019 (60599325-OWE-FIP(CEMP)-20191031_2).

- Contains at least 98% (by weight) natural material.
- Does not meet the definition of Virgin Excavated Natural Material in the Act.

ENM **does not include**:

- Material located in a hotspot.
- Material that has been processed.
- Material that contains asbestos, acid sulfate soil (ASS), potential acid sulfate soil (PASS) or sulfidic ores.

The ENM Order is provided in **Appendix A**.

1.3 VENM

The Protection of the Environment Operations Act 1997 (POEO Act) defines VENM as natural material that:

- Has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities.
- Does not contain any sulfidic ores or soils or any other waste.
- Includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved for the time being pursuant to an EPA Gazettal notice.

To be classified as VENM, materials must satisfy all aspects of the above definition.

1.4 Recovered Aggregate Order

The requirements of the Recovered Aggregate Order 2014 apply to the supply of recovered aggregate (i.e. recycled) for application to land as road making material, or in building, landscaping or construction works.

In the Recovered Aggregate Order 2014, recovered aggregate means material comprising of concrete, brick, ceramics, natural rock and asphalt processed into an engineered material. This does not include refractory materials, or asphalt that contains coal tar.

The Recovered Aggregate Order 2014 is provided in **Appendix A**.

1.5 Basalt Fines Order

The requirements of the Basalt Fines Order 2014 apply to the supply of basalt fines for application to land for building or maintaining railway infrastructure, for road making activities, or as a soil amendment.

In the Basalt Fines Order 2014, basalt fines means a material comprising of naturally excavated basalt with a maximum particle size of 9.5 mm, that is derived from the processing of basalt or the recycling of railway ballast.

The Basalt Fines Order 2014 is provided in **Appendix A**.

1.6 Recovered Glass Sand Order

The requirements of the Recovered Glass Sand Order 2014 apply to the supply of recovered glass sand for application to land for the purpose of pipe bedding, drainage or for road making activities.

In the Recovered Glass Sand Order 2014, recovered glass sand means recovered glass that has been processed to produce a 'sand-like' glass material with a particle size diameter generally less than 5 mm and that contains at least 98% recovered glass.

The Recovered Glass Sand Order 2014 is provided in **Appendix A**.

2.0 Assessment Requirements

The assessment requirements relate to the Goodman appointed construction contractor (CC) and the environmental consultant.

This FIP recognises that the CC may:

- Appoint their own environmental consultant(s) to pre-assess the suitability of ENM and/or VENM materials proposed for importation to Lot 3B, and/or
- Be provided with ENM and/or VENM assessment reports prepared by other consultants for potential source sites.

Where ENM and/or VENM assessment reports have been prepared by other consultants, the CC must supply the reports to Goodman and the environmental consultant for review, prior to materials being imported to Site. These reports shall include but not be limited to the following information:

- Location of source site, proposed quantity and type of material(s).
- Clear statement(s) on what materials are excluded from the assessment and why, as applicable.
- Collection and analysis of characterisation samples as per Section 2.1 and Section 2.2.
- Collection and analysis of field quality control (QC) samples. Field QC samples should be collected and analysed, including rinsates (where sampling tools have been utilised), inter and intra-laboratory duplicates and trip blanks.
- Assessment of data useability and reliability.
- Clear conclusion on classification as either ENM, VENM or other EPA approved material (refer to following sections).

All materials imported to Lot 3B will require compliance sampling by the environmental consultant, to confirm suitability for use. The minimum sampling rates (refer following sections) exclude field QC samples. Field QC samples, as noted above, will be collected and analysed.

2.1 ENM

To assess that imported materials meet the ENM classification, the requirements presented in **Appendix A** shall apply. In summary, the following are applicable.

Table 1 Chemicals and Concentrations

Attributes	Maximum Average Concentration (mg/kg)	Absolute Maximum Concentration (mg/kg)
1. Mercury	0.5	1
2. Cadmium	0.5	1
3. Lead	50	100
4. Arsenic	20	40
5. Chromium (total)	75	150
6. Copper	100	200
7. Nickel	30	60
8. Zinc	150	300
9. Electrical conductivity	1.5 dS/m	3 dS/m
10. pH	5 to 9	4.5 to 10
11. Total Polycyclic aromatic hydrocarbons (PAH)	20	40
12. Benzo(a)pyrene	0.5	1

Attributes	Maximum Average Concentration (mg/kg)	Absolute Maximum Concentration (mg/kg)
13. Benzene	NA	0.5
14. Toluene	NA	65
15. Ethylbenzene	NA	25
16. Xylene	NA	15
17. Total petroleum hydrocarbons (TPH) C10-C36	250	500
18. Rubber, plastic, bitumen, paper, cloth, paint and wood	0.05 %	0.1 %
19. Asbestos	Not detected	Not detected

Notes:

Items 1 to 18 sourced from **Table 4** in the **ENM Order** (refer **Appendix A**).

Item 19 added by AECOM.

Tests must be undertaken by NATA accredited methods and as specified in Table 4 in the ENM Order.

An assessment for ASS/PASS is also required, refer to **Table 5** (second line item).

2.1.1 Sampling Requirements

The following sections relate to the assessment of ENM by other consultants at the source site(s). If the ENM is contemplated for use at Lot 3B, these requirements must be met.

Stockpiled excavated natural materials must be sampled as per the requirements in Table 2. The following also applies:

- Composite sampling must be undertaken for analysis of Attributes 1 to 10 and 18 in Table 1 above. Discrete sampling must be undertaken for analysis of Attributes 11 to 17 and 19.
- One composite sample comprises 5 sub-samples of equal size.
- Sampling must be undertaken in a manner that ensures representative materials of the whole stockpile are assessed.
- For stockpiles greater than 4000 tons, the number of samples in Table 2 (below) must be repeated.

Table 2 Sampling Stockpiled Soils

Quantity (tons)	Number samples	Validation
<500	3	Required (test results comply with the conditions of the ENM exemption prior to the material being supplied to Site)
500-1000	4	
1000-2000	5	
2000-3000	7	
3000-4000	10	

In-situ material must be sampled by collecting discrete samples as per Table 3 and Table 4 below. For source sites larger than 50 000 m², these should be subdivided into smaller areas and sampled as per Table 3 (below).

Table 3 In-Situ Sampling at Surface

Size of In-Situ area (m ²)	Number of Systematic sampling points	Validation
500	5	Required (test results comply with the conditions of the ENM exemption prior to the material being supplied to Site)
1000	6	
2000	7	
3000	9	

Size of In-Situ area (m ²)	Number of Systematic sampling points	Validation
4000	11	
5000	13	
6000	15	
7000	17	
8000	19	
9000	20	
10 000	21	
15 000	25	
20 000	30	
25 000	35	
30 000	40	
35 000	45	
40 000	50	
45 000	52	
50 000	55	

Table 4 In-Situ Sampling at Depth

Sampling Requirements	Validation
<p>1 soil sample at 1 m below ground level from each surface sampling point followed by 1 soil sample for every metre thereafter.</p> <p>From 1 m below ground level, sample at 1 m intervals until the proposed depth of excavation of the material is reached (refer Appendix A for further detail).</p>	Required if the depth of excavation is equal to or greater than 1 m below ground level.

2.1.2 Compliance Sampling Assessment Requirements

To confirm suitability for use at Lot 3B, compliance sampling will be undertaken, as summarised below:

- A minimum of 3 samples per source site will be required.
- Source site volumes are less than 1000 m³: 1 sample per 200 m³.
- Source site volumes between 1000 m³ and 10 000 m³: 1 sample per 1000 m³ including the first 1000 m³ sampled as above.
- Source site volume greater than 10 000 m³: 1 sample per 2000 m³ including the first 10 000 m³ sampled as above.
- Samples are to be analysed for Items 1 to 8, 11 to 17 and 19 in **Table 1** plus PAH, TRH C6-C40, OCP, OPP and PCB.
- Analysis results must meet the ENM absolute maximum concentrations shown in **Table 1** and the Health Investigation Level (HIL) and Health Screening Level (HSL) for commercial/industrial land use (HIL D and HSL D) for PAH, TRH C6-C40, OCP, OPP and PCB.

2.2 VENM

The definition of VENM is provided in **Section 1.3**. The following must be undertaken:

Table 5 VENM Assessment

Item/ Consideration	VENM	Course of Action
Are manufactured chemicals or process residues present	A material can only be VENM if it has been excavated from an area that is not contaminated with manufactured chemicals or process residues as a result of industrial, commercial, mining or agricultural activities	Undertake land-use history appraisal of proposed source site. This must include at a minimum: <ul style="list-style-type: none"> Review of current and historical aerial photographs, to confirm no previous industrial land uses. Review of historical certificates of title, to assess previous owners and potential land use. Review NSW EPA website to assess if the source site and/or nearby properties have been notified under section 58 of the Contaminated Land Management Act 1997. Review the NSW EPA website to assess if the source site and/or nearby properties are listed on the NSW Government PFAS (per- and poly-fluoroalkyl substances) Investigation Program. Review the Department of Defence website for Unexploded Ordnance records. Review geological and soil maps to evaluate anticipated subsurface conditions. Inspection of the source site to ascertain current conditions, with photographic records to be provided as a line of evidence.
Are sulfidic ores or soils present	VENM cannot contain sulfidic ores or soils	<ul style="list-style-type: none"> Review acid sulfate soil risk maps. Material cannot be classified as VENM if the acid sulfate soil risk maps identify a high probability of occurrence of ASS or PASS. If the acid sulfate soil risk maps identify a high probability of ASS or PASS, chemical assessment will be required as per the Acid Sulfate Soils Assessment Guidelines and up-dated ASS laboratory method Guidelines Version 2.1 (June 2004).
Are naturally occurring asbestos soils present	VENM cannot contain naturally occurring asbestos	<ul style="list-style-type: none"> Review the naturally occurring asbestos risk maps available on SafeWork NSW website. If the maps indicate a medium/high probability of naturally occurring asbestos, sampling and analysis would be required to demonstrate that the material does not contain asbestos².
Is there any other waste present	VENM cannot contain any waste	<ul style="list-style-type: none"> Inspection of source site. Interviews with personnel at source site. Supplier to provide VENM certificate (refer Appendix A).

² It is recommended that these potential source sites are not considered further. If assessment and analysis is contemplated, the requirements of the ASC NEPM 2013 and Guidelines for the Assessment, Remediation and Management of Asbestos-contaminated Sites in Western Australia (May 2009) would apply.

Item/ Consideration	VENM	Course of Action
Is chemical assessment necessary	Yes, if material is potentially contaminated with manufactured chemicals or process residues and/or if ASS/PASS may be present	<ul style="list-style-type: none"> Analysis for chemicals or process residues will depend on the potential contaminant sources. If uncertainty exists, all samples should be analysed for the contaminants noted in Table 1 and TRH C6-C40, OCP, OPP, PCB and VHC (refer to Glossary for definitions). Analysis for PFAS if background data (refer Section 2.7) indicate it is a contaminant of concern. Analysis for ASS/PASS.

2.2.1 VENM Sampling Rates

To confirm suitability for use at Site, compliance sampling will be undertaken, as summarised below:

- A minimum of 3 samples per source site will be required.
- Source site volumes are less than 1000 m³: 1 sample per 100 m³.
- Source site volumes between 1000 m³ and 10 000 m³: 1 sample per 1000 m³ including the first 1000 m³ sampled as above.
- Source site volumes exceed 10 000 m³: 1 sample per 2500 m³ including the first 10 000 m³ sampled as above.

2.2.2 VENM Assessment Criteria

The results must be compared to:

- The HIL and HSL presented in the ASC NEPM 2013. Exposure scenario A applicable to residential with garden accessible soil land use should be utilised.
- Analysis results for organics (i.e. TRH, BTEX, PAH, OCP, OPP, PCB) should be below the laboratory limit of reporting (LOR). Any results above LOR should be assessed on a case by case basis before allowing material on Site.
- Analysis results for metals should indicate background concentrations.

If asbestos is identified, materials will not be acceptable for use at the Site.

2.2.3 Residential Source Sites

Material can only be classified VENM if it has been excavated from an area that is not contaminated with manufactured chemicals or process residues as a result of industrial, commercial, mining or agricultural activities. AECOM notes that residential properties may have potential contamination sources (e.g. demolition spoil, application of pesticides beneath buildings, fuel storage, workshops/garages) or be affected by contaminants derived from off-site sources.

Residential source sites will therefore require the level of assessment noted in **Table 5**.

Where residential redevelopment sites have been assessed to be an ENM or VENM source site and the consultant's report identifies that waste materials (i.e. overburden) will be stripped and disposed to landfill separately, the subject site must be inspected by a Goodman representative or appointed representative. The inspection must prove that waste material (or overburden) has been completely removed prior to importation of underlying materials to the subject Site.

2.3 Recovered Aggregates

To assess that materials meet the Recovered Aggregate classification, the requirements presented in **Appendix A** shall apply, plus sampling and analysis, as noted below. In summary, Recovered Aggregates must meet the following.

Table 6 Recovered Aggregates, Chemicals & Concentrations

Column 1	Column 2	Column 3	Column 4
Chemicals/Attributes	Max' Average Concentration for Characterisation ⁽¹⁾	Max' Average Concentration for Routine Testing ⁽¹⁾	Absolute Maximum Concentration ⁽¹⁾
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1.5
3. Lead	75	75	150
4. Arsenic	20	Not required	40
5. Chromium (total)	60	60	120
6. Copper	60	60	150
7. Nickel	40	Not required	80
8. Zinc	200	200	350
9. Electrical conductivity	1.5 dS/m	1.5 dS/m	3 dS/m
10. Metal	1 %	1 %	2 %
11. Plaster	0.25 %	0.25 %	0.5 %
12. Rubber, plastic, paper, cloth, paint, wood and other vegetable matter	0.2 %	0.2 %	0.3 %
13. Asbestos ⁽²⁾	Not detected	Not detected	Not detected

Notes:

(1) = mg/kg 'dry weight'. (2) = added by AECOM. The absolute maximum concentration or other value of that attribute in any recovered aggregate supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4.

Assessment Requirements

Assessment of the suitability of Recovered Aggregates for commercial/industrial land use will include:

- CC to source documentation from the commercial supplier (refer **Section 2.8**).
- CC to advise the environmental consultant of the total expected net import quantity (in m³).
- The environmental consultant to undertake compliance sampling and analysis. This will entail:
 - Collection of representative samples of each type of recovered aggregate imported to Lot 3B
 - Samples to be collected and analysed at a rate of 1 per 500 m³
 - Each sample to be analysed for TRH, BTEXN, PAH, OCP, OPP, PCB, M8 and asbestos
 - Comparison of results to the ASC NEPM HIL D and HSL D. Analysis results must be below these criteria. Asbestos must not be present.

2.4 Basalt Fines

To assess that materials meet the Basalt Fines classification, the requirements presented in **Appendix A** shall apply, plus sampling and analysis, as noted below. In summary, Basalt Fines must meet the following:

Table 7 Basalt Fines, Chemicals & Concentrations

Column 1	Column 2	Column 3	Column 4
Chemicals/Attributes	Max' Average Concentration for Characterisation ⁽¹⁾	Max' Average Concentration for Routine Testing ⁽¹⁾	Absolute Maximum Concentration ⁽¹⁾
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1
3. Lead	50	50	100
4. Arsenic	15	15	30
5. Chromium (total)	25	Not required	50
6. Copper	25	Not required	50
7. Nickel	25	Not required	50
8. Zinc	75	75	150
9. Electrical conductivity	1 dS/m	1 dS/m	2 dS/m
10. Metal, glass, asphalt, ceramics and slag	2.5 %	Not required	5 %
11. Plaster, clay lumps and other friable materials	0.25 %	Not required	0.5 %
12. Rubber, plastic, bitumen, paper, cloth, paint, wood and other vegetable matter	0.05 %	Not required	0.1 %
13. Asbestos ⁽²⁾	Not detected	Not detected	Not detected

Notes:

(1) = mg/kg 'dry weight'. (2) = added by AECOM. The absolute maximum concentration or other value of that attribute in any recovered aggregate supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4.

Assessment Requirements

Assessment of the suitability of Basalt Fines for commercial/industrial land use will include:

- CC to source documentation from the commercial supplier (refer **Section 2.8**).
- CC to advise environmental consultant of the total expected net import quantity (in m³).
- The environmental consultant to undertake compliance sampling and analysis. This will entail:
 - Collection of representative samples of the material(s) imported to Lot 3B
 - Samples to be collected at a rate of 1 per 1000 m³
 - Each sample to be analysed for TRH, BTEXN, PAH, OCP, OPP, PCB, M8 and asbestos
 - Comparison of results to the ASC NEPM HIL D and HSL D. Analysis results must be below these criteria. Asbestos must not be present.

2.5 Recovered Glass Sand

To assess that materials meet the Recovered Glass Sand classification, the requirements presented in **Appendix A** shall apply, plus sampling and analysis, as noted below. In summary, Glass Sand must meet the following:

Table 8 Recovered Glass Sand, Contaminants and Concentrations

Column 1	Column 2	Column 3	Column 4
Chemicals/Attributes	Max' Average Concentration for Characterisation ⁽¹⁾	Max' Average Concentration for Routine Testing ⁽¹⁾	Absolute Maximum Concentration ⁽¹⁾
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1.5
3. Lead	50	50	100
4. Arsenic	10	Not required	20
5. Chromium (total)	20	Not required	40
6. Copper	40	Not required	120
7. Molybdenum	5	Not required	10
8. Nickel	10	Not required	20
9. Zinc	100	100	300
10. Total Organic Carbon	1 %	Not required	2 %
11. Electrical conductivity	1 dS/m	1 dS/m	2 dS/m
12. Metals	0.25 %	0.25 %	0.5 %
13. Plaster, clay lumps and other friable materials	0.25 %	0.25 %	0.5 %
14. Rubber, plastic, bitumen, paper, cloth, paint, wood and other vegetable matter	0.3 %	0.3 %	0.5 %
15. Asbestos ⁽²⁾	Not detected	Not detected	Not detected

Notes:

(1) = mg/kg 'dry weight'. (2) = added by AECOM. The absolute maximum concentration or other value of that attribute in any recovered aggregate supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4.

2.5.1 Assessment Requirements

Assessment of the suitability of Glass Sand for commercial/industrial land use will include:

- CC to source documentation from the commercial supplier (refer **Section 2.9**).
- CC to advise the environmental consultant of the total expected net import quantity (in m³).
- The environmental consultant to undertake compliance sampling and analysis. This will entail:
 - Collection of representative samples of the material(s) imported to Lot 3B
 - Samples to be collected at a rate of 1 per 500 m³
 - Each sample to be analysed for TRH, BTEXN, PAH, OCP, OPP, PCB, M8 and asbestos
 - Comparison of results to the ASC NEPM HIL D and HSL D. Analysis results must be below these criteria. Asbestos must not be present.

2.6 Consultants' Assessment Reports

A report will be required for each potential VENM or ENM source site. Each report must be prepared by an appropriately qualified consultant and include:

- All applicable ENM and/or VENM assessment requirements noted in this document.
- Identifiers for the source site (i.e. street address and suburb and Lot and Deposited Plan numbers).
- A Figure showing the location of the source site.
- The anticipated volume of material to be imported to the subject site.
- A description of the material to be imported to the subject site.
- Site inspection observations, including neighbouring properties.
- Photographs showing site conditions.
- Consideration of the likelihood of PFAS to be present (refer **Section 2.7**).
- Analysis for PFAS if it is identified as a contaminant of concern.
- Copies of NATA stamped laboratory analysis certificates, including chain of custody documentation, sample receipt acknowledgement forms, quality assurance/quality control (QA/QC) data.
- Analysis results for field QA/QC samples (e.g. equipment rinsate blanks, field duplicates etc). AECOM recommends that split field duplicate samples are analysed by a secondary laboratory, so that an assessment of the precision of the primary laboratory data can be made. QA/QC evaluation should be undertaken with reference to the ASC NEPM 2013.
- Evaluation of the analysis data reliability and useability.
- A conclusion (i.e. does the material meet the classification of either ENM or VENM).

2.7 PFAS

PFAS can be associated with aqueous film forming foams (AFFF, used in firefighting), Teflon coatings, fabric protectors, electroplating, a range of industrial processes and landfills.

Soil and/or bedrock materials (i.e. VENM or ENM) proposed to be imported to Lot 3B must be assessed for PFAS if background/history data for the source site indicates that it is a potential source of PFAS, or located near a potential PFAS source site. The indicators would include but not be limited to:

- Listing on the NSW EPA website.
- Previous or current use of the source site as a fire station or fire training ground.
- Department of Defence properties, including adjacent lands.
- Electroplating facilities.
- Industrial facilities or other lands that have had fires attended to by the NSW Fire Brigade.

No soil and/or bedrock materials will be imported to Lot 3B if:

- Background data for the source site indicates a potential for PFAS and no PFAS analyses have been undertaken.
- PFAS concentrations in soil and/or bedrock materials exceed the 'residential and garden accessible soil' land use criteria (i.e. HIL A) provided in the PFAS National Environmental Management Plan Version 2.0 January 2020 (PFAS NEMP 2.0).

The PFAS NEMP 2.0 'residential and garden accessible soil' land use criteria are:

- PFOS + PFHxS: 0.01 mg/kg
- PFOA: 0.1 mg/kg.

2.8 Review of Consultants' Assessment Reports

The environmental consultant should be provided a copy of each Assessment Report of ENM and/or VENM for review purposes. An appropriate report, addressing all items in **Section 2.6**, must be sighted prior to the importation of material to Lot 3B.

In the event that the review indicates insufficient assessment data, no materials shall be imported to Lot 3B until the Consultant has satisfactorily addressed the identified data gaps.

Goodman or Goodman's' appointed representative(s) should retain a copy of each Assessment Report. This includes source sites not deemed to be an acceptable source of ENM or VENM or reports lacking sufficient data, so that an "*Exclusion Register*" can be maintained and tracked.

Any materials that are considered acceptable for import, based on review of the Consultants' report, will require compliance sampling and analysis to ensure suitability for use (per this FIP).

2.9 POEO (Waste) Regulation 2014 Documentation

For any materials imported to Lot 3B under the applicable Resource Recovery Order (RRO), the following shall apply:

- The commercial supplier of the material must provide a letter stating that the material was generated under the applicable RRO. At least one letter per material type will be required.
- The commercial supplier must provide copies of test results, confirming contaminant concentrations meet the applicable '*Absolute maximum concentration*'.

The environmental consultant will undertake compliance sampling and analysis to ensure suitability of the materials for use at the Site.

2.10 On-Site Inspections

During importation of materials, the Construction Contractor (CC) will undertake inspections of vehicles entering Lot 3B. The following information should be noted and recorded:

- Vehicle registration (license plate) number.
- Location of source site.
- Contact name at source site.
- Time left source site and time of arrival at Lot 3B.
- Contents of truck and are they similar to the expected contents.
- Inspection of materials when deposited from truck.
- GPS truck-tracking data (if applicable).

Where suspicious loads and/or evasive answers and/or incomplete vehicle tracking data are apparent, permission to unload should not be granted.

Where contaminants or suspected contaminants are observed in imported material during tipping, the truck will be reloaded and be sent back to the source site. Cartage from the source site shall cease and will only recommence when the CC is satisfied that the issue has been addressed.

3.0 Materials Tracking Register

A Materials Tracking Register (MTR) must be implemented by the CC, to document that only 'approved' material is imported to Lot 3B. At a minimum, the MTR should include the following:

- Location of source site, expected volume of material and description and reference to a Consultant's Assessment Report.
- Log of vehicles leaving source site, to be provided by the source site each morning, including license plate details. The source site should also provide an indication of the number of truck loads expected each day.
- All trucks **arriving** at Lot 3B must possess a loading docket from the source site. If a truck does not possess a loading docket, it will not be allowed to unload. The loading docket must identify the source site and time the truck left the source site.
- A Spotter (or Spotters) will be at Lot 3B, to meet all trucks. The Spotter(s) will:
 - Log all vehicles entering Lot 3B, including license plate details and 'time in'.
 - Check the loading docket, including time left source site and time-in at Lot 3B. Any discrepancies in times will be discussed. Trucks with significant time discrepancies may be refused entry.
 - Description of materials imported (e.g. clay, shale, sandstone etc.).
 - Location materials deposited at Lot 3B.
 - When tipping, the Spotter will check material for unexpected contaminants (odours, staining, waste materials etc.).

When the Spotter(s) is/are satisfied, they will sign the loading docket and keep a copy for records.

An example pro-forma is included in **Appendix B**.

Appendix A

POEO (Waste)
Regulation, Orders &
Exemptions

Appendix A POEO (Waste) Regulation, Orders & Exemptions

LOT 3B, OAKDALE WEST ESTATE, KEMPS CREEK.

DRAWING LIST	
Sheet Number	Sheet Name
DA10	COVERPAGE
DA11	PERSPECTIVE OFFICE 3B1
DA12	PERSPECTIVE OFFICE 3B2
DA20	SITE & WAREHOUSE PLAN
DA21	ROOF PLAN - WAREHOUSE
DA22	FLOOR PLAN - OFFICE 3B1
DA23	FLOOR PLAN - OFFICE 3B2
DA24	FLOOR PLAN / ELEVATION DOCK OFFICE
DA30	ELEVATIONS & SECTION - WAREHOUSE 3B1/ 3B2
DA31	ELEVATIONS - OFFICE 3B1
DA33	ELEVATIONS - OFFICE 3B2
DA39	SIGNAGE PLAN



1 PERSPECTIVE WAREHOUSE 3B1



2 PERSPECTIVE WAREHOUSE 3B2



1

OFFICE 3B1 -PRESPECTIVE 01



2

OFFICE 3B1 -PERSPECTIVE 02



1 OFFICE 3B2 -PERSPECTIVE 03



2 OFFICE 3B2 -PERSPECTIVE 04

Legend

Site Boundary

Lot Boundary

Building 7.5m Setback
(For Estate Road Only)

Landscape 3.75m Setback
(For Estate Road Only)

FNC-1 Chainwire Fencing

FNC-2 Palisade Fencing

RW Retaining Wall

Development Area Schedule	
Site Area	46,198 sqm
Warehouse 3B-1 (Inclusive of Dock Office & Labs)	10,000 sqm
Warehouse 3B-2	10,000 sqm
Office 3B-1 (2 levels)	1,000 sqm
Office 3B-2 (1 level)	500 sqm
Total Building Area	
	21,500 sqm
Awning	4,215 sqm
Site Cover (exc. awning)	47 %
Floor Space Ratio	0.47 : 1
Hardstand Area	
	15,910 sqm
Light Duty Area	4,415 sqm
Fire Track Area	772 sqm
Carparking 3B-1 (Inclusive of 2 disabled spaces and 3 x EV Charging Stations with provision of 3 additional stations in the future)	
	100
Carparking 3B-2 (Inclusive of 2 disabled spaces and 3 x EV Charging Stations with provision of 3 additional stations in the future)	
	58

SBA
ARCHITECTS

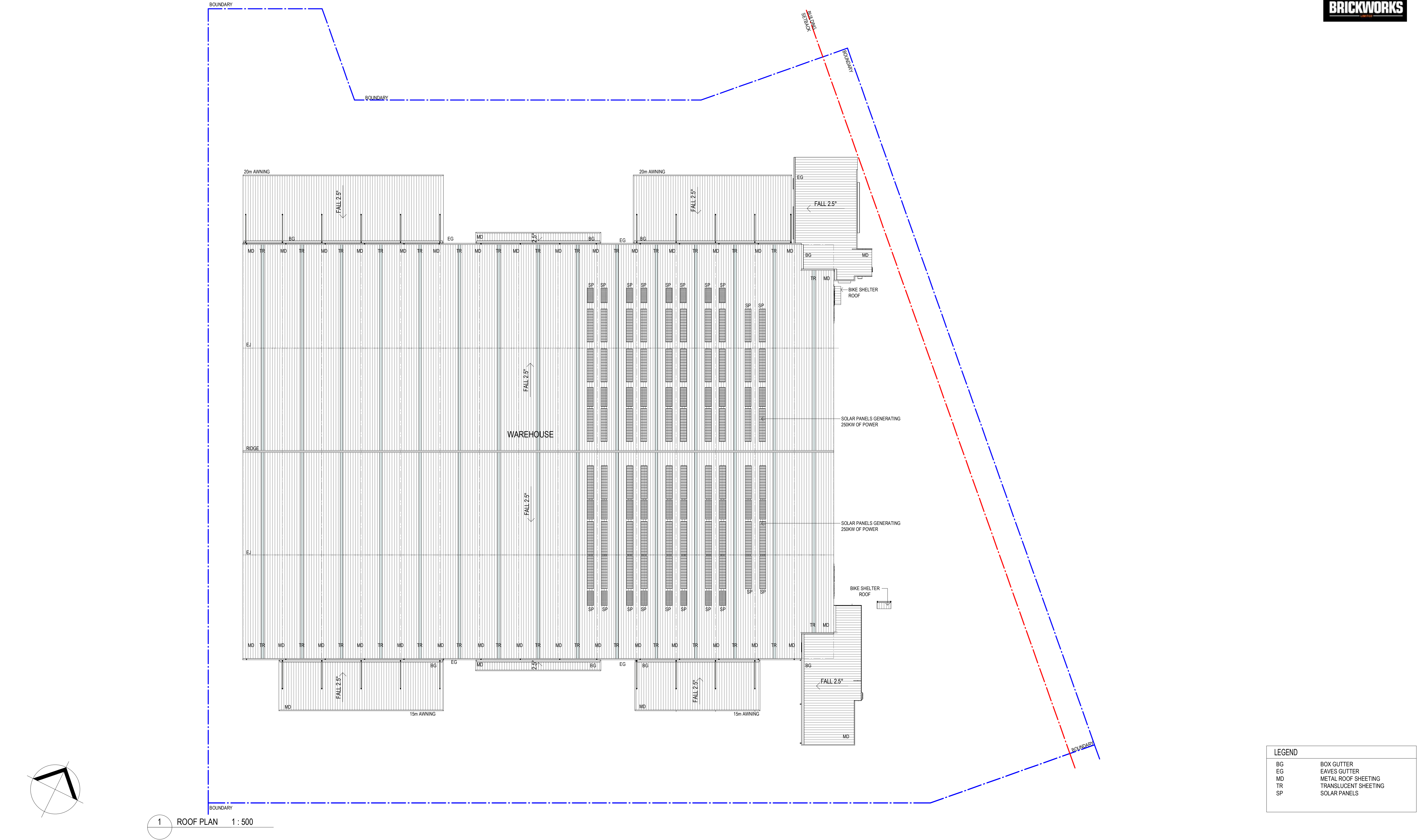
Oakdale West Estate
Kemps Creek, NSW

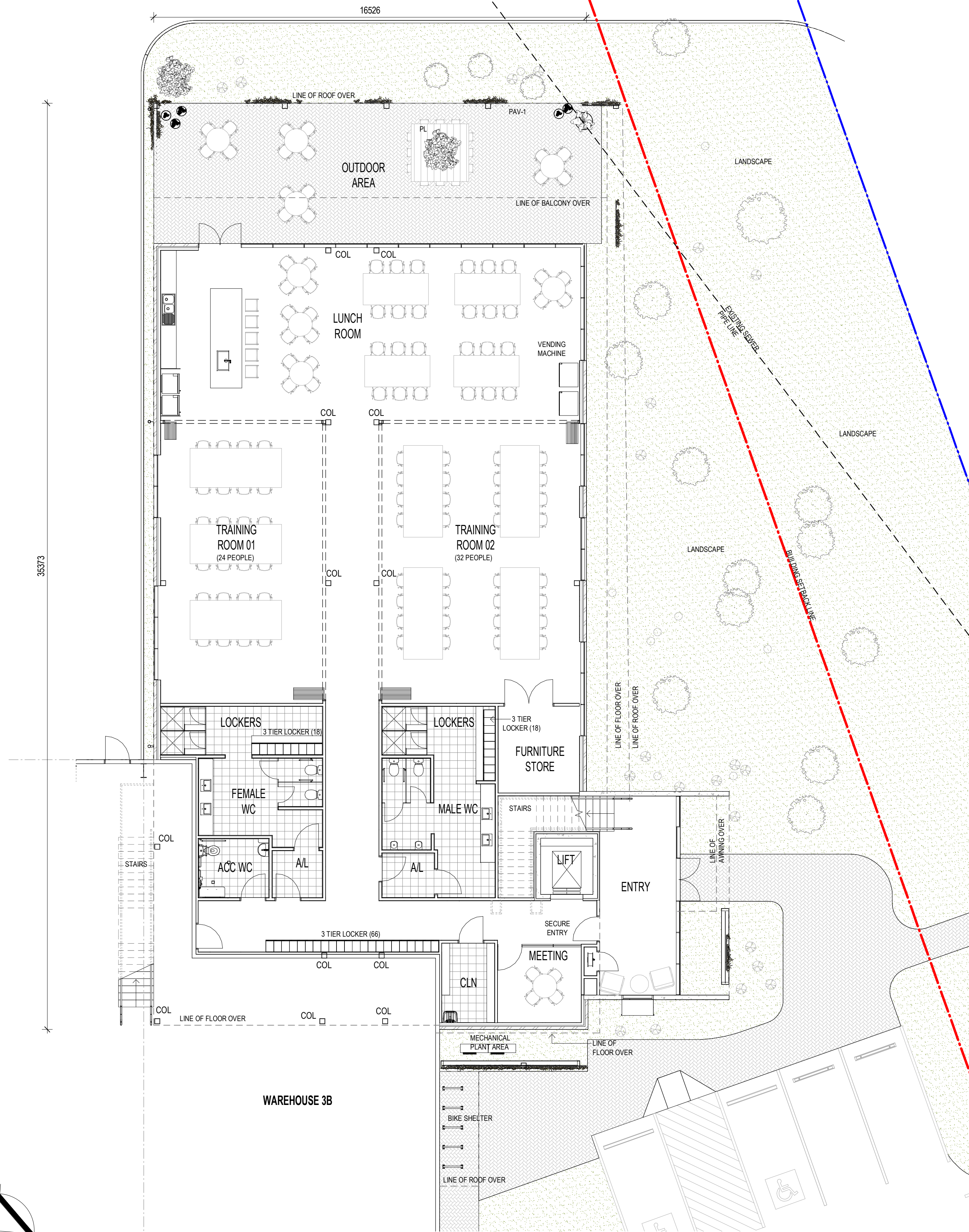
PROPOSED INDUSTRIAL FACILITY LOT 3B
Development Application

Site & Warehouse Plan

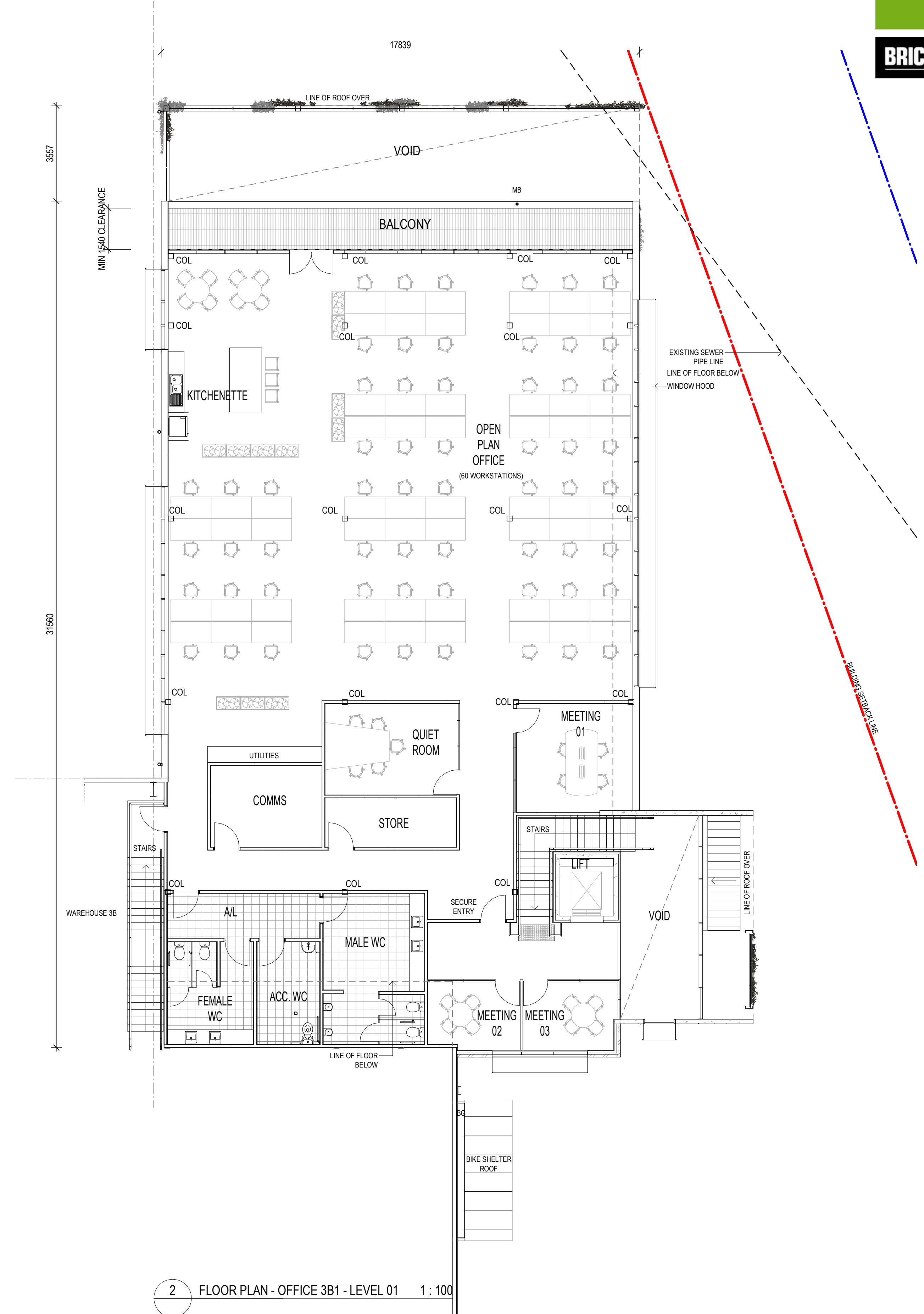
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1:1000 @ A3
18 June 2021

OAK 3B DA 20 (E)
Job No 21116

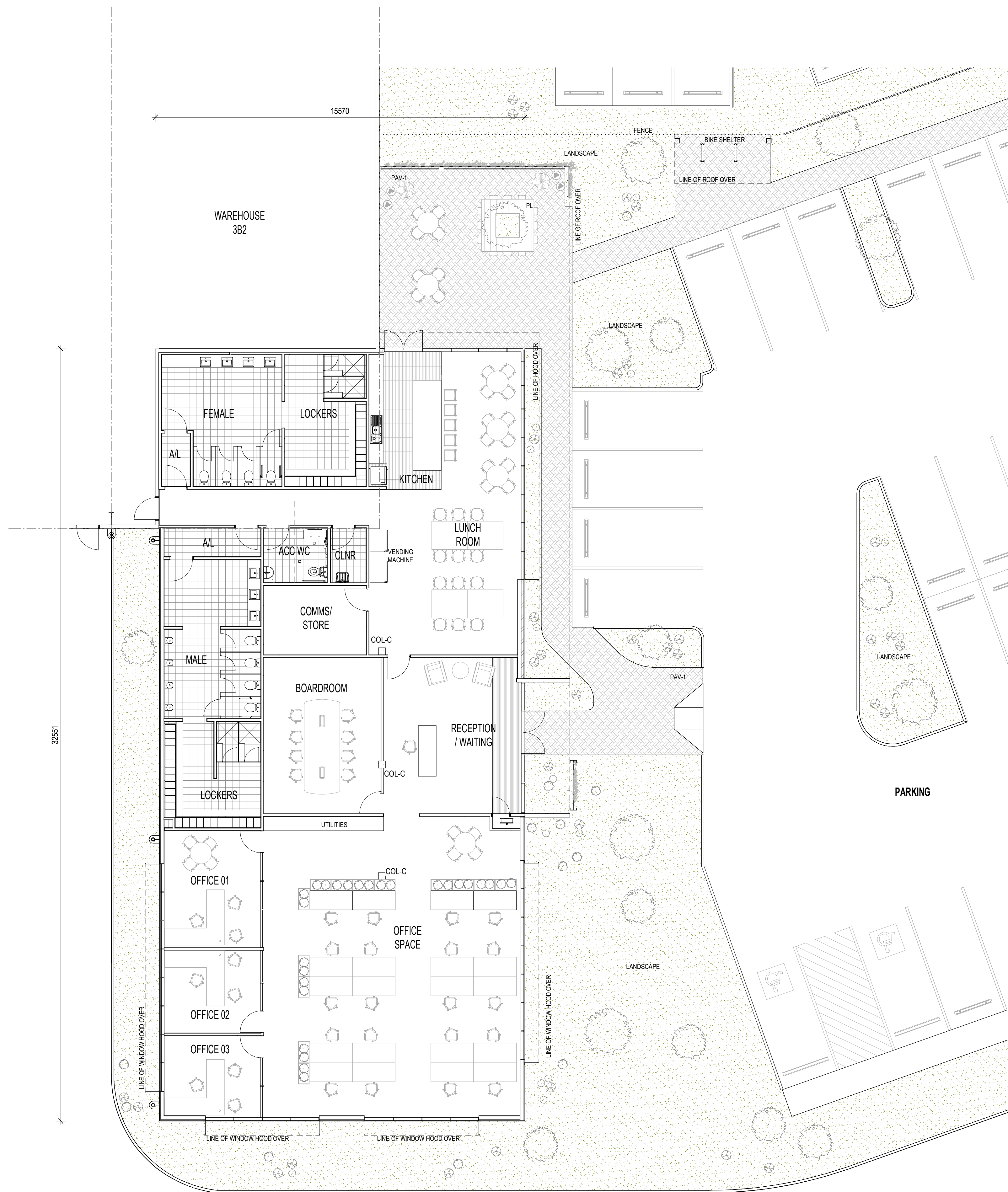




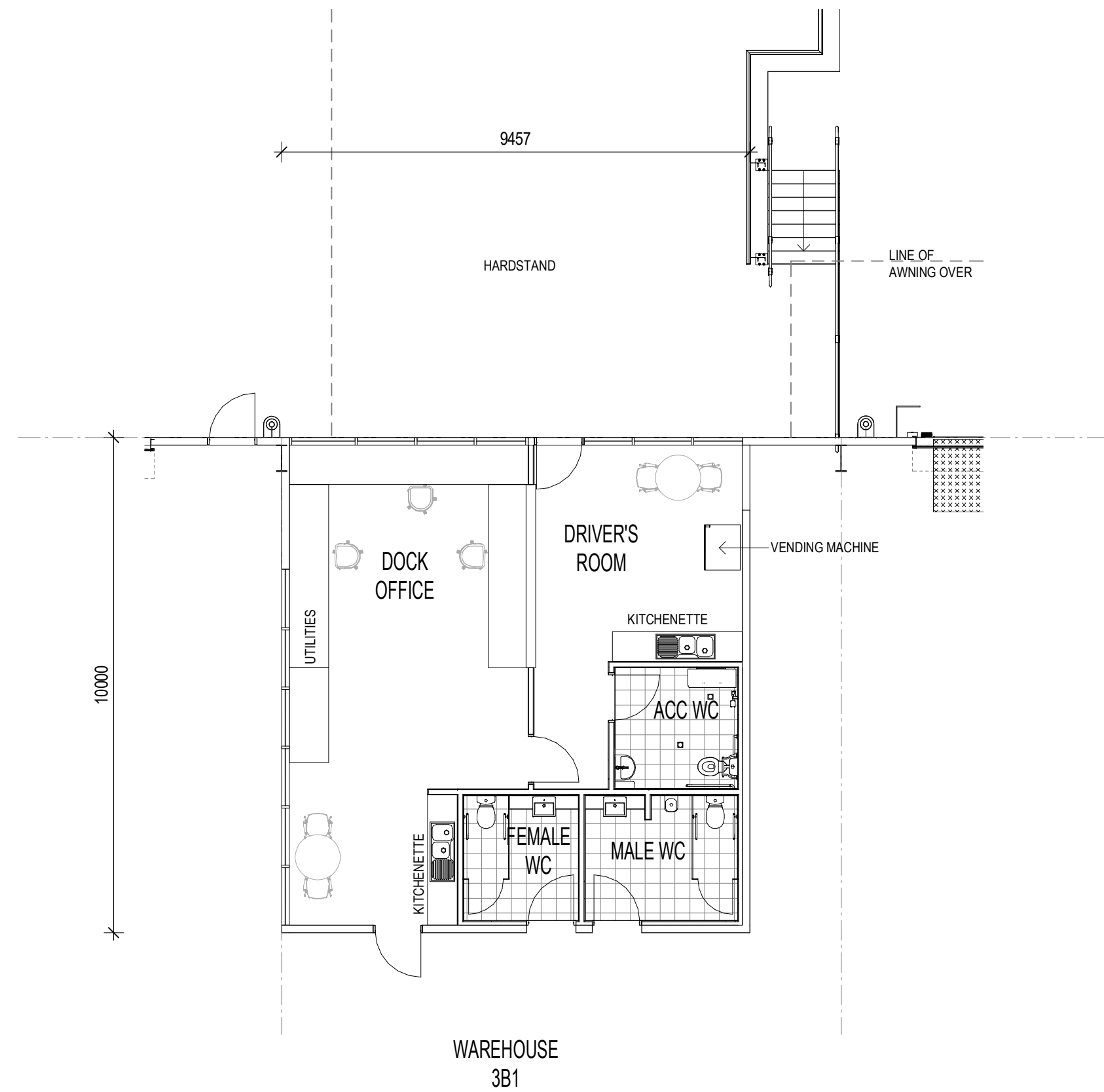
1 FLOOR PLAN - OFFICE 3B1 - GROUND 1 : 100



2 FLOOR PLAN - OFFICE 3B1 - LEVEL 01 1 : 100



1 FLOOR PLAN - OFFICE 3B2 1 : 100



1 FLOOR PLAN DOCK OFFICE 1 : 100



2 ELEVATION NORTH - DOCK OFFICE 1 : 100

INDICATIVE EXTERNAL FINISHES LEGEND

- BLK-1

BRICKWORK TO EQUAL BOWRAL 300 GERTRUDIS BROWN 300 X 110 X 50mm. STACKED BOND WITH GREY MORTAR JOINTS
- AWN-1

STEEL AWNING. PAINT FINISH TO MATCH COLOURBOND MONUMENT
- GL-1

CLEAR GLAZING - LIGHT GREY TINT OR SIMILAR
- MOR-1

METAL DECK ROOFING COLOURBOND - SURFIMIST
- MRS

METAL ROLLER SHUTTER PREFINISHED IN SHALE GREY
- MESH-1

STAINLESS STEEL MESH IN METAL FRAME
- PCP-1

PRECAST CONCRETE PANEL WITH "NAWKAW PERMATINT PAINT FINISH"
- PCP-2

PRECAST CONCRETE DADO PANEL PAINT FINISH
- PMW-1

PREFINISHED METAL WALL SHEET CLADDING COLOURBOND - MONUMENT FINISH (OR SIMILAR)
- PMW-2

PREFINISHED METAL WALL SHEET CLADDING COLOURBOND - GOODMAN GREEN FINISH
- PMW-3

PREFINISHED STANDING SEAM PROFILE METAL CLADDING EQUAL TO FILTERS PROMINENCE FINESSE IN COLOURBOND MONUMENT FINISH
- PMW-4

PREFINISHED METAL WALL SHEET CLADDING COLOURBOND - SHALE GREY
- TRS-1

TRANSLUCENT ROOF SHEET. OPAL COLOUR
- WH-1

STEEL WINDOW HOOD. COLOURBOND MONUMENT FINISH (OR SIMILAR)
- FRM

PREFINISHED ALUMINIUM WINDOW FRAME. POWDER COATING IN BLACK
- DP-1

DOWNPIPE COLOUR TO MATCH BACKGROUND CLADDING COLOUR
- PAV-1

PAVER, GREY BRICK, HERRINGBONE PATTERN
- TMB

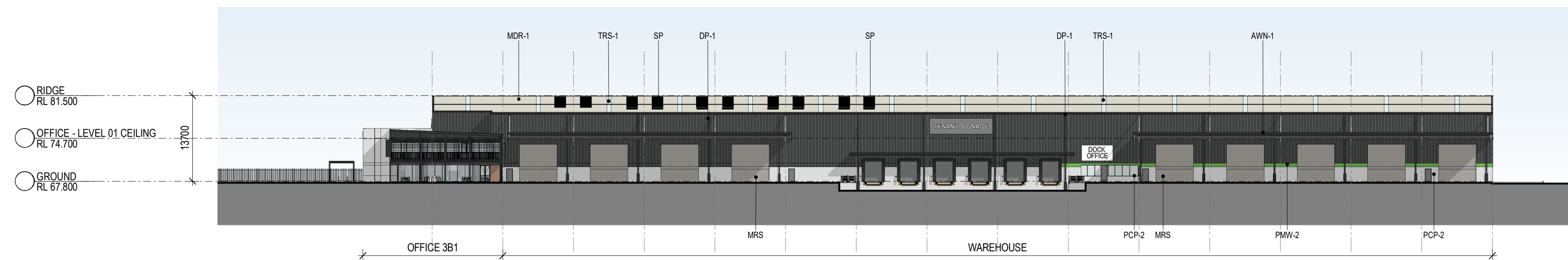
TIMBER LOOK PANELS, ALUMINIUM CLIP ON PANELS, SCULPTFORM
- SC

STAINLESS STEEL CABLE WITH CLIMBING PLANTS
- SP

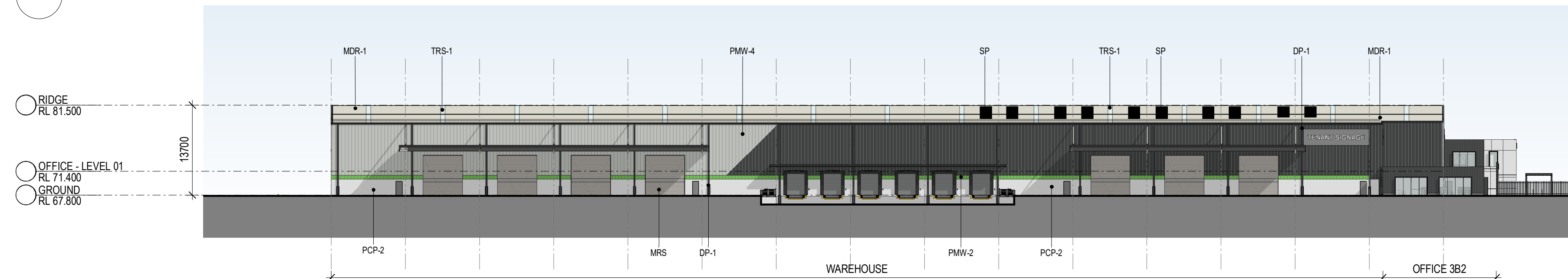
SOLAR PANELS
- MB

WELDED SOLID METAL BAR BALUSTRADE PAINT FINISH
- PL

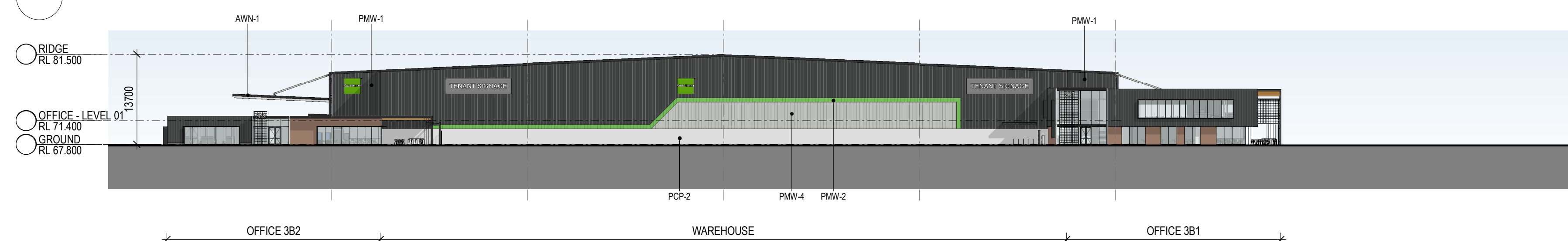
1m x 1m ABOVE GROUND PLANTER WITH TIMBER TABLE



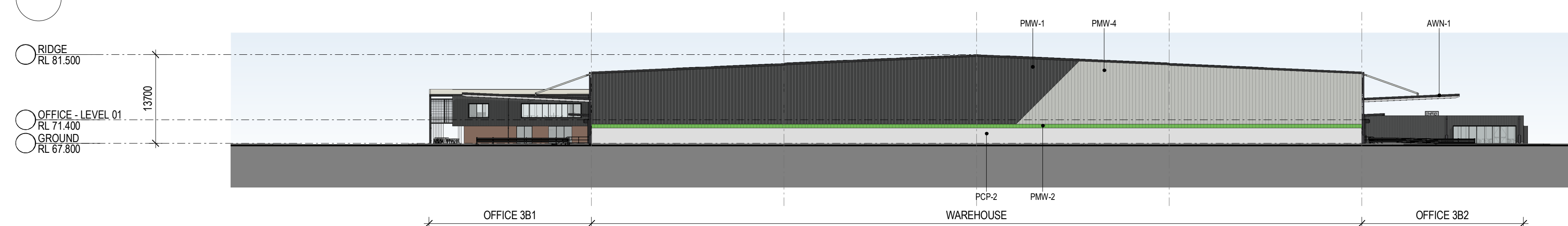
1 ELEVATION NORTH - WAREHOUSE 1 : 500



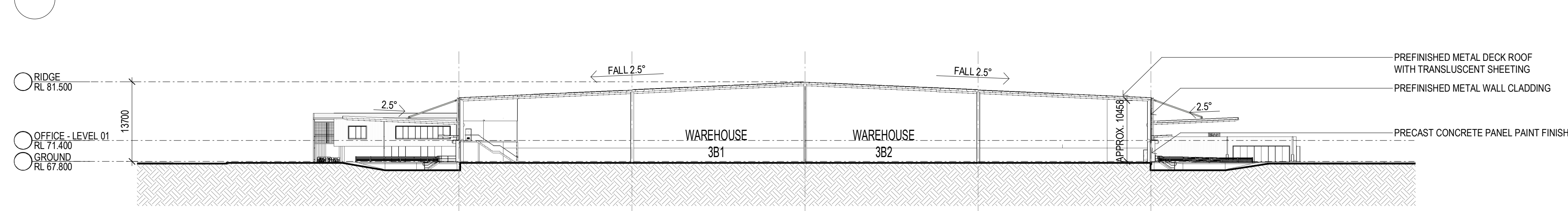
2 ELEVATION SOUTH - WAREHOUSE 1 : 500



3 ELEVATION EAST - WAREHOUSE 1 : 500



4 ELEVATION WEST - WAREHOUSE 1 : 500



5 SECTION 01 - WAREHOUSE 1 : 500

INDICATIVE EXTERNAL FINISHES LEGEND

BLK-1 BRICKWORK TO EQUAL BOWRAL 300 GERTRUDIS BROWN 300 X 110 X 50mm. STACKED BOND WITH GREY MORTAR JOINTS	AWN-1 STEEL AWNING. PAINT FINISH TO MATCH COLORBOND MONUMENT	GL-1 CLEAR GLAZING - LIGHT GREY TINT OR SIMILAR	MDR-1 METAL DECK ROOFING COLORBOND - SURFMIST	MRS METAL ROLLER SHUTTER PREHENSED IN SHALE GREY	MESH-1 STAINLESS STEEL MESH IN METAL FRAME	PCP-1 PRECAST CONCRETE PANEL WITH 'NAWKAW' PERMATINT PAINT FINISH	PCP-2 PRECAST CONCRETE DADO PANEL PAINT FINISH	PMW-1 PREFINISHED METAL WALL SHEET CLADDING COLORBOND - MONUMENT FINISH (OR SIMILAR)	PMW-2 PREFINISHED METAL WALL SHEET CLADDING COLORBOND - GOODMAN GREEN FINISH	PMW-3 PREFINISHED STANDING SEAM PROFILE METAL CLADDING EQUAL TO FILERS PROMINENCE FINESSE IN COLOURBOND MONUMENT FINISH	PMW-4 PREFINISHED METAL WALL SHEET CLADDING COLOURBOND - SHALE GREY	TRS-1 TRANSLUCENT ROOF SHEET, OPAL COLOUR
WH-1 STEEL WINDOW HOOD. COLORBOND MONUMENT FINISH (OR SIMILAR)	FRM PREFINISHED ALUMINIUM WINDOW FRAME POWDER COATING IN BLACK	DP-1 DOWNPIPE COLOUR TO MATCH BACKGROUND CLADDING COLOUR	PAV-1 PAVER, GREY BRICK, HERRINGBONE PATTERN	TMB TIMBER LOOK PANELS, ALUMINIUM CLIK ON PANELS, SCULPTIFORM	SC STAINLESS STEEL CABLE WITH CLIMBING PLANTS	SP SOLAR PANELS	MB WELDED SOLID METAL BAR BALUSTRADE PAINT FINISH	PL 1m x 1m ABOVE GROUND PLANTER WITH TIMBER TABLE				



1 ELEVATION EAST - OFFICE 3B1 1 : 100



2 ELEVATION WEST - OFFICE 3B1 1 : 100



3 ELEVATION NORTH - OFFICE 3B1 1 : 100



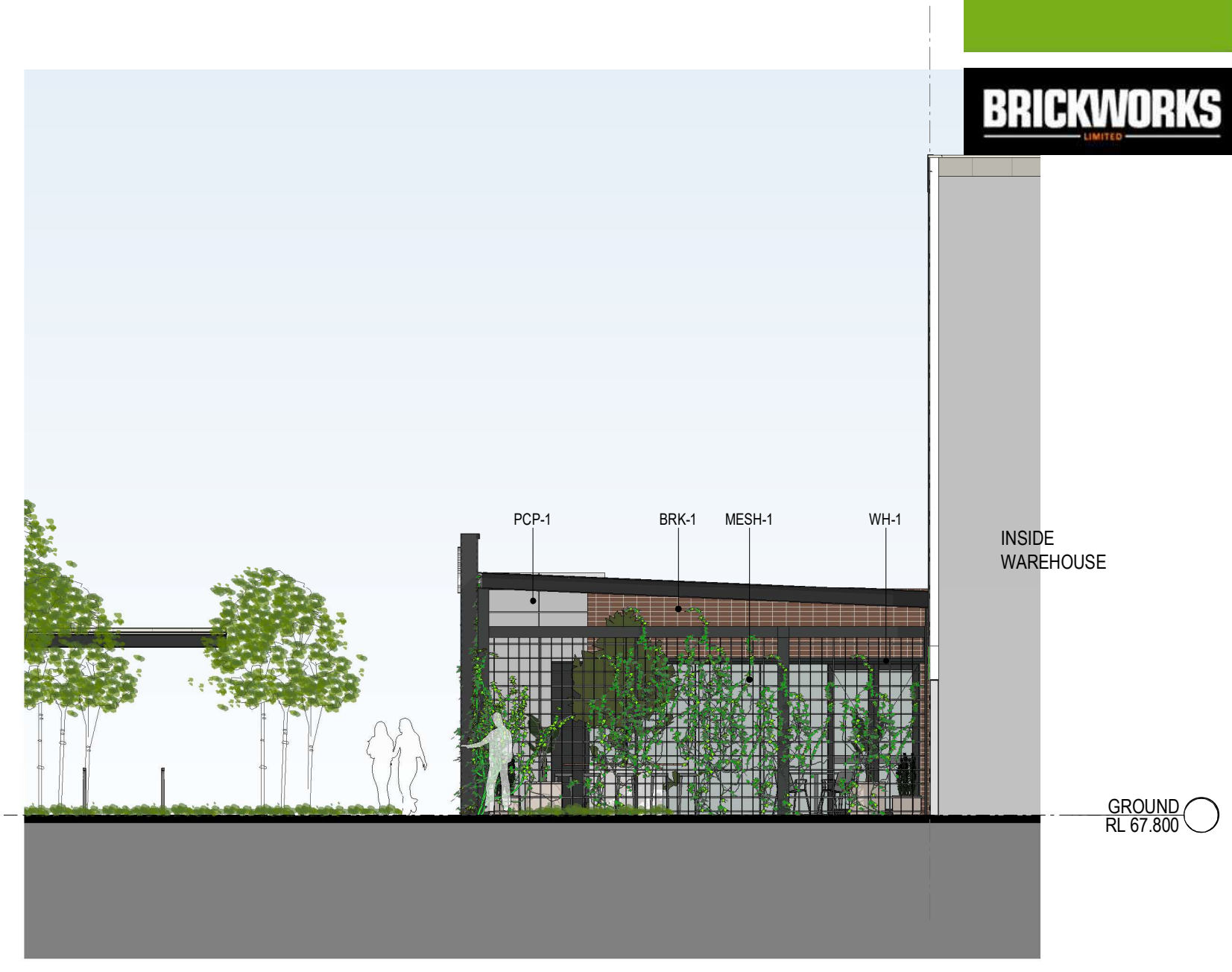
4 ELEVATION SOUTH - OFFICE 3B1 1 : 100

INDICATIVE EXTERNAL FINISHES LEGEND

BLK-1 BRICKWORK TO EQUAL BOWRAL 300 GERTRUDIS BROWN 300 x 110 x 50mm. STACKED BOND WITH GREY MORTAR JOINTS	AWN-1 STEEL AWNING. PAINT FINISH TO MATCH COLOURBOND MONUMENT	GL-1 CLEAR GLAZING - LIGHT GREY TINT OR SIMILAR	MDR-1 METAL DECK ROOFING COLORBOND - SURFMIST	MRS METAL ROLLER SHUTTER PRENISHED IN SHALE GREY	MESH-1 STAINLESS STEEL MESH IN METAL FRAME	PCP-1 PRECAST CONCRETE PANEL WITH "NAWKAW PERMATINT PAINT FINISH"	PCP-2 PRECAST CONCRETE DADO PANEL PAINT FINISH	PMW-1 PREFINISHED METAL WALL SHEET CLADDING COLORBOND - MONUMENT FINISH (OR SIMILAR)	PMW-2 PREFINISHED METAL WALL SHEET CLADDING COLORBOND - GOODMAN GREEN FINISH	PMW-3 PREFINISHED STANDING SEAM PROFILE METAL CLADDING EQUAL TO FILTERS PROMINENCE FINESSE IN COLOURBOND MONUMENT FINISH	PMW-4 PREFINISHED METAL WALL SHEET CLADDING COLOURBOND - SHALE GREY	TRS-1 TRANSLUCENT ROOF SHEET. OPAL COLOUR
WH-1 STEEL WINDOW HOOD. COLORBOND MONUMENT FINISH (OR SIMILAR)	FRM PREFINISHED ALUMINIUM WINDOW FRAME POWDER COATING IN BLACK	DP-1 DOWNSPIPE COLOUR TO MATCH BACKGROUND CLADDING COLOUR	PAV-1 PAVER, GREY BRICK, HERRINGBONE PATTERN	TMB TIMBER LOOK PANELS, ALUMINIUM CLIK ON PANELS, SCULPTFORM	SC STAINLESS STEEL CABLE WITH CLIMBING PLANTS	SP SOLAR PANELS	MB WELDED SOLID METAL BAR BALUSTRADE PAINT FINISH	PL 1m x 1m ABOVE GROUND PLANTER WITH TIMBER TABLE				



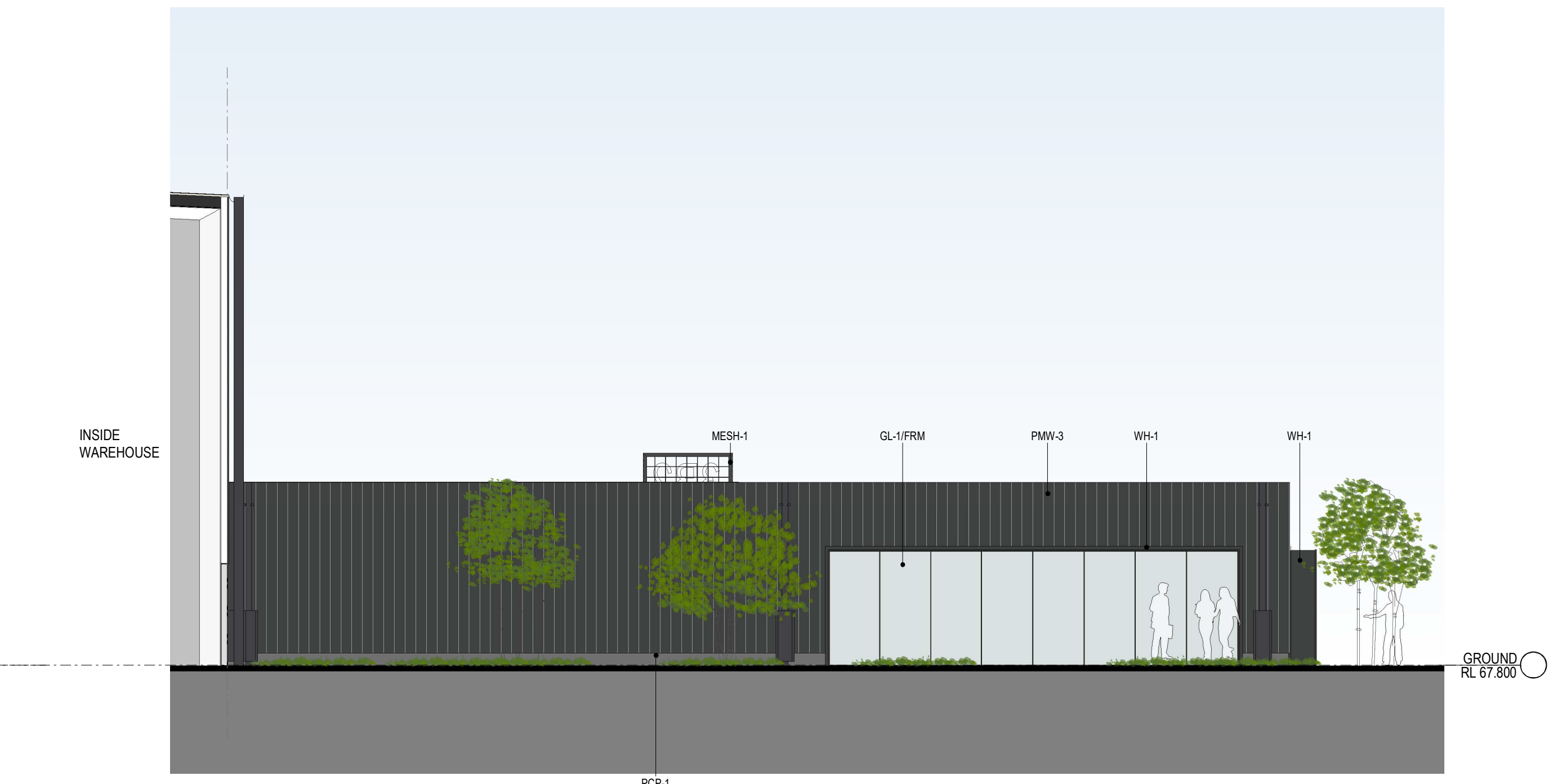
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2 ELEVATION NORTH - OFFICE 3B2 1 : 100



3 ELEVATION SOUTH - OFFICE 3B2 1 : 100



4 ELEVATION WEST - OFFICE 3B2 1 : 100

INDICATIVE EXTERNAL FINISHES LEGEND

BLK-1 BRICKWORK TO EQUAL BOWRAL 300 GERTRUDIS BROWN 300 X 110 X 50mm. STACKED BOND WITH GREY MORTAR JOINTS	AWN-1 STEEL AWNING. PAINT FINISH TO MATCH COLORBOND MONUMENT	GL-1 CLEAR GLAZING - LIGHT GREY TINT OR SIMILAR	MDR-1 METAL DECK ROOFING COLORBOND - SURFIMIST	MRS METAL ROLLER SHUTTER PREFINISHED IN SHALE GREY	MESH-1 STAINLESS STEEL MESH IN METAL FRAME	PCP-1 PRECAST CONCRETE PANEL WITH "NAWKAW" PERMATINT PAINT FINISH*	PCP-2 PRECAST CONCRETE DADO PANEL PAINT FINISH	PMW-1 PREFINISHED METAL WALL SHEET CLADDING COLORBOND - MONUMENT FINISH (OR SMILAR)	PMW-2 PREFINISHED METAL WALL SHEET CLADDING COLORBOND - GOODMAN GREEN FINISH	PMW-3 PREFINISHED STANDING SEAM PROFILE METAL CLADDING EQUAL TO FILTERS PROMINENCE FINESSE IN COLOURBOND MONUMENT FINISH	PMW-4 PREFINISHED METAL WALL SHEET CLADDING COLOURBOND - SHALE GREY	TRS-1 TRANSLUCENT ROOF SHEET. OPAL COLOUR
WH-1 STEEL WINDOW HOOD. COLORBOND MONUMENT FINISH (OR SIMILAR)	FRM PREFINISHED ALUMINIUM WINDOW FRAME POWDER COATING IN BLACK	DP-1 DOWNSPIPE COLOUR TO MATCH BACKGROUND CLADDING COLOUR	PAV-1 PAVER, GREY BRICK, HERRINGBONE PATTERN	TMB TIMBER LOOK PANELS, ALUMINIUM CLIP ON PANELS, SCULPTFORM	SC STAINLESS STEEL CABLE WITH CLIMBING PLANTS	SP SOLAR PANELS	MB WELDED SOLID METAL BAR BALUSTRADE PAINT FINISH	PL 1m x 1m ABOVE GROUND PLANTER WITH TIMBER TABLE				



Signage Legend

- C** Customer Signage
- D** Customer Signage
- E** Dock Office Signage
- S3** Wayfinding - Truck
- S4** Wayfinding - Car
- S6** Goodman Light Box (Type 1) on Warehouse

CUSTOMER SIGNAGE

11260 Approx

2500 Approx

10600 Approx

C Illuminated Tenant Sign fixed to Building (artwork to future details)

D Non Illuminated Dock Office Sign fixed to Building (artwork to future details)

Dock Office

2500 Approx

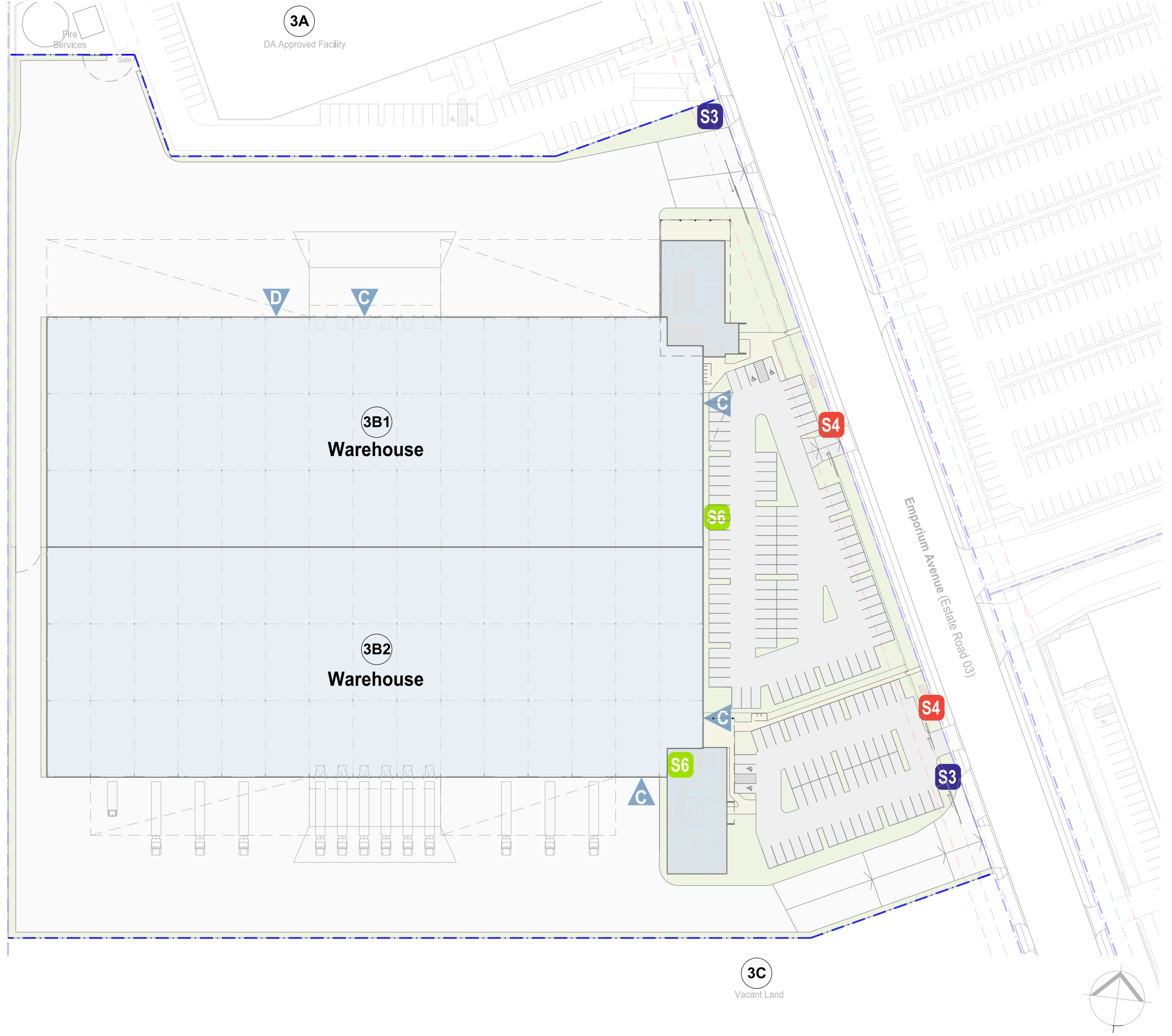
5000 Approx

S3 Illuminated Truck Wayfinding Pylon Sign

S4 Illuminated Car Wayfinding Pylon Sign

S6 Illuminated Sign fixed to Building

NOTE: Signage Images Not To Scale





Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

The excavated natural material order 2014

Introduction

This order, issued by the Environment Protection Authority (EPA) under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), imposes the requirements that must be met by suppliers of excavated natural material to which 'the excavated natural material exemption 2014' applies. The requirements in this order apply in relation to the supply of excavated natural material for application to land as engineering fill or for use in earthworks.

1. Waste to which this order applies

- 1.1. This order applies to excavated natural material. In this order, excavated natural material means naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:
- a) been excavated from the ground, and
 - b) contains at least 98% (by weight) natural material, and
 - c) does not meet the definition of Virgin Excavated Natural Material in the Act.

Excavated natural material does not include material located in a hotspot; that has been processed; or that contains asbestos, Acid Sulfate Soils (ASS), Potential Acid Sulfate soils (PASS) or sulfidic ores.

2. Persons to whom this order applies

- 2.1. The requirements in this order apply, as relevant, to any person who supplies excavated natural material, that has been generated, processed or recovered by the person.
- 2.2. This order does not apply to the supply of excavated natural material to a consumer for land application at a premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal (thermal treatment)' of Schedule 1 of the POEO Act.

3. Duration

- 3.1. This order commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Generator requirements

The EPA imposes the following requirements on any generator who supplies excavated natural material.

Sampling requirements

- 4.1. On or before supplying excavated natural material, the generator must:
 - 4.1.1. Prepare a written sampling plan which includes a description of sample preparation and storage procedures for the excavated natural material.
 - 4.1.2. Undertake sampling and testing of the excavated natural material as required under clauses 4.2, 4.3, and 4.4 below. The sampling must be carried out in accordance with the written sampling plan.
- 4.2. The generator must undertake sampling and analysis of the material for ASS and PASS, in accordance with the NSW Acid Sulfate Soil Manual, Acid Sulfate Soils Management Advisory Council, 1998 and the updated Laboratory Methods Guidelines version 2.1 – June 2004 where:
 - 4.2.1. the pH measured in the material is below 5, and/or
 - 4.2.2. the review of the applicable Acid Sulfate Soil Risk Maps (published by the former Department of Land and Water Conservation and available at <http://www.environment.nsw.gov.au/acidsulfatesoil/riskmaps.htm>) indicates the potential presence of ASS.
- 4.3. For stockpiled material, the generator must:
 - 4.3.1. undertake sampling in accordance with Australian Standard 1141.3.1-2012 Methods for sampling and testing aggregates – Sampling – Aggregates (or equivalent);
 - 4.3.2. undertake characterisation sampling by collecting the number of samples listed in Column 2 of Table 1 with respect to the quantity of the waste listed in Column 1 of Table 1 and testing each sample for the chemicals and other attributes listed in Column 1 of Table 4. For the purposes of characterisation sampling the generator must collect:
 - 4.3.2.1. composite samples for attributes 1 to 10 and 18 in Column 1 of Table 4.
 - 4.3.2.2. discrete samples for attributes 11 to 17 in Column 1 of Table 4.
 - 4.3.2.3. The generator must carry out sampling in a way that ensures that the samples taken are representative of the material from the entire stockpile. All parts of the stockpile must be equally accessible for sampling.
 - 4.3.2.4. for stockpiles greater than 4,000 tonnes the number of samples described in Table 1 must be repeated.
 - 4.3.3. store the excavated natural material appropriately until the characterisation test results are validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 4 and the absolute maximum concentration or other value listed in Column 3 of Table 4.

Table 1

Sampling of Stockpiled Material		
Column 1	Column 2	Column 3
Quantity (tonnes)	Number of samples	Validation
<500	3	Required
500 – 1,000	4	
1,000 – 2,000	5	
2,000 – 3,000	7	
3,000 – 4,000	10	

4.4. For in situ material, the generator must:

- 4.4.1. undertake sampling by collecting discrete samples. Compositing of samples is not permitted for in-situ materials.
- 4.4.2. undertake characterisation sampling for the range of chemicals and other attributes listed in Column 1 of Table 4 according to the requirements listed in Columns 1, 2 and 3 of Table 2. When the ground surface is not comprised of soil (e.g. concrete slab), samples must be taken at the depth at which the soil commences.
- 4.4.3. undertake sampling at depth according to Column 1 of Table 3.
- 4.4.4. collect additional soil samples (and analyse them for the range of chemicals and other attributes listed in Column 1 of Table 4), at any depth exhibiting discolouration, staining, odour or other indicators of contamination inconsistent with soil samples collected at the depth intervals indicated in Table 3.
- 4.4.5. segregate and exclude hotspots identified in accordance with Table 2, from material excavated for reuse.
- 4.4.6. subdivide sites larger than 50,000 m² into smaller areas and sample each area as per Table 2.
- 4.4.7. store the excavated natural material appropriately until the characterisation test results are validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 4 and the absolute maximum concentration or other value listed in Column 3 of Table 4.

Table 2

<i>In Situ Sampling at surface</i>				
Column 1	Column 2	Column 3	Column 4	Column 5
Size of <i>in situ</i> area (m ²)	Number of systematic sampling points recommended	Distance between two sampling points (m)	Diameter of the hot spot that can be detected with 95% confidence (m)	Validation
500	5	10.0	11.8	Required
1000	6	12.9	15.2	
2000	7	16.9	19.9	
3000	9	18.2	21.5	
4000	11	19.1	22.5	
5000	13	19.6	23.1	
6000	15	20.0	23.6	
7000	17	20.3	23.9	
8000	19	20.5	24.2	
9000	20	21.2	25.0	
10,000	21	21.8	25.7	
15,000	25	25.0	28.9	
20,000	30	25.8	30.5	
25,000	35	26.7	31.5	
30,000	40	27.5	32.4	
35,000	45	27.9	32.9	
40,000	50	28.3	33.4	
45,000	52	29.3	34.6	
50,000	55	30.2	35.6	

Table 2 has been taken from NSW EPA 1995, *Contaminated Sites Sampling Design Guidelines*, NSW Environment Protection Authority.

Table 3

<i>In Situ Sampling at Depth</i>	
Column 1	Column 2
Sampling Requirements *	Validation
<p>1 soil sample at 1.0 m bgl from each surface sampling point followed by 1 soil sample for every metre thereafter.</p> <p>From 1.0 m bgl, sample at the next metre interval until the proposed depth of excavation of the material is reached. If the proposed depth of excavation is between 0.5 to 0.9 m after the last metre interval, sample at the base of the proposed depth of excavation.</p>	Required if the depth of excavation is equal to or greater than 1.0 m bgl

* Refer to Notes for examples

Chemical and other material requirements

- 4.5. The generator must not supply excavated natural material waste to any person if, in relation to any of the chemical and other attributes of the excavated natural material:
- 4.5.1. The chemical concentration or other attribute of any sample collected and tested as part of the characterisation of the excavated natural material exceeds the absolute maximum concentration or other value listed in Column 3 of Table 4:
 - 4.5.2. The average concentration or other value of that attribute from the characterisation of the excavated natural material (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 4.
- 4.6. The absolute maximum concentration or other value of that attribute in any excavated natural material supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 3 of Table 4.

Table 4

Column 1	Column 2	Column 3
Chemicals and other attributes	Maximum average concentration for characterisation (mg/kg 'dry weight' unless otherwise specified)	Absolute maximum concentration (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	1
2. Cadmium	0.5	1
3. Lead	50	100
4. Arsenic	20	40
5. Chromium (total)	75	150
6. Copper	100	200
7. Nickel	30	60
8. Zinc	150	300
9. Electrical Conductivity	1.5 dS/m	3 dS/m
10. pH *	5 to 9	4.5 to 10
11. Total Polycyclic Aromatic Hydrocarbons (PAHs)	20	40
12. Benzo(a)pyrene	0.5	1
13. Benzene	NA	0.5
14. Toluene	NA	65
15. Ethyl-benzene	NA	25
16. Xylene	NA	15
17. Total Petroleum Hydrocarbons C ₁₀ -C ₃₆	250	500
18. Rubber, plastic, bitumen, paper, cloth, paint and wood	0.05%	0.10%

* The ranges given for pH are for the minimum and maximum acceptable pH values in the excavated natural material.

Test methods

- 4.7. The generator must ensure that any testing of samples required by this order is undertaken by analytical laboratories accredited by the National Association of Testing Authorities (NATA), or equivalent.
- 4.8. The generator must ensure that the chemicals and other attributes (listed in Column 1 of Table 4) in the excavated natural material it supplies are tested in accordance with the test methods specified below or other equivalent analytical methods. Where an equivalent analytical method is used the detection limit must be equal to or less than that nominated for the given method below.
 - 4.8.1. Test methods for measuring the mercury concentration.
 - 4.8.1.1. Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold vapour technique), or an equivalent analytical method with a detection limit < 20% of the stated absolute maximum concentration in Column 3 of Table 2 (i.e. < 0.20 mg/kg dry weight).
 - 4.8.1.2. Report as mg/kg dry weight.
 - 4.8.2. Test methods for measuring chemicals 2 to 8.
 - 4.8.2.1. Sample preparation by digesting using USEPA SW-846 Method 3051A Microwave assisted acid digestion of sediments, sludges, soils, and oils (or an equivalent analytical method).
 - 4.8.2.2. Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of the stated absolute maximum concentration in Column 3 of Table 2, (e.g. 10 mg/kg dry weight for lead).
 - 4.8.2.3. Report as mg/kg dry weight.
 - 4.8.3. Test methods for measuring electrical conductivity and pH.
 - 4.8.3.1. Sample preparation by mixing 1 part excavated natural material with 5 parts distilled water.
 - 4.8.3.2. Analysis using Method 103 (pH) and 104 (Electrical Conductivity) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).
 - 4.8.3.3. Report electrical conductivity in deciSiemens per metre (dS/m).
 - 4.8.4. Test method for measuring Polynuclear Aromatic Hydrocarbons (PAHs) and benzo(a)pyrene.
 - 4.8.4.1. Analysis using USEPA SW-846 Method 8100 Polynuclear Aromatic Hydrocarbons (or an equivalent analytical method).
 - 4.8.4.2. Calculate the sum of all 16 PAHs for total PAHs.
 - 4.8.4.3. Report total PAHs as mg/kg dry weight.
 - 4.8.4.4. Report benzo(a)pyrene as mg/kg.

- 4.8.5. Test method for measuring benzene, toluene, ethylbenzene and xylenes (BTEX).
- 4.8.5.1. Method 501 (Volatile Alkanes and Monocyclic Aromatic Hydrocarbons) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).
- 4.8.5.2. Report BTEX as mg/kg.
- 4.8.6. Test method for measuring Total Petroleum Hydrocarbons (TPH).
- 4.8.6.1. Method 506 (Petroleum Hydrocarbons) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).
- 4.8.6.2. Report as mg/kg dry weight.
- 4.8.7. Test method for measuring rubber, plastic, bitumen, paper, cloth, paint and wood.
- 4.8.7.1. NSW Roads & Traffic Authority Test Method T276 Foreign Materials Content of Recycled Crushed Concrete (or an equivalent method).
- 4.8.7.2. Report as percent.

Notification

- 4.9. On or before each transaction, the generator must provide the following to each person to whom the generator supplies the excavated natural material:
- a written statement of compliance certifying that all the requirements set out in this order have been met;
 - a copy of the excavated natural material exemption, or a link to the EPA website where the excavated natural material exemption can be found; and
 - a copy of the excavated natural material order, or a link to the EPA website where the excavated natural material order can be found.

Record keeping and reporting

- 4.10. The generator must keep a written record of the following for a period of six years:
- the sampling plan required to be prepared under clause 4.1.1;
 - all characterisation sampling results in relation to the excavated natural material supplied;
 - the volume of detected hotspot material and the location;
 - the quantity of the excavated natural material supplied; and
 - the name and address of each person to whom the generator supplied the excavated natural material.
- 4.11. The generator must provide, on request, the characterisation and sampling results for that excavated natural material supplied to the consumer of the excavated natural material.

5. Definitions

In this order:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

Bgl means below ground level, referring to soil at depth beneath the ground surface.

composite sample means a sample that combines five discrete sub-samples of equal size into a single sample for the purpose of analysis.

consumer means a person who applies, or intends to apply excavated natural material to land.

discrete sample means a sample collected and analysed individually that will not be composited.

generator means a person who generates excavated natural material for supply to a consumer.

hotspot means a cylindrical volume which extends through the soil profile from the ground surface to the proposed depth of excavation, where the level of any contaminant listed in Column 1 of Table 2 is greater than the absolute maximum concentration in Column 3 of Table 2.

in situ material means material that exists on or below the ground level. It does not include stockpiled material.

in situ sampling means sampling undertaken on *in situ* material.

N/A means not applicable.

stockpiled material means material that has been excavated from the ground and temporarily stored on the ground prior to use.

systematic sampling means sampling at points that are selected at even intervals and are statistically unbiased.

transaction means:

- in the case of a one-off supply, the supply of a batch, truckload or stockpile of excavated natural material that is not repeated.
- in the case where the supplier has an arrangement with the recipient for more than one supply of excavated natural material, the first supply of excavated natural material as required under the arrangement.

Manager Waste Strategy and Innovation
Environment Protection Authority
(by delegation)

Notes

The EPA may amend or revoke this order at any time. It is the responsibility of each of the generator and processor to ensure it complies with all relevant requirements of the most current order. The current version of this order will be available on ' www.epa.nsw.gov.au

In gazetting or otherwise issuing this order, the EPA is not in any way endorsing the supply or use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this order are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this order nor the accompanying exemption guarantee that the environment, human health or agriculture will not be harmed.

Any person or entity which supplies excavated natural material should assess whether the material is fit for the purpose the material is proposed to be used for, and whether this use may cause harm. The supplier may need to seek expert engineering or technical advice.

Regardless of any exemption or order provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The supply of excavated natural material remains subject to other relevant environmental regulations in the POEO Act and Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of this order, is guilty of an offence and subject to prosecution.

This order does not alter the requirements of any other relevant legislation that must be met in supplying this material, including for example, the need to prepare a Safety Data Sheet. Failure to comply with the conditions of this order constitutes an offence under clause 93 of the Waste Regulation.

Examples

In situ sampling at depth

Example 1.

If the proposed depth of ENM excavation is between 1 m bgl and 1.4 m bgl, then:

- 1 sample on surface (as per the requirements of Table 2).
- 1 sample at 1 m bgl.
- No further depth sampling after 1 m bgl, unless required under section 4.4.4.

Example 2.

If the proposed depth of ENM excavation is at 1.75 m bgl, then:

- 1 sample on surface (as per the requirements of Table 2).
- 1 sample at 1 m bgl.
- 1 sample at 1.75 m bgl.
- No further depth sampling after 1.75 m bgl, unless required under section 4.4.4.

Example 3.

If the proposed depth of ENM excavation is at 2.25 m bgl, then:

- 1 sample on surface (as per the requirements of Table 2).
- 1 sample at 1 m bgl.
- 1 sample at 2 m bgl.
- No further depth sampling after 2 m bgl, unless required under section 4.4.4.



Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014

The excavated natural material exemption 2014

Introduction

This exemption:

- is issued by the Environment Protection Authority (EPA) under clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation); and
- exempts a consumer of excavated natural material from certain requirements under the *Protection of the Environment Operations Act 1997* (POEO Act) and the Waste Regulation in relation to the application of that waste to land, provided the consumer complies with the conditions of this exemption.

This exemption should be read in conjunction with 'the excavated natural material order 2014'.

1. Waste to which this exemption applies

- 1.1. This exemption applies to excavated natural material that is, or is intended to be, applied to land as engineering fill or for use in earthworks.
- 1.2. Excavated natural material is naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:
 - a) been excavated from the ground, and
 - b) contains at least 98% (by weight) natural material, and
 - c) does not meet the definition of Virgin Excavated Natural Material in the Act.

Excavated natural material does not include material located in a hotspot; that has been processed; or that contains asbestos, Acid Sulfate Soils (ASS), Potential Acid Sulfate soils (PASS) or sulfidic ores.

2. Persons to whom this exemption applies

- 2.1. This exemption applies to any person who applies or intends to apply excavated natural material to land as set out in 1.1.

3. Duration

- 3.1. This exemption commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Premises to which this exemption applies

- 4.1. This exemption applies to the premises at which the consumer's actual or intended application of excavated natural material is carried out.

5. Revocation

- 5.1. 'The excavated natural material exemption 2012' which commenced 19 October 2012 is revoked from 24 November 2014.

6. Exemption

- 6.1. Subject to the conditions of this exemption, the EPA exempts each consumer from the following provisions of the POEO Act and the Waste Regulation in relation to the consumer's actual or intended application of excavated natural material to land as engineering fill or for use in earthworks at the premises:
- section 48 of the POEO Act in respect of the scheduled activities described in clauses 39 of Schedule 1 of the POEO Act;
 - Part 4 of the Waste Regulation;
 - section 88 of the POEO Act; and
 - clause 109 and 110 of the Waste Regulation.
- 6.2. The exemption does not apply in circumstances where excavated natural material is received at the premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal' (thermal treatment) of Schedule 1 of the POEO Act.

7. Conditions of exemption

The exemption is subject to the following conditions:

- 7.1. At the time the excavated natural material is received at the premises, the material must meet all chemical and other material requirements for excavated natural material which are required on or before the supply of excavated natural material under 'the excavated natural material order 2014'.
- 7.2. The excavated natural material can only be applied to land as engineering fill or for use in earthworks.
- 7.3. The consumer must keep a written record of the following for a period of six years:
- the quantity of any excavated natural material received; and
 - the name and address of the supplier of the excavated natural material received.
- 7.4. The consumer must make any records required to be kept under this exemption available to authorised officers of the EPA on request.
- 7.5. The consumer must ensure that any application of excavated natural material to land must occur within a reasonable period of time after its receipt.

8. Definitions

In this exemption:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

consumer means a person who applies, or intends to apply excavated natural material to land.

**Manager Waste Strategy and Innovation
Environment Protection Authority
(by delegation)**

Notes

The EPA may amend or revoke this exemption at any time. It is the responsibility of the consumer to ensure they comply with all relevant requirements of the most current exemption. The current version of this exemption will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this exemption, the EPA is not in any way endorsing the use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this exemption are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this exemption nor the accompanying order guarantee that the environment, human health or agriculture will not be harmed.

The consumer should assess whether or not the excavated natural material is fit for the purpose the material is proposed to be used for, and whether this use will cause harm. The consumer may need to seek expert engineering or technical advice.

Regardless of any exemption provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The receipt of excavated natural material remains subject to other relevant environmental regulations in the POEO Act and the Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of having an exemption, is guilty of an offence and subject to prosecution.

This exemption does not alter the requirements of any other relevant legislation that must be met in utilising this material, including for example, the need to prepare a Safety Data Sheet (SDS).

Failure to comply with the conditions of this exemption constitutes an offence under clause 91 of the Waste Regulation.

Certification: Virgin excavated natural material



1. I [full name]

of [organisation
and address]

certify that the waste as set out in section 2 of this notice is Virgin Excavated Natural Material (VENM) as defined in Schedule 1 of the *Protection of the Environment Operations Act 1997*.

This certification is made on behalf of the waste generator [fill out if applicable]

being [full name]

of [organisation
and address]

2. The waste was generated at:

Street address:

Title reference (Lot/DP, etc.):

The amount of waste
(by volume or weight) is:

3. I have made the determination that the waste is VENM because:

- ☐ I have assessed the historical and current land use of the site at which the waste was generated.
- ☐ The waste is not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities.
- ☐ The waste does not contain any sulfidic ores or soils.
- ☐ The waste does not contain any other waste.
- ☐ The waste does not contain asbestos in any form.

Note: that all sections of this form must be completed including all boxes checked in Section 3 above and signed below for any material to be certified as VENM.

Signature(s)

.....

Name(s) (printed)

Date

Warning: There are significant penalties under s.144AA of the *Protection of the Environment Operations Act 1997* for a person who supplies (whether knowingly or not) information that is false or misleading in a material respect about waste.

This certificate is intended to assist waste generators, contractors and/or receivers of VENM to have confidence that a range of relevant factors have been considered in the classification of a waste material as VENM.

Published by:

Environment Protection Authority, 59–61 Goulburn Street, Sydney South 1232

Ph: 131 555. TTY users: phone 133 677, then ask for 131 555

Speak and listen users: phone 1300 555 727, then ask for 131 555

Email: info@environment.nsw.gov.au; Web: www.epa.nsw.gov.au

Report pollution and environmental incidents: Environment Line: 131 555 (NSW only)

EPA 2013/0693; September 2013



Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

The recovered aggregate order 2014

Introduction

This order, issued by the Environment Protection Authority (EPA) under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), imposes the requirements that must be met by suppliers of recovered aggregate to which 'the recovered aggregate exemption 2014' applies. The requirements in this order apply in relation to the supply of recovered aggregate for application to land as a road making material, or in building, landscaping or construction works.

1. Waste to which this order applies

- 1.1. This order applies to recovered aggregate. In this order, recovered aggregate means material comprising of concrete, brick, ceramics, natural rock and asphalt processed into an engineered material. This does not include refractory bricks or associated refractory materials, or asphalt that contains coal tar.

2. Persons to whom this order applies

- 2.1. The requirements in this order apply, as relevant, to any person who supplies recovered aggregate that has been generated, processed or recovered by the person.
- 2.2. This order does not apply to the supply of recovered aggregate to a consumer for land application at a premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal (thermal treatment)' of Schedule 1 of the POEO Act.

3. Duration

- 3.1. This order commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Processor requirements

The EPA imposes the following requirements on any processor who supplies recovered aggregate.

Sampling requirements

- 4.1. On or before supplying recovered aggregate, the processor must:
 - 4.1.1. Prepare a written sampling plan which includes a description of sample

preparation and storage procedures for the recovered aggregate.

- 4.1.2. Undertake sampling and testing of the recovered aggregate as required under clauses 4.2 and 4.3 below. The sampling must be carried out in accordance with the written sampling plan and Australian Standard 1141.3.1-2012 Methods for sampling and testing aggregates – Sampling – Aggregates (or equivalent).
- 4.2. Where the recovered aggregate is generated as part of a continuous process, the processor must undertake the following sampling:
 - 4.2.1. Characterisation of the recovered aggregate by collecting 20 composite samples of the waste and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of characterisation. Characterisation must be conducted for recovered aggregate generated and processed every year following the commencement of the continuous process; and
 - 4.2.2. Routine sampling of the recovered aggregate by collecting either 5 composite samples from every 4,000 tonnes (or part thereof) processed or 5 composite samples every 3 months (whichever is the lesser); and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1 other than those listed as 'not required' in Column 3. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of routine sampling. However, if characterisation sampling occurs at the same frequency as routine sampling, any sample collected and tested for the purposes of characterisation under clause 4.2.1 may be treated as a sample collected and tested for the purposes of routine sampling under clause 4.2.2.
- 4.3. Where the recovered aggregate is not generated as part of a continuous process, the processor must undertake one-off sampling of a batch, truckload or stockpile of the recovered aggregate, by collecting 10 composite samples from every 4,000 tonnes (or part thereof) processed and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. The test results for each composite sample must be validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 1 and the absolute maximum concentration or other value listed in Column 4 of Table 1 prior to the supply of the recovered aggregate.

Chemical and other material requirements

- 4.4. The processor must not supply recovered aggregate to any person if, in relation to any of the chemical and other attributes of the recovered aggregate:
 - 4.4.1. The concentration or other value of that attribute of any sample collected and tested as part of the characterisation, or the routine or one-off sampling, of the recovered aggregate exceeds the absolute maximum concentration or other value listed in Column 4 of Table 1, or
 - 4.4.2. The average concentration or other value of that attribute from the characterisation or one-off sampling of the recovered aggregate (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 1, or
 - 4.4.3. The average concentration or other value of that attribute from the routine sampling of the recovered aggregate (based on the arithmetic mean) exceeds the maximum average concentration or other value

listed in Column 3 of Table 1.

- 4.5. The absolute maximum concentration or other value of that attribute in any recovered aggregate supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4 of Table 1.

Table 1

Column 1	Column 2	Column 3	Column 4
Chemicals and other attributes	Maximum average concentration for characterisation (mg/kg 'dry weight' unless otherwise specified)	Maximum average concentration for routine testing (mg/kg 'dry weight' unless otherwise specified)	Absolute maximum concentration (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1.5
3. Lead	75	75	150
4. Arsenic	20	Not required	40
5. Chromium (total)	60	60	120
6. Copper	60	60	150
7. Nickel	40	Not required	80
8. Zinc	200	200	350
9. Electrical Conductivity	1.5 dS/m	1.5dS/m	3 dS/m
10. Metal	1%	1%	2%
11. Plaster	0.25%	0.25%	0.5%
12. Rubber, plastic, paper, cloth, paint, wood and other vegetable matter	0.2%	0.2%	0.3%

Test methods

- 4.6. The processor must ensure that any testing of samples required by this order is undertaken by analytical laboratories accredited by the National Association of Testing Authorities (NATA), or equivalent.
- 4.7. The processor must ensure that the chemicals and other attributes (listed in Column 1 of Table 1) in the recovered aggregate it supplies are tested in accordance with the test methods specified below or other equivalent analytical methods. Where an equivalent analytical method is used the detection limit must be equal to or less than that nominated for the given method below.
- 4.7.1. Test method for measuring the mercury concentration:
- 4.7.1.1. Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold vapour technique), or an equivalent analytical method with a detection limit < 20% of the stated maximum average concentration in Table 1, Column 2 (i.e. < 0.1 mg/kg dry weight).
- 4.7.1.2. Report as mg/kg dry weight.
- 4.7.2. Test methods for measuring chemicals 2 - 8:

- 4.7.2.1. Sample preparation by digesting using USEPA SW-846 Method 3051A Microwave assisted acid digestion of sediments, sludges, soils, and oils.
- 4.7.2.2. Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of stated maximum concentration in Table 1, Column 2 (i.e. 1 mg/kg dry weight for lead).
- 4.7.2.3. Report as mg/kg dry weight.
- 4.7.3. Test methods for measuring the electrical conductivity:
 - 4.7.3.1. Sample preparation by mixing 1 part recovered aggregate with 5 parts distilled water.
 - 4.7.3.2. Analysis using Method 104 (Electrical Conductivity) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).
 - 4.7.3.3. Report deciSiemens per metre (dS/m).
- 4.7.4. Test method for measuring the attributes 10 - 12:
 - 4.7.4.1. NSW Roads & Traffic Authority Test Method T276 Foreign Materials Content of Recycled Crushed Aggregate (or an equivalent method), for the materials listed in 10 - 12 of Column 1, Table 1.
 - 4.7.4.2. Report as %

Notification

- 4.8. On or before each transaction, the processor must provide the following to each person to whom the processor supplies the recovered aggregate:
 - a written statement of compliance certifying that all the requirements set out in this order have been met;
 - a copy of the recovered aggregate exemption, or a link to the EPA website where the recovered aggregate exemption can be found; and
 - a copy of the recovered aggregate order, or a link to the EPA website where the recovered aggregate order can be found.

Record keeping and reporting

- 4.9. The processor must keep a written record of the following for a period of six years:
 - the sampling plan required to be prepared under clause 4.1.1;
 - all characterisation, routine and/or one-off sampling results in relation to the recovered aggregate supplied;
 - the quantity of the recovered aggregate supplied; and
 - the name and address of each person to whom the processor supplied the recovered aggregate.
- 4.10. The processor must provide, on request, the most recent characterisation and sampling (whether routine or one-off or both) results for recovered aggregate supplied to any consumer of the recovered aggregate.
- 4.11. The processor must notify the EPA within seven days of becoming aware that it has not complied with any requirement in clause 4.1 to 4.7.

5. Definitions

In this order:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

composite sample means a sample that combines five discrete sub-samples of equal size into a single sample for the purpose of analysis.

consumer means a person who applies, or intends to apply, recovered aggregate to land.

continuous process means a process that produces recovered aggregate on an ongoing basis.

processor means a person who processes, mixes, blends, or otherwise incorporates recovered aggregate into a material in its final form for supply to a consumer.

transaction means:

- in the case of a one-off supply, the supply of a batch, truckload or stockpile of recovered aggregate that is not repeated.
- in the case where the supplier has an arrangement with the recipient for more than one supply of recovered aggregate the first supply of recovered aggregate as required under the arrangement.

Manager Waste Strategy and Innovation

Environment Protection Authority

(by delegation)

Notes

The EPA may amend or revoke this order at any time. It is the responsibility of each of the generator and processor to ensure it complies with all relevant requirements of the most current order. The current version of this order will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this order, the EPA is not in any way endorsing the supply or use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this order are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this order nor the accompanying exemption guarantee that the environment, human health or agriculture will not be harmed.

Any person or entity which supplies recovered aggregate should assess whether the material is fit for the purpose the material is proposed to be used for, and whether this use may cause harm. The supplier may need to seek expert engineering or technical advice.

Regardless of any exemption or order provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The supply of recovered aggregate remains subject to other relevant environmental regulations in the POEO Act and Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of this order, is guilty of an offence and subject to prosecution.

This order does not alter the requirements of any other relevant legislation that must be met in supplying this material, including for example, the need to prepare a Safety Data Sheet. Failure to comply with the conditions of this order constitutes an offence under clause 93 of the Waste Regulation.



Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

The basalt fines order 2014

Introduction

This order, issued by the Environment Protection Authority (EPA) under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), imposes the requirements that must be met by suppliers of basalt fines to which 'the basalt fines exemption 2014' applies. The requirements in this order apply in relation to the supply of basalt fines for application to land for building or maintaining railway infrastructure, for road making activities, or as a soil amendment.

1. Waste to which this order applies

- 1.1. This order applies to basalt fines. In this order, basalt fines means a material comprising of naturally excavated basalt with a maximum particle size of 9.5 mm, that is derived from the processing of basalt or the recycling of railway ballast.

2. Persons to whom this order applies

- 2.1. The requirements in this order apply, as relevant, to any person who supplies basalt fines that has been generated, processed or recovered by the person.
- 2.2. This order does not apply to the supply of basalt fines to a consumer for land application at a premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal (thermal treatment)' of Schedule 1 of the POEO Act.

3. Duration

- 3.1. This order commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Processor requirements

The EPA imposes the following requirements on any processor who supplies basalt fines.

Sampling requirements

- 4.1. On or before supplying basalt fines the processor must:
 - 4.1.1. Prepare a written sampling plan which includes a description of sample preparation and storage procedures for the basalt fines.
 - 4.1.2 Undertake sampling and testing of the basalt fines as required under

clauses 4.2 and 4.3 below. The sampling must be carried out in accordance with the written sampling plan and Australian Standard 1141.3.1-2012 Methods for sampling and testing aggregates – Sampling – Aggregates (or equivalent).

- 4.2. Where the basalt fines are generated as part of a continuous process, the processor must undertake the following sampling:
 - 4.2.1. Characterisation of the basalt fines by collecting 20 composite samples of the waste and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of characterisation. Characterisation must be conducted for basalt fines generated and processed during each 2-year period following the commencement of the continuous process; and
 - 4.2.2. Routine sampling of basalt fines by collecting either 5 composite samples from every 10,000 tonnes (or part thereof) processed or 5 composite samples every 3 months (whichever is the lesser); and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1 other than those listed as 'not required' in Column 3. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of routine sampling. However, if characterisation sampling occurs at the same frequency as routine sampling, any sample collected and tested for the purposes of characterisation under clause 4.2.1 may be treated as a sample collected and tested for the purposes of routine sampling under clause 4.2.2.
- 4.3. Where the basalt fines are not generated as part of a continuous process, the processor must undertake one-off sampling of a batch, truckload or stockpile of the basalt fines, by collecting 10 composite samples from every 4,000 tonnes (or part thereof) processed and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. The test results for each composite sample must be validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 1 and the absolute maximum concentration or other value listed in Column 4 of Table 1 prior to the supply of the basalt fines.

Chemical and other material requirements

- 4.4. The processor must not supply basalt fines to any person if, in relation to any of the chemical and other attributes of the basalt fines:
 - 4.4.1. The concentration or other value of that attribute of any sample collected and tested as part of the characterisation or the routine or one-off sampling of the basalt fines exceeds the absolute maximum concentration or other value listed in Column 4 of Table 1, or
 - 4.4.2. The average concentration or other value of that attribute from the characterisation or one-off sampling of the basalt fines (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 1, or
 - 4.4.3. The average concentration or other value of that attribute from the routine sampling of the basalt fines (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 3 of Table 1.

- 4.5. The absolute maximum concentration or other value of that attribute in any basalt fines supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4 of Table 1.

Table 1

Column 1	Column 2	Column 3	Column 4
Chemicals and other attributes	Maximum average concentration for characterisation (mg/kg 'dry weight' unless otherwise specified)	Maximum average concentration for routine testing (mg/kg 'dry weight' unless otherwise specified)	Absolute maximum concentration (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1
3. Lead	50	50	100
4. Arsenic	15	15	30
5. Chromium (total)	25	Not required	50
6. Copper	25	Not required	50
7. Nickel	25	Not required	50
8. Zinc	75	75	150
9. Electrical Conductivity	1 dS/m	1 dS/m	2 dS/m
10. Metal, glass, asphalt, ceramics and slag	2.5%	Not required	5%
11. Plaster, clay lumps and other friable materials	0.25%	Not required	0.5%
12. Rubber, plastic, bitumen, paper, cloth, paint, wood and other vegetable matter	0.05%	Not required	0.1%

Test methods

- 4.6. The processor must ensure that any testing of samples required by this order is undertaken by analytical laboratories accredited by the National Association of Testing Authorities (NATA), or equivalent.
- 4.7. The processor must ensure that the chemicals and other attributes (listed in Column 1 of Table 1) in the basalt fines it supplies are tested in accordance with the test methods specified below or other equivalent analytical methods. Where an equivalent analytical method is used the detection limit must be equal to or less than that nominated for the given method below.
- 4.6.1 Test methods for measuring the mercury concentration:
- 4.6.1.1 Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold vapour technique), or an equivalent analytical method with a detection limit < 20% of the stated absolute maximum average concentration in Table 1, Column 4 (i.e. <0.2mg/kg dry weight of mercury).
- 4.6.1.2 Report as mg/kg dry weight.

- 4.6.2 Test methods for measuring chemicals 2 - 8:
 - 4.6.2.1 Sample preparation by digesting using USEPA SW-846 Method 3051A Microwave assisted acid digestion of sediments, sludges, soils, and oils.
 - 4.6.2.2 Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of the stated absolute maximum concentration in Table 1, Column 4 (i.e. <10 mg/kg dry weight for lead).
 - 4.6.2.3 Report as mg/kg dry weight.
- 4.6.3 Test methods for measuring the electrical conductivity:
 - 4.6.3.1 Sample preparation by mixing 1 part basalt fines with 5 parts distilled water.
 - 4.6.3.2 Analysis using Method 104 (Electrical Conductivity) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).
 - 4.6.3.3 Report in deciSiemens per metre (dS/m).
- 4.6.4 Test method for measuring the attributes 10 - 12:
 - 4.6.4.1 NSW Roads & Traffic Authority Test Method T276 Foreign Materials Content of Recycled Crushed Concrete (or an equivalent method) and modified to use a 2.36mm sieve.
 - 4.6.4.2 Report as %.

Notification

- 4.8. On or before each transaction, the processor must provide the following to each person to whom the processor supplies the basalt fines:
 - a written statement of compliance certifying that all the requirements set out in this order have been met;
 - a copy of the basalt fines exemption, or a link to the EPA website where the basalt fines exemption can be found; and
 - a copy of the basalt fines order, or a link to the EPA website where the basalt fines order can be found.

Record keeping and reporting

- 4.9. The processor must keep a written record of the following for a period of six years:
 - the sampling plan required to be prepared under clause 4.1.1;
 - all characterisation, routine and/or one-off sampling results in relation to the basalt fines supplied;
 - the quantity of the basalt fines supplied; and
 - the name and address of each person to whom the processor supplied the basalt fines.
- 4.10. The processor must provide, on request, the most recent characterisation and sampling (whether routine or one-off or both) results for basalt fines supplied to any consumer of the basalt fines.
- 4.11. The processor must notify the EPA within seven days of becoming aware that it has not complied with any requirement in clause 4.1 to 4.7.

5. Definitions

In this order:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

composite sample means a sample that combines five discrete sub-samples of equal size into a single sample for the purpose of analysis.

consumer means a person who applies, or intends to apply, basalt fines to land.

continuous process means a process that produces basalt fines on an ongoing basis.

processor means a person who processes, mixes, blends, or otherwise incorporates basalt fines into a material in its final form for supply to a consumer.

transaction means:

- in the case of a one-off supply, the supply of basalt fines, the supply of a batch, truckload or stockpile of basalt fine that is not repeated.
- in the case where the supplier has an arrangement with the recipient for more than one supply of basalt fines, the first supply of basalt fines as required under the arrangement.

Manager Waste Strategy and Innovation

Environment Protection Authority

(by delegation)

Notes

The EPA may amend or revoke this order at any time. It is the responsibility of each of the generator and processor and to ensure it complies with all relevant requirements of the most current order. The current version of this order will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this order, the EPA is not in any way endorsing the supply or use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this order are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this order nor the accompanying exemption guarantee that the environment, human health or agriculture will not be harmed.

Any person or entity which supplies basalt fines should assess whether the material is fit for the purpose the material is proposed to be used for, and whether this use may cause harm. The supplier may need to seek expert engineering or technical advice.

Regardless of any exemption or order provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The supply of basalt fines remains subject to other relevant environmental regulations in the POEO Act and Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of this order, is guilty of an offence and subject to prosecution.

This order does not alter the requirements of any other relevant legislation that must be met in supplying this material, including for example, the need to prepare a Safety Data Sheet. Failure to comply with the conditions of this order constitutes an offence under clause 93 of the Waste Regulation.



Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014

The recovered glass sand order 2014

Introduction

This order, issued by the Environment Protection Authority (EPA) under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), imposes the requirements that must be met by suppliers of recovered glass sand to which 'the recovered glass sand exemption 2014' applies. The requirements in this order apply in relation to the supply of recovered glass sand for application to land for the purpose of pipe bedding, drainage or for road making activities.

1. Waste to which this order applies

- 1.1. This order applies to recovered glass sand. In this order, recovered glass sand means recovered glass that has been processed to produce a 'sand-like' glass material with a particle size diameter generally less than 5 mm, and that contains at least 98% recovered glass.

2. Persons to whom this order applies

- 2.1. The requirements in this order apply, as relevant, to any person who supplies recovered glass sand that has been generated, processed or recovered by the person.
- 2.2. This order does not apply to the supply of recovered glass sand to a consumer for land application at the premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal' (thermal treatment) of Schedule 1 of the POEO Act.

3. Duration

- 3.1. This order commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Processor requirements

The EPA imposes the following requirements on any processor who supplies recovered glass sand.

Sampling requirements

- 4.1. On or before supplying recovered glass sand the processor must:
 - 4.1.1. Prepare a written sampling plan which includes a description of sample preparation and storage procedures for the recovered glass sand.
 - 4.1.2. Undertake sampling and testing of the recovered glass sand as required under clauses 4.2 and 4.3 below. The sampling must be carried out in accordance with Australian Standard 1141.3.1-2012 Methods for sampling and testing aggregates – Sampling – Aggregates (or equivalent).
- 4.2. Where the recovered glass sand is generated as part of a continuous process, the processor must undertake the following sampling:
 - 4.2.1. Characterisation sampling of recovered glass sand by collecting 20 composite samples of the waste and testing each sample for the chemical and other attributes listed in Column 1 of Table 1. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of characterisation. Where there is a change in inputs that is likely to affect the properties of the recovered glass sand, characterisation must be repeated. Characterisation samples can be used for routine testing and subsequent calculations. Characterisation must be conducted for recovered glass sand generated and processed during each 2-year period following the commencement of the continuous process; and
 - 4.2.2. Routine sampling of the recovered glass sand by collecting either 5 composite samples from every 4,000 tonnes (or part thereof) processed or 5 composite samples every 3 months (whichever is the lesser); and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1 other than those listed as 'not required' in Column 3. Each composite sample must be taken from a batch, truckload or stockpile that has not been previously sampled for the purposes of routine sampling. However, if characterisation sampling occurs at the same frequency as routine sampling, any sample collected and tested for the purposes of characterisation under clause 4.2.1 may be treated as a sample collected and tested for the purposes of routine sampling under clause 4.2.2.
- 4.3. Where the recovered glass sand is not generated as part of a continuous process, the processor must undertake one-off sampling of a batch, truckload or stockpile of the recovered glass sand, by collecting 10 composite samples from every 4,000 tonnes (or part thereof) processed and testing each sample for the chemicals and other attributes listed in Column 1 of Table 1. The test results for each composite sample must be validated as compliant with the maximum average concentration or other value listed in Column 2 of Table 1 and the absolute maximum concentration or other value listed in Column 4 of Table 1 prior to the supply of the recovered glass sand.

Chemical and other material requirements

- 4.4. The processor must not supply recovered glass sand to any person if, in relation to any of the chemical and other attributes of the recovered glass sand:

- 4.4.1. The concentration or other value of that attribute of any sample collected and tested as part of the characterisation, or the routine or one-off sampling, of the recovered glass sand exceeds the absolute maximum concentration or other value listed in Column 4 of Table 1, or
- 4.4.2. The average concentration or other value of that attribute from the characterisation or one-off sampling of the recovered glass sand (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 1, or
- 4.4.3. The average concentration or other value of that attribute from the routine sampling of the recovered glass sand (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 3 of Table 1.
- 4.5. The absolute maximum concentration or other value of that attribute in any recovered glass sand supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 4 of Table 1.

Table 1

Column 1	Column 2	Column 3	Column 4
Chemicals and other attributes	Maximum average concentration for characterisation (mg/kg 'dry weight' unless otherwise specified)	Maximum average concentration for routine testing (mg/kg 'dry weight' unless otherwise specified)	Absolute maximum concentration (mg/kg 'dry weight' unless otherwise specified)
1. Mercury	0.5	Not required	1
2. Cadmium	0.5	0.5	1.5
3. Lead	50	50	100
4. Arsenic	10	Not required	20
5. Chromium (total)	20	Not required	40
6. Copper	40	Not required	120
7. Molybdenum	5	Not required	10
8. Nickel	10	Not required	20
9. Zinc	100	100	300
10. Total Organic Carbon	1.0%	Not required	2.0%
11. Electrical Conductivity	1 dS/m	1 dS/m	2 dS/m
12. Metals	0.25%	0.25%	0.50%
13. Plaster, clay lumps and other friable materials	0.25%	0.25%	0.50%
14. Rubber, plastic, bitumen, paper, cloth, paint, wood and other vegetable matter	0.3%	0.3%	0.5 %

Test methods

- 4.6. The processor must ensure that any testing of samples required by this order is undertaken by analytical laboratories accredited by the National Association of Testing Authorities (NATA), or equivalent.
- 4.7. The processor must ensure that the chemicals and other attributes (listed in Column 1 of Table 1) in the recovered glass sand it supplies are tested in accordance with the test methods specified below or other equivalent analytical methods. Where an equivalent analytical method is used the detection limit must be equal to or less than that nominated for the given method below.
 - 4.7.1. Test methods for measuring the mercury concentration:
 - 4.7.1.1. Analysis using USEPA SW-846 Method 7471B Mercury in solid or semisolid waste (manual cold vapour technique), or an equivalent analytical method with a detection limit < 20% of the stated absolute maximum concentration in Table 1, Column 4 (i.e. 0.2 mg/kg dry weight).
 - 4.7.1.2. Report as mg/kg dry weight.
 - 4.7.2. Test methods for measuring chemicals 2 - 9:
 - 4.7.2.1. Sample preparation by digesting using USEPA SW-846 Method 3051A Microwave assisted acid digestion of sediments, sludges, soils, and oils.
 - 4.7.2.2. Analysis using USEPA SW-846 Method 6010C Inductively coupled plasma - atomic emission spectrometry, or an equivalent analytical method with a detection limit < 10% of the stated absolute maximum concentration in Table 1, Column 4, (i.e. 0.15 mg/kg dry weight for cadmium).
 - 4.7.2.3. Report as mg/kg dry weight.
 - 4.7.3. Test methods for measuring the total organic carbon content:
 - 4.7.3.1. Method 105 (Organic Carbon) and using a 2 gram sample in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).
 - 4.7.3.2. Reporting as % total organic carbon.
 - 4.7.4. Test methods for measuring the electrical conductivity:
 - 4.7.4.1. Sample preparation by mixing 1 part recovered aggregate 'as received' with 5 parts distilled water.
 - 4.7.4.2. Analysis using Method 104 (Electrical Conductivity) in Schedule B (3): Guideline on Laboratory Analysis of Potentially Contaminated Soils, National Environment Protection (Assessment of Site Contamination) Measure 1999 (or an equivalent analytical method).
 - 4.7.4.3. Report in deciSiemens per metre (dS/m).

4.7.5. Test method for measuring the attributes 12 - 14:

4.7.5.1. NSW Roads & Traffic Authority Test Method T276 Foreign Materials Content of Recycled Crushed Aggregate (or an equivalent method), for the materials listed in 12 - 14 of Column 1, Table 1.

4.7.5.2. Report as %.

Notification

4.8. On or before each transaction, the processor must provide the following to each person to whom the processor supplies the recovered glass sand:

- a written statement of compliance certifying that all the requirements set out in this order have been met;
- a copy of the recovered glass sand exemption, or a link to the EPA website where the recovered glass sand exemption can be found; and
- a copy of the recovered glass sand order, or a link to the EPA website where the recovered glass sand order can be found.

Record keeping and reporting

4.9. The processor must keep a written record of the following for a period of six years:

- the sampling plan required to be prepared under clause 4.1.1;
- all characterisation, routine and/or one-off sampling results in relation to the recovered glass sand supplied;
- the quantity of the recovered glass sand supplied; and
- the name and address of each person to whom the processor supplied the recovered glass sand.

4.10. The processor must provide, on request, the most recent characterisation and sampling (whether routine or one-off or both) results for recovered glass sand supplied to any consumer of the recovered glass sand.

4.11. The processor must notify the EPA within seven days of becoming aware that it has not complied with any requirement in clause 4.1 to 4.7.

5. Definitions

In this order:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

composite sample means a sample that combines five discrete sub-samples of equal size into a single sample for the purpose of analysis.

consumer means a person who applies, or intends to apply, recovered glass sand to land.

continuous process means a process that produces recovered glass sand on an ongoing basis.

processor means a person who processes, mixes, blends, or otherwise incorporates recovered glass sand into a material in its final form for supply to a consumer.

recovered glass is glass sourced from the collection of domestic or commercial waste. This includes glass collected from domestic commingled recycling collections. This does not include glass recovered from the sorting or processing of:

- mixed municipal waste, or
- mixed commercial and industrial waste, or
- construction and demolition waste, or
- Cathode Ray Tubes, or
- other glass recovered from electrical equipment, or
- fluorescent or incandescent lights.

transaction means:

- in the case of a one-off supply, the supply of a batch, truckload or stockpile of recovered glass sand that is not repeated.
- in the case where the supplier has an arrangement with the recipient for more than one supply of recovered glass sand the first supply of recovered glass sand as required under the arrangement.

Manager Waste Strategy and Innovation

Environment Protection Authority

(by delegation)

Notes

The EPA may amend or revoke this order at any time. It is the responsibility of each of the generator and processor to ensure it complies with all relevant requirements of the most current order. The current version of this order will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this order, the EPA is not in any way endorsing the supply or use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this order are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this order nor the accompanying exemption guarantee that the environment, human health or agriculture will not be harmed.

Any person or entity which supplies recovered glass sand should assess whether the material is fit for the purpose the material is proposed to be used for, and whether this use may cause harm. The supplier may need to seek expert engineering or technical advice.

Regardless of any exemption or order provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The supply of recovered glass sand remains subject to other relevant environmental regulations in the POEO Act and Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of this order, is guilty of an offence and subject to prosecution.

This order does not alter the requirements of any other relevant legislation that must be met in supplying this material, including for example, the need to prepare a Safety Data Sheet.

Failure to comply with the conditions of this order constitutes an offence under clause 93 of the Waste Regulation.

Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014

The recovered glass sand exemption 2014

Introduction

This exemption:

- is issued by the Environment Protection Authority (EPA) under clauses 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation); and
- exempts a consumer of recovered glass sand from certain requirements under the *Protection of the Environment Operations Act 1997* (POEO Act) and the Waste Regulation in relation to the application of that waste to land, provided the consumer complies with the conditions of this exemption.

This exemption should be read in conjunction with 'the recovered glass sand order 2014'.

1. Waste to which this exemption applies

- 1.1. This exemption applies to recovered glass sand that is, or is intended to be, applied to land for the purpose of pipe bedding, drainage or for road making activities.
- 1.2. Recovered glass sand means recovered glass that has been processed to produce a 'sand-like' glass material with a particle size diameter generally less than 5 mm, and that contains at least 98% recovered glass.

2. Persons to whom this exemption applies

- 2.1. This exemption applies any person who applies, or intends to apply, the recovered glass sand to land as set out in 1.1.

3. Duration

- 3.1. This exemption commences on 24 November 2014 and is valid until revoked by the EPA by notice published in the Government Gazette.

4. Premises to which this exemption applies

- 4.1. This exemption only applies to the premises at which the consumer's actual or intended application of recovered glass sand is carried out.

5. Revocation

- 5.1. 'The recovered glass sand exemption 2010' which commenced on 14 June 2010 is revoked from 24 November 2014.

6. Exemption

- 6.1. Subject to the conditions of this exemption, the EPA exempts each consumer from the following provisions of the POEO Act and the Waste Regulation in relation to the consumer's actual or intended application of recovered glass sand to land as pipe bedding, drainage or for road making activities at the premises:
- section 48 of the POEO Act in respect of the scheduled activities described in clauses 39 and 42 of Schedule 1 of the POEO Act;
 - Part 4 of the Waste Regulation;
 - section 88 of the POEO Act; and
 - clause 109 and 110 of the Waste Regulation.
- 6.2. The exemption does not apply in circumstances where recovered glass sand is received at the premises for which the consumer holds a licence under the POEO Act that authorises the carrying out of the scheduled activities on the premises under clause 39 'waste disposal (application to land)' or clause 40 'waste disposal (thermal treatment)' of Schedule 1 of the POEO Act.

7. Conditions of exemption

The exemption is subject to the following conditions:

- 7.1. At the time the recovered glass sand is received at the premises, the material must meet all chemical and other material requirements for recovered glass sand which are required on or before the supply of recovered glass sand under 'the recovered glass sand order 2014'.
- 7.2. The recovered glass sand can only be applied to land for the purpose of pipe bedding, drainage or for road making activities.
- 7.3. The consumer must keep a written record of the following for a period of six years:
- the quantity of any recovered glass sand received; and
 - the name and address of the supplier of the recovered glass sand received.
- 7.4. The consumer must make any records required to be kept under this exemption available to authorised officers of the EPA on request.
- 7.5. The consumer must ensure that any application of recovered glass sand to land must occur within a reasonable period of time after its receipt.

8. Definitions

In this exemption:

application or apply to land means applying to land by:

- spraying, spreading or depositing on the land; or
- ploughing, injecting or mixing into the land; or
- filling, raising, reclaiming or contouring the land.

consumer means a person who applies, or intends to apply, recovered glass sand to land.

recovered glass is glass sourced from the collection of domestic or commercial waste. This includes glass collected from domestic commingled recycling collections. This does not include glass recovered from the sorting or processing of:

- mixed municipal waste, or
- mixed commercial and industrial waste, or
- construction and demolition waste, or
- Cathode Ray Tubes or other glass recovered from electrical equipment, or fluorescent or incandescent lights.

Manager Waste Strategy and Innovation
Environment Protection Authority
(by delegation)

Notes

The EPA may amend or revoke this exemption at any time. It is the responsibility of the consumer to ensure they comply with all relevant requirements of the most current exemption. The current version of this exemption will be available on www.epa.nsw.gov.au

In gazetting or otherwise issuing this exemption, the EPA is not in any way endorsing the use of this substance or guaranteeing that the substance will confer benefit.

The conditions set out in this exemption are designed to minimise the risk of potential harm to the environment, human health or agriculture, although neither this exemption nor the accompanying order guarantee that the environment, human health or agriculture will not be harmed.

The consumer should assess whether or not the recovered glass sand is fit for the purpose the material is proposed to be used for, and whether this use will cause harm. The consumer may need to seek expert engineering or technical advice.

Regardless of any exemption provided by the EPA, the person who causes or permits the application of the substance to land must ensure that the action is lawful and consistent with any other legislative requirements including, if applicable, any development consent(s) for managing operations on the site(s).

The receipt of recovered glass sand remains subject to other relevant environmental regulations in the POEO Act and the Waste Regulation. For example, a person who pollutes land (s. 142A) or water (s. 120), or causes air pollution through the emission of odours (s. 126), or does not meet the special requirements for asbestos waste (Part 7 of the Waste Regulation), regardless of having an exemption, is guilty of an offence and subject to prosecution.

This exemption does not alter the requirements of any other relevant legislation that must be met in utilising this material, including for example, the need to prepare a Safety Data Sheet (SDS).

Failure to comply with the conditions of this exemption constitutes an offence under clause 91 of the Waste Regulation.

Appendix B

Materials Tracking Register Proforma

Materials Tracking Register

[illegible]

APPENDIX J

Waste Management Plan

DRAFT

OAKDALE WEST BUILDING 3B

Waste Management Plan

Prepared for:

Goodman Property Services (Aust) Pty Ltd
1-11 Hayes Rd
Rosebery NSW 2018

SLR Ref: 610.30398.00000-R01
Version No: -v3.0
June 2021



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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goodman Property Services (Aust) Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
610.30398.00000-R01-v3.0	15 June 2021	Emerson Helmi Patch	Celine El-Khoury	Celine El-Khoury
610.30398.00000-R01-v2.0	1 June 2021	Emerson Helmi Patch	Celine El-Khoury	Celine El-Khoury
610.30398.00000-R01-v1.0	18 May 2021	Emerson Helmi Patch	Celine El-Khoury	Celine El-Khoury

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1 Introduction

1.1 Overview

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Goodman Property Services (Aust) Pty Ltd (the Client) to prepare a Waste Management Plan (WMP) in support of Development Application (DA) for Building 3B of the Oakdale West estate. The WMP is for the site preparation, construction and operational activities of Building 3B of the Oakdale West industrial Estate (the Project).

This WMP applies to the waste generated from the site preparation, construction and operational stages of the Project and has been prepared using architectural drawings supplied by the Client and attached in **Appendix A**.

As per Condition C17 of SSD 7348, this report should be prepared in accordance with the NSW Waste Classification Guidelines (DECCW, 2009). These guidelines are now out of date. The most up to date guidelines are the NSW EPA's Waste Classification Guidelines 2014. This report was prepared in accordance with these guidelines. See **Table 2** and **Table 6** for more information on waste classification.

1.2 Objectives

The principal objective of this WMP is to identify all potential wastes likely to be generated at the Project site during the site preparation, construction and operational phases, including a description of how waste would be handled, processed and disposed of, or re-used or recycled, in accordance with Penrith City Council's (Council) requirements.

The specific objectives of this WMP are as follows:

- To encourage the minimisation of waste production and maximisation of resource recovery.
- To ensure the appropriate management of contaminated and hazardous waste.
- To assist in ensuring that any environmental impacts during the operational life of the Project comply with Council's development consent conditions and other relevant regulatory authorities.

1.3 Review of WMP

This WMP is not a static document. It is a working document that requires review and updating to ensure ongoing suitability for the proposed on-going operations at the site.

This WMP will be reviewed and updated:

- To remain consistent with waste and landfill regulations and guidelines
- If changes are made to site waste and recycling management, or
- To take advantage of new technologies, innovations and methodologies for waste or recycling management.

Copies of the original WMP and its future versions should be retained by the building manager. Changes made to the WMP, as well as the reasons for the changes made, should be documented by the building manager as part of the review process.

2 Project Description

2.1 Overview of Proposed Development

The proposed development comprises the construction of Building 3B within Precinct 3 of the Oakdale West Estate and its fit out and use as a warehouse and distribution centre with two (2) tenancies. The proposal includes ancillary office space, car and truck parking, loading bays, landscaping, solar panels and signage for each tenancy.. The proposed development will facilitate warehouse and distribution uses consistent with the IN1 General Industrial zone under the State Environmental Planning Policy (Western Sydney Employment Area) 2009.

The proposal does not require clearing or supporting infrastructure as all necessary vegetation removal, infrastructure installation and other investigations were approved and have been undertaken in accordance with SSD 7348.

2.2 Overview of Proposed Construction Work

Project works for are expected to include site preparation and construction activities.

A site plan for the Project is shown in **Figure 1** and **Appendix A**. The anticipated construction works for this development include the construction of the below:

- a warehouse and distribution centre with two (2) tenancies
- Two ancillary offices, one for each tenancy
- Truck and car parking areas, and associated site hardstand.

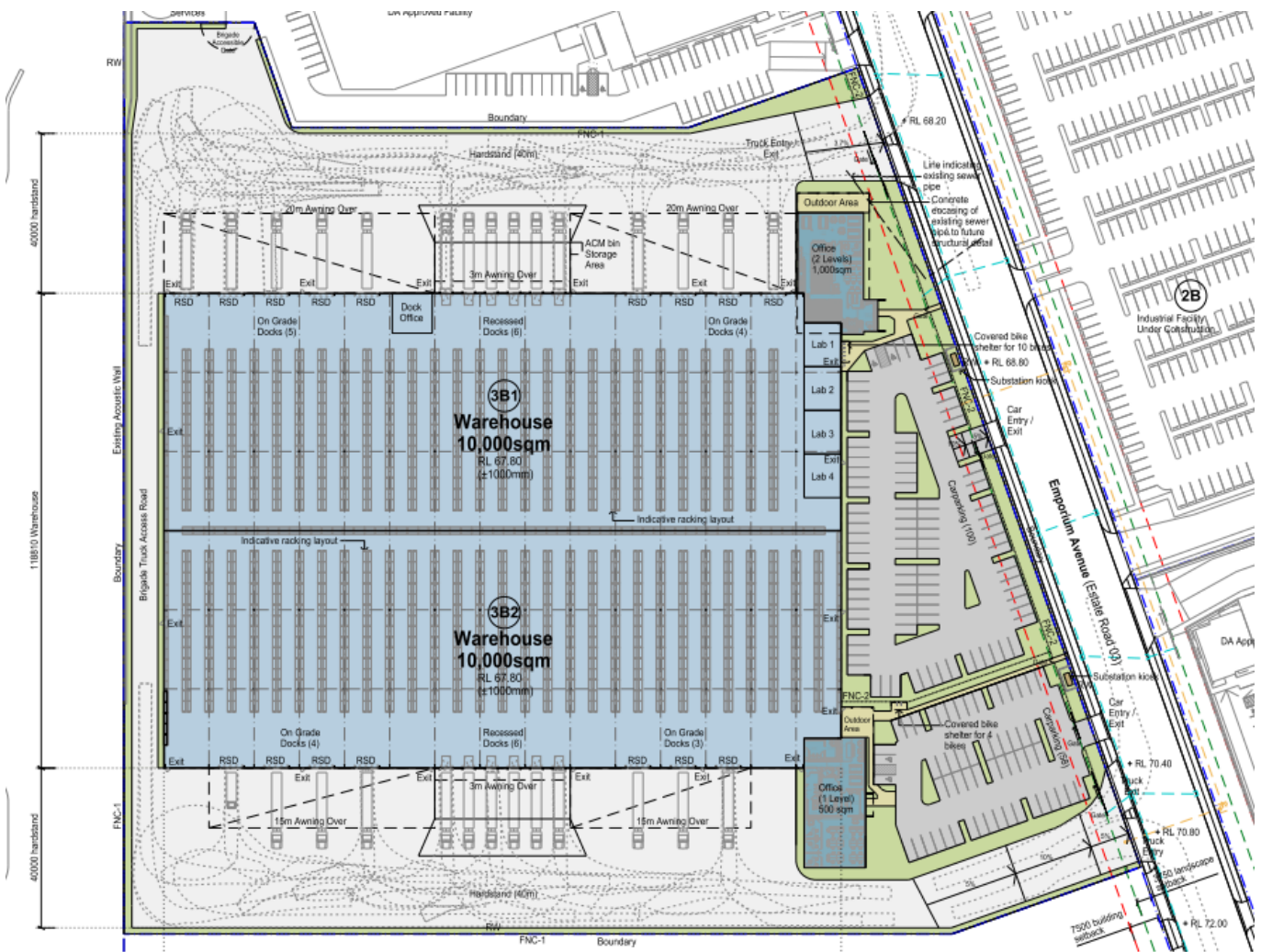


Figure 1 Site Plan

2.3 Overview of Proposed Operations

Based on communication with the Client, SLR understands the Project will function as a standard warehouse with distribution operations.

3 Better Practice Waste Management and Recycling

3.1 Waste Management Hierarchy

This WMP has been prepared in line with the waste management hierarchy shown in **Figure 2**, which summarises the objectives of the *Waste Avoidance and Resource Recovery Act 2001*.

The waste management hierarchy comprises the following principles, from most to least preferable:

- Waste **avoidance**, prevention or reduction of waste generation. Achievable through better design and purchasing choices.
- Waste **reuse**, reuse without substantially changing the form of the waste.
- Waste **recycling**, treatment of waste that is no longer usable in its current form to produce new products.
- Energy **recovery**, processing of residual waste materials to recover energy.
- Waste **treatment**, reduce potential environmental, health and safety risks.
- Waste **disposal**, in a manner that causes the least harm to the natural environment.

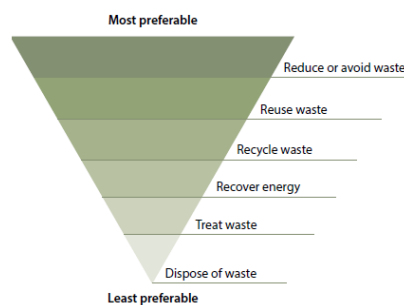


Image from NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21.

Figure 2 Waste management hierarchy

3.2 Benefits of Adopting Better Practice

Adopting better practice principles in waste minimisation offers significant benefits for organisations, stakeholders and the wider community. Benefits from better practice waste minimisation include:

- Improved reputation of an organisation due to social and environmental responsibility.
- Lowered consumption of non-renewable resources.
- Reduced environmental impact, for example, pollution, from materials manufacturing and waste treatment.
- Reduced expenses from lower waste disposal.
- Providing opportunities for additional revenue streams through beneficial reuse.

4 Waste Legislation and Guidance

The legislation and guidance outlined in **Table 1** below should be referred to during the site preparation, construction and operational phases of the Project.

Table 1 Legislation and guidance

Legislation and Guidance	Objectives
Council legislation and guidelines	
Penrith Local Environmental Plan (LEP) 2010 ¹	The Penrith LEP came into force for the entire Penrith local government area on 25 February 2015 and provides the legal framework of the Penrith Development Control Plan, including land use and development permitted in a set zone. The LEP also contains provisions to conserve local heritage and protect sensitive land.
Penrith Development Control Plan (DCP) 2014 ²	The Penrith DCP came into effect on 17 April 2015 and supports provision of the LEP planning controls by providing detailed planning and design guidelines. The DCP has been prepared in accordance with the <i>Waste Avoidance and Resource Recovery Act 2001</i> . One of the objectives of the DCP is to assist in reducing Penrith's ecological footprint by encouraging the diversion of waste from landfill. This WMP specifically addresses Part C5 – Waste Management of the DCP and the Waste Management Guidelines for Industrial, Commercial and Mixed Use.
Waste Strategy 2017-2026, Penrith City Council	Council's waste strategy sets out the waste management targets for the Penrith local government area including working towards reduced waste generation and increased landfill diversion. The strategy was prepared in consultation with the community and informed by waste audit results. The strategy defines the actions required to reach the targets, including actions for waste diversion from landfill, resource recovery, technology innovation, community education and resource recovery facilities.
State and National legislation and guidelines	
Building Code of Australia (BCA) and relevant Australian Standards	The BCA has the aim of achieving nationally consistent, minimum necessary standards of relevant health and safety, amenity and sustainability objectives efficiently.
Council of Australian Governments National Construction Code 2019	The National Construction Code 2019 sets the minimum requirements for the design, construction and performance of buildings throughout Australia.
NSW EPA's Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities 2012	These better practice guidelines present information on waste minimisation and resource recovery as well as information on commonly used waste management provisions. The guidelines also provide benchmarks for assessing waste production rates in Australia.
NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21	The <i>NSW Waste Avoidance and Resource Recovery Strategy 2014-21</i> is aimed at ultimately "improving environment and community well-being by reducing the environmental impact of waste and using resources more efficiently" by presenting a framework intended to avoid and reduce waste generation, increase recycling, divert more waste from landfill, manage problem wastes better, reduce litter and reduce illegal dumping.

¹ <https://legislation.nsw.gov.au/#/view/EPI/2010/540>

² <https://www.penrithcity.nsw.gov.au/building-development/planning-zoning/planning-controls/development-control-plans>

Legislation and Guidance	Objectives
NSW EPA Resource Recovery Orders and Resource Recovery Exemptions	<p>The NSW EPA has issued a number of resource recovery orders and resource recovery exemptions under the POEO (Waste) Regulation 2014 for a range of wastes that may be recovered for beneficial re-use. These wastes typically include those from demolition and construction works, as well as operational wastes such as food waste.</p> <ul style="list-style-type: none"> Resource recovery orders present conditions which generators and processors of waste must meet to supply the waste material for beneficial re-use. Resource recovery exemptions contain the conditions which consumers must meet to use waste for beneficial re-use.
NSW EPA's Waste Classification Guidelines 2014	<p>The NSW EPA <i>Waste Classification Guidelines</i> assists waste generators to effectively manage, treat and dispose of waste to ensure the environmental and human health risks associated with waste are managed appropriately and in accordance with the <i>POEO Act 1997</i> and is associated regulations.</p>
<i>Protection of the Environment Operations Act (POEO) 1997 and Amendment Act 2011</i>	<p>The <i>POEO Act 1997</i> and <i>POEO Amendment Act 2011</i> are administered by the NSW Environment Protection Authority (NSW EPA) to enable the NSW Government to establish instruments for setting environmental standards, goals, protocols and guidelines. They outline the regulatory requirements for lawful disposal of wastes generated during the demolition, construction and operational phases of a development, as well as the system for licencing waste transport and disposal.</p>
The Work Health and Safety Regulation 2017	<p>The Work Health and Safety Regulation 2017 provide detailed actions and guidance associated with the topics discussed in <i>The Work Health and Safety Act 2011</i>. The primary aim of the regulation is to protect the health and safety of workers and ensure that risks are minimised in work environments. Workplaces are to ensure that they are compliant with the requirements specified in the regulations. The regulations discuss items such as actions that are prohibited or obligated in work environments, the requirements for obtaining licences and registrations, and the roles and responsibilities of staff in workplaces.</p>
<i>Waste Avoidance and Resource Recovery Act 2001</i>	<p>The <i>Waste Avoidance and Resource Recovery Act 2001</i> aims to promote waste avoidance and resource recovery and repeals the <i>Waste Minimisation and Management Act 1995</i>. Specific objectives of the <i>Waste Avoidance and Resource Recovery Act 2001</i> include:</p> <ul style="list-style-type: none"> encouraging efficient use of resources minimising the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste ensuring industry and the community share responsibility in reducing/dealing with waste, and efficiently funding of waste/resource management planning, programs and service delivery. <p>As of 2016, the addition to the Act of Part 5 defines the legislative framework for the "Return and Earn Container Deposit Scheme" whereby selected beverage containers can be returned to State Government authorities for a monetary refund.</p>

5 Site Preparation and Construction Waste and Recycling Management

5.1 Targets for Resource Recovery

The performance of each new development should contribute to the following target from the NSW EPA (2014) *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*:

- 75 % of total construction and demolition waste recycled, increasing to 80 % by 2021.

Additionally, in the interests of Council's additional commitments to waste management controls, the construction and excavation procedures should endeavour to reach the following outlined target from the DCP:

- Reduce the volume of demolition, construction and fit out waste, including excavation, going to landfill by 76 %.

It is anticipated that the waste minimisation measures in the following sections will assist the Project to meet these targets. Waste reporting and audits can be used to determine the actual percentage of wastes that have been recycled during the construction and site preparation stage of the Project.

5.2 Waste Streams and Classifications

The site preparation and construction of the Project is likely to generate the following broad waste streams:

- Site clearance wastes
- Construction wastes
- Plant maintenance waste
- Packaging wastes, and
- Work compound waste from on-site employees.

A summary of likely waste types generated from site preparation and construction activities, along with their waste classifications and proposed management methods, is provided in **Table 2**.

For further information on how to classify a waste type refer to the NSW EPA (2014) *Waste Classification Guidelines*³. Further information on managing site preparation and construction wastes is available from the NSW EPA website⁴.

³ Available online from <https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines>

⁴ <http://www.epa.nsw.gov.au/your-environment/waste/industrial-waste/construction-demolition>

Table 2 Potential waste types and their management methods

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Site Clearance		
Green waste including timber, pine and particle board	General solid waste (non-putrescible)	Separated, some chipped and stored on-site for landscaping, remainder to landscape supplies or off-site recycling. Stumps and large trees to landfill.
Clean fill	General solid waste (non-putrescible)	On-site re-use
Contaminated fill	To be classified subject to the results of testing	Off-site treatment or disposal to landfill
Excavated natural material (ENM) or virgin excavated natural material (VENM)	General solid waste (non-putrescible)	On-site re-use of topsoil for landscaping of the site, off-site beneficial re-use or send to landfill site.
Construction		
Sediment fencing, geotextile materials	General solid waste (non-putrescible)	Reuse at other sites where possible or disposal to landfill
Concrete	General solid waste (non-putrescible)	Off-site recycling for filling, levelling or road base
Bricks and pavers	General solid waste (non-putrescible)	Cleaned for reuse as footings, broken bricks for internal walls, crushed for landscaping or driveway use, off-site recycling
Gyprock or plasterboard	General solid waste (non-putrescible)	Off-site recycling or returned to supplier
Sand or soil	General solid waste (non-putrescible)	Off-site recycling
Metals such as fittings, appliances and bulk electrical cabling, including copper and aluminium	General solid waste (non-putrescible)	Off-site recycling at metal recycling compounds and remainder to landfill
Conduits and pipes	General solid waste (non-putrescible)	Off-site recycling
Timber	General solid waste (non-putrescible)	Off-site recycling, Chip for landscaping, Sell for firewood <i>Treated</i> : reused for formwork, bridging, blocking, propping or second-hand supplier <i>Untreated</i> : reused for floorboards, fencing, furniture, mulched second hand supplier Remainder to landscape supplies.
Doors, Windows, Fittings	General solid waste (non-putrescible)	Off-site recycling at second hand building supplier
Insulation material	General solid waste (non-putrescible)	Off-site disposal
Glass	General solid waste (non-putrescible)	Off-site recycling, glazing or aggregate for concrete production

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Asbestos	Special waste	Off-site disposal at a licenced landfill facility.
Fluorescent light fittings and bulbs	Hazardous waste	Off-site recycling or disposal; contact <i>FluoroCycle</i> for more information ⁵
Paint	Hazardous waste	Off-site recycling, Paintback collection ⁶ or disposal
Synthetic Rubber or carpet underlay	General solid waste (non-putrescible)	Off-site recycling; reprocessed and used in safety devices and speed humps
Ceramics including tiles	General solid waste (non-putrescible)	Off-site recycling at a crushing and recycling company
Carpet	General solid waste (non-putrescible)	Off-site recycling or disposal; reused for landscaping, insulation or equestrian uses
Plant Maintenance		
Empty oil and other drums or containers, such as fuel, chemicals, paints, spill clean ups	Hazardous waste: Containers were previously used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid waste (non-putrescible): Containers have been cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility Note: Discharge to sewer subject to Trade Waste Agreement with local Council
Air filters and rags	General solid waste (non-putrescible)	Off-site disposal
Drained Oil filters	General solid waste (non-putrescible)	Off-site recycling
Commercial Lead acid or Nickel cadmium Batteries	Hazardous waste	Off-site recycling, Contact the Australian Battery Recycling Initiative ⁷ for more information
Packaging		
Packaging materials, including wood, plastic, including stretch wrap or LLPE, cardboard and metals	General solid waste (non-putrescible)	Off-site recycling
Wooden or plastic crates and pallets	General solid waste (non-putrescible)	Reused for similar projects, returned to suppliers, or off-site recycling. Contact <i>Business Recycling</i> for more information ⁸
Work Compound and Associated Offices		
Food Waste	General solid (putrescible) waste	Dispose to landfill with general garbage

⁵ Available online from <http://www.fluorocycle.org.au/> or <http://www.environment.gov.au/settlements/waste/lamp-mercury.html>

⁶ Available online from <https://www.paintback.com.au/>

⁷ <http://www.batteryrecycling.org.au/home>

⁸ Available online from <http://businessrecycling.com.au/search/>

Waste Types	NSW EPA Waste Classification	Proposed Management Method
Recyclable beverage containers including glass and plastic bottles, aluminium cans and steel cans	General solid waste (non-putrescible)	Co-mingled recycling at off-site licensed facility or deliver to local NSW container deposit scheme 'Return and Earn' facility ⁹
Clean paper and cardboard	General solid waste (non-putrescible)	Paper and cardboard recycling at off-site licensed facility
General domestic waste generated by workers such as soiled paper and cardboard and polystyrene	General solid waste (non-putrescible) mixed with putrescible waste	Disposal at landfill

5.3 Site preparation

The Project will be constructed on primarily greenfield land. Care should be taken to minimise site disturbance and limit unnecessary excavation.

Council's DCP states that if excess material is transported offsite, they are to be informed of the quantity, quality, method of transport and where the material will be disposed. SLR recommends that excavated spoil is classified by a specialist contaminated land consultant and separated into contaminated materials, if any, uncontaminated fill or ENM.

Uncontaminated fill or ENM should be retained on site and managed appropriately for beneficial re-use for filling earthworks. As a last resort, remaining uncontaminated fill or ENM is to be sent off-site to a licenced facility in accordance with the Protection of the Environment Operations (Waste) Regulation 2014.

For contaminated material management, refer **Section 5.7.4** of this WMP.

5.4 Construction Waste Types and Quantities

The Construction Site Manager will need to specify the types and quantities of wastes produced during construction and on this basis, the numbers and capacity of skip bins can be determined.

In the absence of readily available construction waste generation rates from Council, SLR has adopted the waste generation rates from Appendix A of The Hills Development Control Plan (DCP) 2012 for estimating the type and quantities of waste generated from construction of the Project. The waste generation rates listed in the Hills DCP include '2 Bedroom', '3 Bedroom', 'Block of Flats', 'Factory' and 'Office'. SLR has adopted the 'Factory' and 'Office' rates to measure waste expected from the Project, as the construction of a factory and office is the most relevant in representing the construction of the industrial warehouse and office precinct. In the absence of readily available published information for 'Carpark' construction waste generation rates, SLR has developed 'Carpark' construction rates based on the 'Office' rates by:

- Removing timber, bricks and gyprock as these materials are unlikely to be present in significant quantities in a modern carpark structure, and
- Increasing the rates for concrete, sand or soil, metal and 'other', in proportion, to maintain the total assumed tonnage per 1000 m² of construction.

⁹Available online from <http://returnandearn.org.au/>

The waste generation rates are shown in **Table 3**.

Table 3 Waste generation rates for the construction of the Project

Rate Type	Floor Area (m ²)	Waste types and quantities (m ³)						
		Timber	Concrete	Bricks	Gyprock	Sand or Soil	Metal	Other
Factory	1,000	0.25	2.10	1.65	0.45	4.80	0.60	0.50
Office	1,000	5.1	18.8	8.5	8.6	8.8	2.75	5
Carpark	1,000	--	30.6	--	--	14.3	4.5	8.1

The waste generation rates for 'Factory' are applied to calculate the waste quantities generated from the construction of each warehouse. The 'Office' waste generation rates are applied to calculate the waste quantities from all office administration areas. The 'Carpark' waste generation rates are applied to calculate the waste quantities from the construction of all external hard surface areas including carpark and heavy and light duty surfaces. The areas are based on the areas provided in the site plans attached in **Appendix A**.

Actual waste quantities and composition will vary; however, this estimate is provided so that the Construction Site Manager can make provision for on-site or off-site re-use and recycling opportunities.

The construction wastes quantities anticipated from the construction of Building 3B are provided in **Table 4**.

Table 4 Estimated types and quantities of construction waste

Project component	Area (m ²)	Waste types and quantities (m ³)						
		Timber	Concrete	Bricks	Gyprock	Sand and Soil	Metal	Other
Warehouse 3B-1	10,000	5	25	20	5	50	10	5
Warehouse 3B-2	10,000	5	190	85	90	90	30	50
Office 3B-1	1,000	10	5	5	5	5	5	5
Office 3B-2	1,000	10	20	10	10	10	5	5
Hardstand area	15,390	-	475	-	-	225	70	125
Light Duty Area	4,680	-	145	-	-	70	25	40
Fire track area	772	-	25	-	-	15	5	10
Total	42,842	30	885	120	110	465	150	240

Waste estimates have been rounded up to the nearest 5 m³.

A waste management plan form provided by Council is attached in **Appendix B**. The form is also available on Council's website¹⁰. This is to be updated by the Site Manager once waste streams, estimated quantities, and final disposal locations and recycling services have been identified.

5.5 Waste Avoidance

In accordance with Council's DCP and better practice waste management, the Building Contractor, Building Designer and/or equivalent roles should:

- Develop a purchasing policy based on the approximate volumes of materials to be used so that the correct quantities are purchased.

¹⁰ https://www.penrithcity.nsw.gov.au/images/documents/forms/Waste_Management_Plan_Application_Form.pdf

- Arrange for delivery of materials on an 'as needed' basis to avoid material degradation through weathering and moisture damage.
- Communicate strategies to handle and store waste to minimise environmental, health and amenity impacts.
- Select materials with a low environmental impact over the lifecycle of the building.
- Choose timber from certified plantations and avoid unsustainable timber imports including western red cedar, oregon, meranti, luan or merbau.
- Use leased equipment rather than purchase and disposal.
- Minimise site disturbance and unnecessary excavation.
- Incorporate existing trees and shrubs into the landscape plan.
- Grouping wet areas together to minimise the amount of pipe work required.
- Design the Project to require standard material sizes or make arrangements with manufacturing groups for the supply of non-standard material sizes.
- Design works for de-construction.
- Reduce packaging waste by:
 - Returning packaging to suppliers where practicable to reduce waste further along the supply chain
 - Purchasing in bulk
 - Requesting cardboard or metal drums rather than plastics
 - Requesting metal straps rather than shrink wrap, and
 - Using returnable packaging such as pallets and reels.
- Use prefabricated materials.
- Select materials for Project works with low embodied energy properties or materials that have been salvaged or recycled for the construction of the Project including concrete that utilises slag and fly ash content, structural and reinforced steel that uses recycled steel content or bulk insulation products that contain recycled content, such as recycled glass in glass-wool.
- Preferentially use paints, floor coverings and adhesives with low VOC (volatile organic compound) content.
- Reduce the use of polyvinyl chloride products.
- Implement measures to prevent the occurrence of windblown litter, dust and stormwater pollution.
- Ensure subcontractors are informed of and implement site waste minimisation and management procedures.

5.6 Reuse, Recycling and Disposal

Effective management of construction materials and construction and demolition waste, including options for reuse and recycling where applicable and practicable, will be conducted. Only wastes that cannot be cost effectively reused or recycled are to be sent to landfill or appropriate disposal facilities.

Refer to **Table 2** for an outline of the proposed reuse, recycling and disposal methods for potential site preparation and construction waste streams generated by the Project.

In accordance with Council's DCP and best practice waste management, the following specific procedures should be implemented:

- Ensure the site's project management of the site includes minimising waste generation, requiring the appropriate storage and timely collection of waste materials, and maximising re-use or recycling of materials.
- Store wastes on site appropriately to prevent cross-contamination and guarantee the highest possible re-use value.
- Consider the potential of any new materials to be re-used and recycled at the end of the Project's life.
- Determine opportunities for the use of prefabricated components and recycled materials.
- Strip topsoil from areas designated for excavation and store it on site for reuse.
- Reuse excavation material will be on-site where possible.
- Re-use formwork where appropriate.
- Retain roofing material cut-offs for re-use or recycling.
- Retain used crates for storage purposes unless damaged.
- Recycle cardboard, glass and metal wastes.
- Recycle or dispose of solid waste timber, brick, concrete, asphalt and rock, where such waste cannot be re-used on site, to an appropriately licenced construction and demolition waste recycling facility or an appropriately licenced landfill.
- Dispose of all asbestos and/or hazardous wastes in accordance with SafeWork NSW and NSW EPA requirements.
- Deliver batteries and florescent lights to drop off-site recycling facility.
- Return excess materials and packaging to the supplier or manufacturer.

5.7 Waste Storage and Servicing

5.7.1 Waste Segregation and Storage

As outlined in the Penrith DCP, waste materials produced from site preparation and construction activities are to be separated at the source and stored separately on-site. It is anticipated that the Project will provide enough space on-site for separate storage, for example, separate skip bins or appropriately managed stockpiles, of the following waste types:

- Bricks, concrete and scrap metal
- Metal and steel, in a condition suitable for recycling at metal recycling facilities
- Timber
- Glass
- Hardstand rubble
- Uncontaminated excavation spoil, if present

- Contaminated excavation spoil, if present
- Hazardous waste, if present
- Paper and cardboard
- General co-mingled recycling waste, and
- Non-recyclable general waste.

If there is insufficient space on-site for full segregation of waste types, the Site Manager, or equivalent role, should consult with the waste and recycling collection contractor to confirm which waste types may be co-mingled prior to removal from the site.

5.7.2 Waste Storage Areas

Waste storage areas will be accessible and allow enough space for storage and servicing requirements. The storage areas will also be flexible in order to cater for change of use throughout the project. Where space is restricted, dedicated stockpile areas are to be delineated on the site, with regular transfers to dedicated skip bins for sorting.

All waste placed in skips or bins for disposal or recycling will be adequately contained to ensure that the waste does not fall, blow, wash or otherwise escape from the site. Waste containers and storage areas are to be kept clean and in a good state of repair.

As per Council's DCP, areas designated for waste storage should:

- Allow unimpeded access by site personnel and waste disposal contractors
- Consider environmental factors which could potentially cause an impact to the waste storage, such as slope, drainage and the location of watercourses and native vegetation
- Allow enough space for the storage of garden waste and other waste materials on-site
- Employ adequate environmental management controls to prevent off-site migration of waste materials and contamination from the waste. For example, consideration of slope, drainage, proximity relative to waterways, stormwater outlets and vegetation
- Consider visual amenity, safety, accessibility and convenience in their selection, and
- Not present hazards to human health or the environment.

5.7.3 Waste Servicing and Record Keeping

The Site Manager or equivalent role is to:

- Arrange for suitable waste collection contractors to remove any construction waste from site
- Ensure waste bins are not filled beyond recommended filling levels
- Ensure that all bins and loads of waste materials leaving site are covered
- Maintain waste disposal documentation detailing, at a minimum:
 - Descriptions and estimated amounts of all waste materials removed from site
 - Details of the waste and recycling collection contractors and facilities receiving the waste and recyclables

- Records of waste and recycling collection vehicle movements, for example, date and time of loads removed, licence plate of collection vehicles, tip dockets from receiving facility, and
- Waste classification documentation for materials disposed to off-site recycling or landfill facilities.
- Ensure lawful waste disposal records are readily accessible for inspection by regulatory authorities such as Council, SafeWork NSW or NSW EPA, and
- Remove waste during hours approved by Council.

If skips and bins are reaching capacity, removal and replacement should be organised as soon as possible. All site generated building waste collected in the skips and bins will leave the site and be deposited in the approved site lawfully able to accept them.

5.7.4 Contaminated or Hazardous Waste Management

During the site preparation and construction phases, SLR recommends that a qualified and certified contractor is engaged to remove all contaminated or hazardous materials, for example, asbestos, and dispose of all contaminated or hazardous waste at an appropriately licenced facility.

All asbestos and other hazardous waste must be handled according to appropriate legislation and regulation including the Work Health and Safety Regulation 2017.

In accordance with Council's DCP, hazardous waste management at the site may require a licence from the EPA and approval from Council. If hazardous waste is identified for removal, Council and NSW EPA are to be consulted prior to undertaking any hazardous waste removal.

5.8 Site Inductions

All staff, including sub-contractors and labourers, employed during the site preparation and construction phases of the Project must undergo induction training regarding waste management for the Site.

Induction training is to cover, as a minimum, an outline of the WMP including:

- Legal obligations and targets
- Emergency response procedures on-site
- Waste priorities and opportunities for reduction, reuse and recycling
- Waste storage locations and separation of waste
- Procedures for suspected contaminated and hazardous wastes
- Waste related signage
- The implications of poor waste management practices, and
- Responsibilities and reporting, including identification of personnel responsible for waste management and individual responsibilities.

It is the responsibility of the Site Manager or Building Contractor to notify Council of the appointment of waste removal, transport or disposal contractors.

5.9 Signage

Standard signage is to be posted in all waste storage and collection areas. All waste containers should be labelled correctly and clearly to identify stored materials.

Signs approved by the NSW EPA for labelling of waste materials are available online¹¹ and should be used where applicable. A selection of signs prepared by NSW EPA is provided in **Figure 3**.



Figure 3 Examples of NSW EPA labels for waste skips and bins

5.10 Monitoring and Reporting

The following monitoring practices are to be undertaken to improve site preparation and construction waste management and to obtain accurate waste generation figures:

- Conduct waste audits of current projects where feasible.
- Note waste generated and disposal methods.
- Look at past waste disposal receipts.
- Record this information to track waste avoidance, reuse and recycling performance and to help in waste estimations for future waste management plans.

As per Council's DCP, records of waste volumes recycled, reused or contractor removed are to be maintained. This can include dockets or receipts verifying recycling and disposal in accordance with this WMP. This evidence should also be presented to regulatory bodies when required.

Daily visual inspections of waste storage areas will be undertaken by site personnel and inspection checklists and logs recorded for reporting to the Site Manager on a weekly basis or as required. These inspections will be used to identify and rectify any resource and waste management issues.

Waste audits are to be carried out by the Building Contractor to gauge the effectiveness and efficiency of waste segregation procedures and recycling and reuse initiatives. Where audits show that the above procedures are not carried out effectively, additional staff training will be undertaken and signage re-examined.

¹¹ NSW EPA approved waste materials signage <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/business-government-recycling/standard-recycling-signs>

5.11 Roles and Responsibilities

All personnel have a responsibility for their own environmental performance and compliance with all legislation. It will be the responsibility of the Building Contractor to implement the WMP, and an employee and subcontractor responsibility to ensure that they always comply with the WMP.

Where possible, an Environmental Management Representative should be appointed for the Project. Suggested roles and responsibilities are provided in **Table 5**.

Table 5 Suggested roles and responsibilities for site preparation and construction waste management

Responsible Person	General Tasks
Construction Site Manager	Ensuring plant and equipment are well maintained.
	Ordering only the required amount of materials.
	Keeping materials segregated to maximise reuse and recycling.
	Ultimately responsible for routinely checking waste sorting and storage areas for cleanliness, hygiene and safety issues, contaminated waste materials, and also ensuring that all monitoring and audit results are well documented and carried out as specified in the WMP.
Construction Environmental Manager or equivalent	Approaching and establishing the local commercial reuse of materials where reuse on-site is not practical.
	Establishing separate skips and recycling bins for effective waste segregation and recycling purposes.
	Ensuring staff and contractors are aware of site requirements.
	Provision of training of the requirements of the WMP and specific waste management strategies adopted for the Project.
	Contaminated waste management and approval of off-site waste transport, disposal locations and checking licensing requirements.
	Approval of off-site waste disposal locations and checking licensing requirements.
	Assessment of suspicious potentially contaminated materials, hazardous materials and liquid wastes.
	Monitoring, inspection and reporting requirements.

Daily visual inspections of waste storage areas may be delegated to other on-site staff. All subcontractors will be responsible for ensuring that their work complies with the WMP through the project induction and contract engagement process.

6 Operational Waste Management

6.1 Targets for Resource Recovery

The waste management performance of each new development should contribute to the overall NSW State targets for recycling outlined in the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*. The targets include increasing waste diverted from landfill to 75% and recycling 70% of commercial, industrial and municipal solid waste¹². Each commercial and industrial development can contribute to this NSW State target through an effective waste management plan.

It is anticipated that the waste minimisation measures in the following sections will assist the Project to meet the state's targets. Waste reporting and audits can be used to determine the actual percentage of waste that are being, or have been, recycled during operation.

6.2 Waste Streams and Classifications

The operation of the Project is anticipated to generate the following broad waste streams:

- Domestic wastes generated by employees, including food wastes
- Bulk packaging wastes, including polystyrene, plastic wrapping and cardboard boxes
- Office waste
- Garden organic waste from landscaped areas
- Bulky waste items such as furniture and e-waste
- Stores, plant and general maintenance wastes, and
- Asbestos waste produced from site visits.

Potential ongoing waste types, their associated waste classifications, and management methods are provided in **Table 6**. For further information on how to determine a waste's classification, refer to the NSW EPA (2014) Waste Classification Guidelines. Suggestions for recycling drop off locations and contacts can be found on <https://businessrecycling.com.au/> for each waste type.

Table 6 Potential waste types, classifications and management methods for operational waste

Waste Types	NSW EPA Classification	Proposed Management Method
General Operations		
Clean office paper	General solid (non-putrescible) waste	Paper recycling at off-site licensed facility
Cardboard including bulky cardboard boxes	General solid (non-putrescible) waste	Cardboard recycling at off-site licensed facility

¹² <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/wastestrategy/140876-warr-strategy-14-21.pdf?la=en&hash=EC6685E6624995242B0538B18C2E80C0CA2E51B3>

Waste Types	NSW EPA Classification	Proposed Management Method
Recyclable beverage containers, glass and plastic bottles, aluminium cans, steel cans	General solid (non-putrescible) waste	NSW container deposit scheme 'Return and Earn', container recycling at off-site licensed facility
Food waste	General solid (putrescible) waste	Compost on or off-site or dispose to landfill with general garbage
Batteries	Hazardous waste	Off-site recycling, alternatively contact the Australian Battery Recycling Initiative for more information
Mobile Phones	Hazardous waste	Off-site recycling; can be taken to the Mobile Muster program. Contact Mobile Muster for more information
Bulky polystyrene	General solid (non-putrescible) waste	Off-site recycling or disposal at landfill
Furniture	General solid (non-putrescible) waste	Off-site reuse or disposal to landfill
E-waste	Hazardous waste	Off-site recycling
Printer toners and ink cartridges	Hazardous waste	Off-site recycling, free disposal box or bags and pickup service exists for printer toners and ink cartridges
General garbage, including non-recyclable plastics	General solid (putrescible and non-putrescible) waste	Disposal at landfill
Maintenance		
Spent smoke detectors ¹³	General solid (non-putrescible) waste, or Hazardous waste (some commercial varieties)	Disposal to landfill, or off-site disposal at licensed facility
Glass, other than containers	General solid (non-putrescible) waste	Off-site recycling
Light bulbs and fluorescent tubes	Hazardous waste	Off-site recycling or disposal, contact FluoroCycle ¹⁴ or Lamp Recyclers ¹⁵ for more information
Cleaning chemicals, solvents, area wash downs, empty oil or paint drums, chemical containers	Hazardous waste if containers used to store Dangerous Goods (Class 1, 3, 4, 5 or 8) and residues have not been removed by washing or vacuuming. General solid (non-putrescible) waste if containers cleaned by washing or vacuuming.	Transport to comply with the transport of Dangerous Goods Code applies in preparation for off-site recycling or disposal at licensed facility.

¹³ The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) require that when more than 10 smoke alarms (particularly americium-241 sources) are collected for bulk disposal they must be treated as radioactive waste and the requirements of the National Health and Medical Research Council's Code of practice for the near-surface disposal of radioactive waste in Australia (1992) must be met.

¹⁴ <https://www.fluorocycle.org.au/>

¹⁵ <https://www.lamprecyclers.com.au/>

Waste Types	NSW EPA Classification	Proposed Management Method
Garden organics - lawn mowing, tree branches, hedge cuttings, leaves	General solid (non-putrescible) waste	Reuse on-site or contractor removal for recycling at licenced facility
Hazardous		
Asbestos	Special waste	Off-site disposal at a licenced landfill facility.

6.3 Estimated Quantities of Operational Waste

SLR has adopted the 'Offices' and 'Warehouse' waste generation rates from Council's DCP Industrial, Commercial and Mixed-Use Waste Management Guidelines for estimating the type and quantities of waste generated from the operational activities of the Project. The operational waste generation rates used are shown below in **Table 7**.

Table 7 Waste generation rates applied to the operations of the Project

Type of Premises	General Waste Generation (L/100 m ² /day)	Recycling Generation (L/100 m ² /day)
Warehouse	10	10
Offices	10	10

Using the waste generation rates in **Table 7** above, the approximate weekly waste quantities for the Project have been calculated. The operational waste quantities were also calculated based on the below assumptions:

- The floor areas as presented on the architectural drawings attached in **Appendix A**, and
- A week comprising seven days of operation

The estimated quantities of operational waste generated by the Project are shown in **Table 8**.

Table 8 Estimated quantities of operational general waste and recycling for the Project

Complex	Location	Area (m ²)	General Waste (L/week)	Recycling (L/week)
Warehouse 3B-1	Warehouse 3B-1	10,000	7,000	7,000
	Office 3B-1	1,000	700	700
	Total	11,000	7,700	7,700
Warehouse 3B-2	Warehouse 3B-2	10,000	7,000	7,000
	Office 3B-2	500	350	350
	Total	10,500	7,350	7,350

Waste quantity estimates have been rounded up to the nearest 5 L.

To minimise packaging waste generated in the recyclables stream, it is recommended that packing waste is returned to the suppliers where possible. Standard pallets are recommended to be returned to their owners and non-standard and broken pallets are to be stockpiled and collected as required by a private waste contractor.

As per Council's DCP, food scraps should be placed in specialised containment bins and collected on a regular basis. To minimise food waste in the general waste stream, it is recommended that the food is donated, composted on site or sent off-site to a composting facility.

If additional collection services are required, such as secured document destruction, these can be organised with a private waste contractor who can provide additional bins and take collected waste to an off-site licenced facility.

The Project is anticipated to produce minimal quantities of garden organics. Less than 100 L of garden organics are estimated to be generated per week. This waste will be taken by a landscaping contractor who will dispose of it at an off-site licenced facility.

6.4 Waste Storage Area Size

For both warehouses, the waste storage area must be large enough to adequately store all quantities of operational waste and recycling between collections.

All waste storage room calculations have considered the bin dimensions listed in Council's DCP, as outlined in **Table 9**.

Table 9 Dimensions and approximate footprint of bins

Dimension	Height (mm)	Depth (mm)	Width (mm)	Gross Floor Area (GFA) (m ²)
3 m ³	1,540	1,520	2,060	3.13

To allow for ready movement of bins into and out of the bin storage area, the bin storage area is to provide a floor area of at least twice the total minimum bin GFA. This can also act as a contingency in the event of spikes in waste generation. Additionally, in accordance with Council's DCP, an additional 0.2 m is to be permitted between the bins to allow for manoeuvrability. This has been considered in the calculation of the waste storage area for each of the buildings in the Project.

The recommended storage areas do not include consideration for the storage of bulky and hazardous waste. For the additional storage space for bulky and hazardous waste, refer to **Section 6.4.2** and **Section 6.4.3**.

6.4.1 Operational waste

The estimated number of bins required for weekly storage of operational waste and recycling generated by the Project are shown in **Table 10** and are based on:

- The estimated quantities of operational waste and recycling as shown in **Table 8**
- Bin dimensions from the Council's DCP as shown in **Table 9**

The estimated number of bins required for weekly storage of operational waste and recycling generated by the project is shown in **Table 10**.

Table 10 Minimum number of bins and waste storage area for operational waste of the Project

Location	Bins Required		Collection frequency		Recommended Storage Area (m ²)
	General Waste	Comingled Recycling	General Waste	Comingled Recycling	
Warehouse 3B-1	1 x 3 m ³	1 x 3 m ³	3	3	12.5
Warehouse 3B-2	1 x 3 m ³	1 x 3 m ³	3	3	12.5

6.4.2 Bulky Waste Management

As outlined in the Penrith DCP, additional storage space for the bulky waste stream must be provided. This stream includes broken pallets, broken storage units, e-waste and other materials that cannot be disposed of in the general or recyclable waste stream.

Council's guidelines do not provide storage area dimensions for bulky waste. In the absence of dimensions provided by Council, SLR has adopted storage area dimensions for bulky waste presented in The City of Sydney's Guidelines for Waste Management in New Developments. These are applied as they are the most recent recommendations for bulky waste storage that have been provided in guidelines for new developments in NSW and are applicable to non-residential developments. The recommended space for storing bulky wastes should be at least:

- 4 m² for developments between 100 m² and 2,000 m², and
- An additional 4m² for developments over 2,000 m² and for every 20,000 m² of office space.

SLR recommends 8 m² to be allocated for bulky waste storage. Hence in addition to the recommended waste storage area noted in **Table 10**, the total waste storage area recommended for the Project is identified in **Table 11**.

Table 11 Total recommended storage area for operations at the Project

Location	Recommended Storage Area (m ²)		
	Waste and Recycling	Bulky waste	Total Storage Area
Warehouse 3B-1	12.5	8	20.5
Warehouse 3B-2	12.5	8	20.5

Management may consider organising a skip on a monthly basis or as required to remove bulky waste items or engage a contractor to collect and transport these items for reuse, recycling or disposal at an EPA licensed facility.

SLR recommends the waste storage areas for the project are shown on the architectural drawing attached in **Appendix A** in line with Council's requirements.

6.4.3 Hazardous Waste Management

As per communication from the Client, the occupier of warehouse 3B-1 will be producing offsite small amounts of asbestos waste, which will be transported back to this facility to be disposed of in one of two specialised asbestos containment bins. We have assumed these bins to be 240 L bins in accordance with the small amounts of asbestos likely to be produced.

In accordance with Council's DCP and best practice waste management, hazardous waste at the site must be placed in specialised containment bins, clearly signposted and labelled, securely locked and may require a licence and consultation from the EPA and approval from Council. Hazardous waste removal is to be undertaken as needed by appropriately licensed specialised contractors.

Table 12 below outlines the total minimum combined space recommended for the general waste and recycling, bulky waste and hazardous waste storage for each area of the Project.

Table 12 Waste storage area requirements including hazardous waste

Building	Space required for general and recycling waste, and bulky waste (m ²)	Space required for hazardous waste storage (m ²)	Total space required (m ²)
3B-1	20.5	0.85	21.4
3B-2	20.5	NA	20.5

SLR recommends that waste audits be undertaken approximately one month into the operational phase of the Project to quantify actual waste generation rates. The assessment of generated waste quantities will be influenced by management, employee and tenant attitudes to recycling and disposal, and the adequacy of signage and education provided for occupants.

6.5 Waste Storage Room Location

In accordance with Council's DCP, the design for the waste storage areas of the Project are to take into consideration better practice waste management and recommendations from Council's DCP. In accordance with better practice waste management and Council's DCP, the waste storage area should be located so that:

- It is located away from primary street frontages
- It is near any on-site loading bays
- It is convenient, safe, functional and directly accessible to users in each tenancy and servicing collection staff, but inaccessible to the public
- It avoids pedestrian or vehicular traffic hazards likely to be caused by waste collection and storage,
- It has 1.8 m zone of unobstructed clearance between the waste storage area and the entrance.

As per Council's DCP, the nominated collection areas for each warehouse are to be clearly nominated on site plans accompanying development applications. SLR recommends this WMP be updated when the waste storage areas are shown on the site plan, in accordance with Council requirements.

6.6 Waste Storage Area Features

In accordance with better practice waste management and Council's DCP, the Project's waste storage areas should have the following features:

- Blend in with the design of the wider development and the surrounding streetscape
- Be well lit and well-ventilated
- Fully enclosed and walled
- Adequate vermin prevention measures

- Reduce potential noise and odour impacts
- Enhance safety for the public
- Be connected to a water outlet for washing purposes
- Equipped with a hot and cold tap-based water supply centralised mixing valve
- Floor graded to a central drainage point which is connected to the sewer
- Have water discharge from washing flow to a sewer approved by the relevant authority
- Waterproofed and sealed non-slip floor constructed in accordance with the Building Code of Australia.
- Waste equipment is protected from theft and vandalism
- Be fully enclosed, walled and not permit through access to other on-site waste infrastructure
- Have a minimum 2.7 m unobstructed internal room height in accordance with the Building Code of Australia
- Adequate lighting and natural or mechanical ventilation in accordance with the Building Code of Australia
- Provide suitable dual door access with a minimum width of 1.8 m and a minimum 1.8 m unobstructed access corridor for the service of bins
- Provide administrative management, including signage to ensure appropriate use
- Be screened from public areas to reduce the impacts of noise, odour and visual amenity, and
- Flexible in design to allow for future changes in operation, tenancies and uses.

6.7 Waste Servicing

Based on communication with the Client, SLR understands that waste collections will be undertaken through a private contractor. The following general waste servicing access requirements should be implemented:

- Waste will be removed regularly.
- Arrangements should be in place so that the waste and recycling storage rooms are not accessible to the general public.

In accordance with Council's DCP, the following is required for the access provisions for of waste collection vehicles:

- Collection vehicles must be able to enter and exit the collection area in a forward direction
- Drawings must show the site's entry point, vehicle's route of travel and manoeuvring
- Swept path models must illustrate how a standard waste collection vehicle will enter, service and exit the site
- A 0.5 m unobstructed clearance is required from all obstructions for the vehicle's ingress and egress manoeuvres
- For rear loaded vehicles, an additional 2 m unobstructed loading zone is required behind the vehicle for the loading of 1,100 L bins. Additionally, a 0.5 m side clearance is required on either side of the vehicle for driver movements and accessibility

- Unobstructed access, adequate driveways and ramps of sufficient strength to support waste collection
- A structural engineer's report is to accompany the DA and confirm that all infrastructure used for vehicle ingress and egress movements can support the waste collection vehicle's weight. Council's DCP consists of dimensions for waste collection vehicles.

The collection vehicles required for 3 m³ front lift bins require 6.2 m height clearance to empty the bins. Therefore, front-lift bins are commonly used in outdoor areas with no restrictions on overhead clearance. For this reason, SLR recommends that the waste storage areas be in an outdoor area with no restrictions on overhead clearance.

SLR recommends that the design of the Project is reviewed by a traffic specialist and that the drawings are updated to be in accordance with Council's servicing requirements listed above. This WMP should be updated to reflect those updates.

Hazardous waste produced at the site will be collected by appropriately licensed specialised services.

Once a private waste contractor is engaged, a valid waste and recycling collection contract is recommended to demonstrate disposal at a waste facility lawfully able to accept it. Written evidence of the valid contract should be kept on-site.

6.8 Waste Avoidance, Reuse and Recycling Measures

6.8.1 Waste Avoidance

Waste avoidance measures include:

- Participating in take-back services to suppliers to reduce waste further along the supply chain
- Avoiding printing where possible
- Review of packaging design to reduce waste but maintain 'fit for purpose'
- Providing ceramic cups, mugs, crockery and cutlery rather than disposable items
- Purchasing consumables in bulk to avoid unnecessary packaging
- Presenting all waste reduction initiatives to staff as part of their induction program, and
- Investigating leased office equipment and machinery rather than purchase and disposal.

6.8.2 Re-use

Possible re-use opportunities include establishing systems with in-house and supply chain stakeholders to transport products in re-useable packaging where possible.

6.8.3 Recycling

Recycling opportunities include:

- Collecting and recycling e-wastes
- Flatten or bale cardboard to reduce number of bins required
- Paper recycling trays provided in office areas for scrap paper collection and recycling

- Collecting printer toners and ink cartridges in allocated bins for appropriate contractor recycling, and
- Development of 'buy recycled' purchasing policy.

6.9 Communication Strategies

Waste management initiatives and management measures should be clearly communicated to building managers, owners, employees, customers and cleaners. Benefits of providing this communication include:

- improved satisfaction with services
- increased ability and willingness to participate in recycling
- improved amenity and safety
- improved knowledge and awareness through standardisation of services
- increased awareness or achievement of environmental goals and targets
- reduced contamination of recyclables stream
- increased recovery of recyclables and organics material, if implemented, and
- greater contribution to targets for waste reduction and resource recovery, the environment and heritage conservation.

To realise the above benefits, the following communication strategies should be considered:

- Use consistent signage and colour coding throughout the Project
- Ensure all staff are trained in correct waste separation and management procedures
- Provide directional signage to show location of and routes to waste storage area
- General waste and co-mingled recycling bins should be clearly labelled and colour-coded to ensure no cross contamination, where applicable
- Employees and cleaners should adhere to the WMP for compliance, in consultation with management, and
- Repair signs and labels promptly to avoid breakdown of communications.

6.10 Signage

As outlined in the Penrith DCP, the waste storage and collection areas should be provided with appropriate signage. These signs should clearly identify waste management procedures and provisions to contractors, tenants and visitors should be distributed around the Project.

Signs which clearly identify waste management procedures and provisions to staff and visitors should be distributed around the Project. Key signage considerations are:

- Clear and correct labelling on all waste and recycling bins, indicating the correct type or types of waste that can be placed into a given bin, as shown in **Figure 4**
- Signposts and directions to location of waste storage areas
- Clear signage in all waste storage areas to instruct users how to correctly separate waste and recycling

- Maintaining a consistent style colour scheme and system for signs throughout the Project, and
- Emergency contact information for reporting issues associated with waste or recycling management.

Colour-coded and labelled bin lids are necessary for identifying bins. All signage should conform to the relevant Australian Standard and use labels approved by the NSW EPA¹⁶. The design and use of safety signs for waste rooms and enclosures should comply with Australian Standard AS 1319 Safety Signs for the Occupational Environment and clearly describes the types of materials designated for each bin.



Figure 4 Example of bin labels for operational waste

6.11 Monitoring and Reporting

Monitoring is recommended to ensure waste and recycling management arrangements and provisions for the Project are functional, practical and are maintained to the standard outlined in this plan, at a minimum.

Visual assessments of bins and bin storage areas should be conducted by the building manager, at minimum:

- Weekly, in the first two months of operation to ensure the waste management system is sufficient for the operation, and
- Every six months, to ensure waste is being managed to the standards outlined in this document.

In addition, audits are to be conducted on a half-yearly basis to ensure WMP provisions are maintained.

Quantities of waste and recycling associated with disposal of waste and recycling, including dockets, receipts and other physical records should be recorded by the Building Manager. This is to allow reviews of the waste management arrangements and provisions at the site over time. Records of waste disposal should also be available to regulatory authorities such as the NSW Environmental Protection Authority and SafeWork NSW, upon request.

Any deficiencies identified in the waste management system, including, but not limited to, unexpected waste quantities, is to be rectified by the Building Manager as soon as it is practical. Where audits show that recycling is not carried out effectively, management should carry out additional staff training, signage re-examination and reviews of the waste management system where the audit or other reviewing body has deemed necessary. If this waste management plan no longer sufficiently meets the needs of the Project, review and updates to maintain suitability must be undertaken.

¹⁶ NSW EPA waste signage and label designs <http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm>

6.12 Roles and Responsibilities

It is the responsibility of the Building Manager, or equivalent role, to implement this WMP and a responsibility of all warehouse tenants and staff to follow the waste management procedures set out by the WMP. SLR recommends that all subcontractors enlisted by the Client are to have roles and responsibilities identified and the Project's waste management system clearly explained. A summary of recommended roles and responsibilities are provided in **Table 13**.

Table 13 Operational waste management responsibility allocation

Responsible Person	General Tasks
Management	Ensure the WMP is implemented throughout the life of the operation.
	Update the WMP on a regular basis (e.g. annually) to ensure the Plan remains applicable.
	Undertake liaison and management of contracted waste collections.
	Organise internal waste audits on a regular basis.
	Manage any complaints and non-compliances reported through waste audits etc.
	Perform inspections of all waste storage areas and waste management equipment on a regular basis.
	Organise cleaning and maintenance requirements for waste management equipment.
	Monitor bins to ensure no overfilling occurs.
	Ensure effective signage, communication and education is provided to alert visitors, employees and cleaners about the provisions of this WMP and waste management equipment use requirements.
	Monitor and maintain signage to ensure it remains clean, clear and applicable.
	Ensure waste and recycling storage rooms are kept tidy.
	Ensure that regular cleaning and daily transfer of bins is being undertaken by the cleaners
	Ultimately responsible for the management of all waste management equipment, cleaning requirements, waste transfer and collection arrangements.
Cleaners and Staff	Removal of general waste, recyclables, cardboard waste and hazardous waste from floor areas for transfer to centralised waste and recycling collection rooms daily or as required.
	Cleaning of all bins and waste and recycling rooms on a weekly basis or as required.
	Compliance with the provisions of this WMP.
Gardening Contractor, as applicable	Removal of all garden organics waste generated during gardening maintenance activities for recycling at an off-site location or reuse as organic mulch on landscaped areas.

APPENDIX A

ARCHITECTURAL DRAWINGS

Legend

Site Boundary

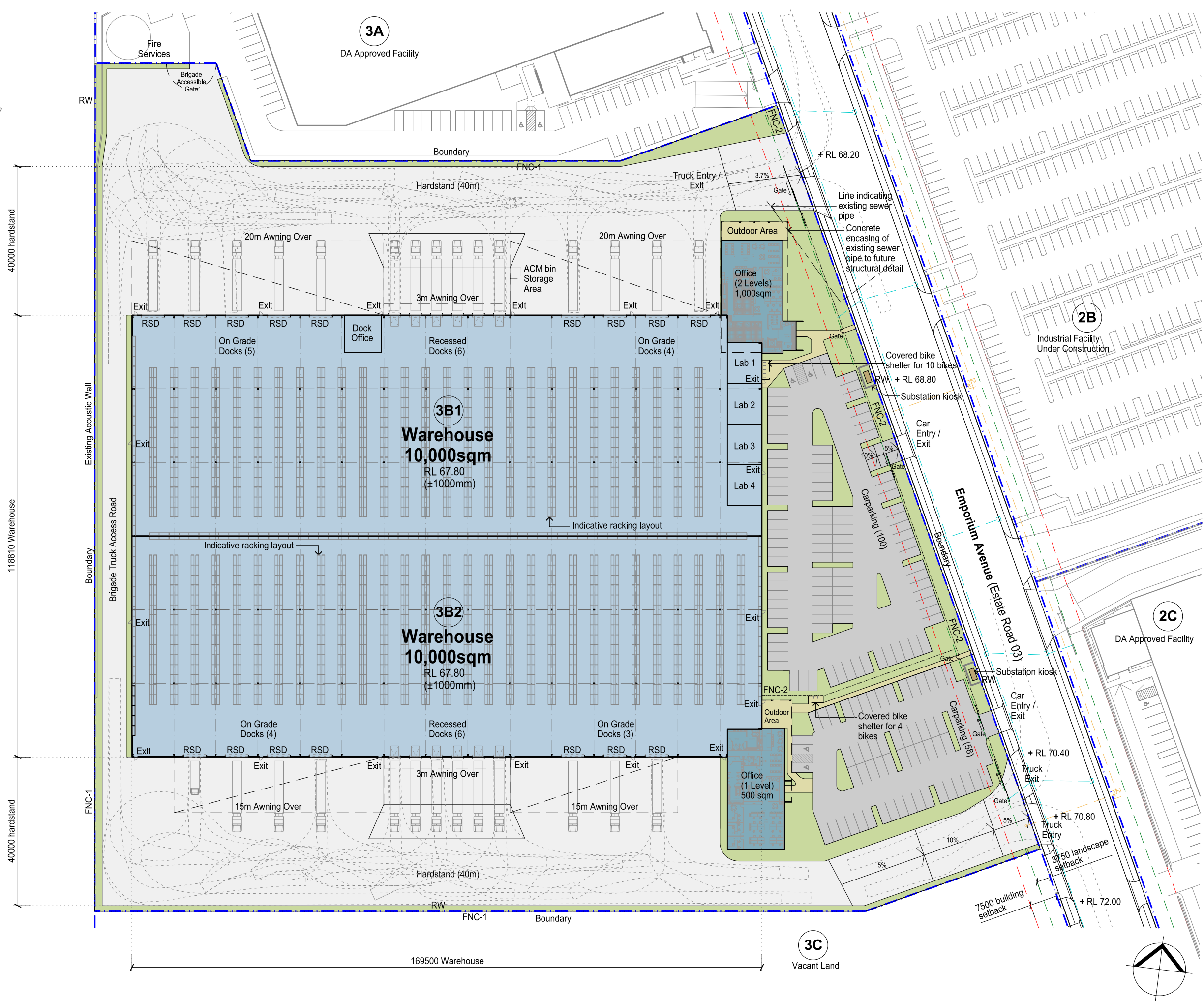
Lot Boundary

FNC-1

FNC-2

RW

Development Area Schedule	
Site Area	46,198 sqm
Warehouse 3B-1 <small>(Inclusive of Dock Office & Labs)</small>	10,000 sqm
Warehouse 3B-2	10,000 sqm
Office 3B-1 (2 levels)	1,000 sqm
Office 3B-2 (1 level)	500 sqm
Total Building Area	21,500 sqm
Awning	4,215 sqm
Site Cover (exc. awning)	47 %
Floor Space Ratio	0.47 : 1
Hardstand Area	15,910 sqm
Light Duty Area	4,415 sqm
Fire Track Area	772 sqm
Carparking 3B-1 <small>(Inclusive of 2 disabled spaces and 3 x EV Charging Stations with provision of 3 additional stations in the future)</small>	100
Carparking 3B-2 <small>(Inclusive of 2 disabled spaces and 3 x EV Charging Stations with provision of 3 additional stations in the future)</small>	58



APPENDIX B

COUNCIL WASTE MANAGEMENT PLAN FORM

WASTE MANAGEMENT PLAN

DEMOLITION, CONSTRUCTION AND USE OF PREMISES

.....●
If you need more space
to give details, you are
welcome to attach extra
pages to this form.

PLEASE COMPLETE ALL PARTS OF THIS FORM THAT ARE RELEVANT TO YOUR DEVELOPMENT APPLICATION (DA).

IF YOU NEED MORE SPACE TO GIVE DETAILS, YOU ARE WELCOME TO ATTACH EXTRA PAGES TO THIS FORM.

Council will assess the information you provide on this form along with your attached plans. We will take into account the types and volumes of waste that could be produced as a result of your proposed development, and how you are planning to:

- minimise the amount of waste produced
- maximise re-use and recycling
- store, transport and dispose of waste safely and thoughtfully.

APPLICANT DETAILS

First name

Surname

Postal Address

Street No.

Street name

Suburb

Post code

Contact phone number

Email address

DETAILS OF YOUR PROPOSED DEVELOPMENT

Street No.

Street name

Suburb

Post code

What buildings and other structures are currently on the site?

.....

.....

.....

Briefly describe your proposed development

.....

.....

.....

Applicant Signature

Date

SECTION 1: DEMOLITION

*Please include details on the plans you submit with this form, for example location of on-site storage areas/containers, vehicle access point/s.

Materials		Destination		
		Re-use and recycling		Disposal
Material	Estimated volume (m ² or m ³)	ON-SITE* Specify proposed re-use or on-site recycling	OFF-SITE Specify contractor and recycling facility	Specify contractor and landfill site
Excavation (eg soil, rock)				
Green waste				
Bricks				
Concrete				
Timber (Please specify type/s)				
Plasterboard				
Metals (Please specify type/s)				
Other				

SECTION 2: CONSTRUCTION

*Please include details on the plans you submit with this form, for example location of on-site storage areas/containers, vehicle access point/s.

Materials		Destination		
		Re-use and recycling		Disposal
Material	Estimated volume (m ² or m ³)	ON-SITE* Specify proposed re-use or on-site recycling	OFF-SITE Specify contractor and recycling facility	Specify contractor and landfill site
Excavation (eg soil, rock)				
Green waste				
Bricks				
Concrete				
Timber (Please specify type/s)				
Plasterboard				
Metals (Please specify type/s)				
Other				

SECTION 3: WASTE FROM ON-GOING USE OF PREMISES

If relevant, please list the type/s of waste that may be generated by on-going use of the premises after the development is finished.	Expected volume (average per week)

SECTION 4: ON-GOING MANAGEMENT OF PREMISES

If relevant, please give details of how you intend to manage waste on-site after the development is finished, for example through lease conditions for tenants or an on-site caretaker/manager. Describe any proposed on-site storage and treatment facilities. Please attach plans showing the location of waste storage and collection areas, and access routes for tenants and collection vehicles.

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APPENDIX K

Flora and Fauna Management Plan

DRAFT



Oakdale West Estate SSD 7348

Building 3B Flora and Fauna Management Plan

Prepared for

Goodman Property Services (Aust.) Pty Ltd

Oakdale West Estate SSD 7348 Building 3B - Flora and Fauna Management Plan

prepared for

Goodman Property Services (Aust.) Pty Ltd

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Document control

Prepared by		
Kat Duchatel BSc. Env. CEnvP EIANZ #691 BAM Accreditation no.BAAS17054		03/09/2021

Revision	Date	Description	Issued to
01	13/07/2021	Draft Flora and Fauna Management Plan	Goodman
02	3/09/2021	Final Flora and Fauna Management Plan - amended as required by Client to reflect Staging Plan	Goodman

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1 Introduction

1.1 Context

Goodman Property Services (Aust) Pty Ltd (Goodman) obtained Development Consent SSD 7348 for the staged development of Oakdale West Industrial Estate (the Estate) comprising a warehousing and a distribution hub in Western Sydney.

An Estate wide Flora and Fauna Management Plan was prepared and approved by the NSW Minister of Environment's Secretary for the 'Concept Proposal' and Stage 1 works. The Estate wide Flora and Fauna Management Plan has been updated as further stages and modifications to the SSD 7348 have been approved. The most recent updated Flora and Fauna Management Plan (v.7, écologique, 11/03/2020) addressed the following Estate wide requirements:

- Vegetation and habitat clearing;
- Protection of retained native vegetation;
- Creation of fauna and snake habitat areas;
- Installation of snake deterrent fencing; and
- Dam decommissioning.

Regardless that the above listed requirements have been completely compliantly, consent conditions for subsequent staging approvals retain the requirement of a Flora and Fauna Management Plan, as a subplan to each Construction Environmental Management Plan (CEMP).

This Flora and Fauna Management Plan (FFMP) has been prepared as a sub-plan to the CEMP that is specific to the construction of Building 3B within Precinct 3 of the Estate.

Building 3B forms part of Stage 5 of the Estate's development and is the subject of a development application submitted to Penrith City Council (Council). Table 1-1 outlines the proposed staging for which the Estate is anticipated to be developed / serviced.

This FFMP will be amended to incorporate any relevant conditions on receipt of consent conditions from Council as required.

Table 1-1. Oakdale West Staging Plan

Stage	Description	Planning status	Anticipated/actual construction commencement
1	Stage 1 Infrastructure Works (see Section 4.1 below)	MOD 1, SSD 7348 - Determined: 26 March 2020 (original consent approved 13 Sep 2019)	Commenced in December 2019 The WNSLR (now Compass Drive) has been completed and dedicated to Penrith City Council.
2	Precinct 1 Building Works (see Section 4.2 below)	MOD 2, SSD 7348 - Determined: 21 April 2020	Building 1A - January 2021 Building 1A commenced in January 2021. Building 1B1, 1B2, & 1C - June 2021

Stage	Description	Planning status	Anticipated/actual construction commencement
3	Stage 2 & 3 Infrastructure Works	MOD 3, SSD 7348 & SSD 10397 Determined: 9 April 2020	April 2020 Commenced and close to completion.
4	Building 2B Works	MOD 3, SSD 7348 & SSD 10397 Determined: 9 April 2020	June 2020 Building 2B is in the advanced stages of construction.
5	Residual Precinct 2 Building Works	MOD 6, SSD 7348 & SSD 9794683	Building 2A - Q3 2021 Building 2C & 2D - 2022
6	Building 3A Works MOD 6, SSD 7348 & DA20	MOD 6, SSD 7348 & DA20/0843 (Building 3A local council DA)	Building 3A - July 2021
7	Building 3B & 4E Works and residual Estate Infrastructure Works	MOD 7 to SSD 7348 to be lodged in June 2021 as well as local council Building DA for Building 3B. Separate Building DA to be lodged for Building 4E. New State Significant Development Application.	Building 3B - October 2021 Building 4E - October 2021 Remaining Estate Infrastructure works to be finished by Q3 2021
8	Building 3C Works	Will be subject to new local council Development Application.	Building 3C - Q4 2021
9	Precinct 4 Building Works (excluding Building 4E)	Local council DA to be submitted	2022 - 2023
10	Precinct 5 Building Works	Local council DA to be submitted	2024

1.2 Consent Conditions

Consent condition D119 requires the preparation of the CEMP, which is to address all relevant consent requirements, including this FFMP (see Condition D88 and other related conditions in Table 1-2).

Table 1-2. Consent conditions relevant to this FFMP and biodiversity mitigation measures

Condition	Mitigation and management measures	Reference/Details
D88	<p>The Applicant must prepare a Terrestrial and Aquatic Flora and Fauna Management Plan (FFMP) for Stage 1, to the satisfaction of the Planning Secretary. The Plan must form part of a CEMP in accordance with Condition D119 and must:</p> <ul style="list-style-type: none"> (a) Be prepared by a suitably qualified and experienced person(s); (b) Describe procedures to manage impacts on biodiversity values during earthworks, clearing and dam decommissioning; (c) Include procedures for clearing marking and protecting the areas of vegetation to be retained on the Site, including the mature vegetation in the north-western corner and the Riparian Corridor adjacent to Ropes Creek in accordance with the Vegetation Management Plan (VMP) prepared under Condition D91; (d) Detail the specific erosion and sediment controls to protect the retained vegetation. 	<p>Purpose of this FFMP</p> <p>Refer also:</p> <ul style="list-style-type: none"> • Oakdale West FFMP v7 (écologique, 11/03/2020)
D89	<p>The Applicant must:</p> <ul style="list-style-type: none"> (a) Not commence bulk earthworks until the FFMP required by Condition D88 is approved by the Planning Secretary; and (b) Implement the most recent version of the FFMP approved by the Planning Secretary for the duration of bulk earthworks and construction. 	<p>The Oakdale West FFMP v7 (écologique, 11/03/2020) was approved by the Planning Secretary and has been implemented compliantly.</p>
D90. Offsets for Stage 1	<p>Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must retire 173 ecosystem credits to offset the removal of up to 4.41 hectares of native vegetation on the Site.</p>	<p>An administrative condition that is not relevant to this FFMP.</p>
D91. Vegetation Management Plan	<p>Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must prepare and implement a Vegetation Management Plan (VMP) for the restoration and rehabilitation of 4.2 ha of Riparian Corridor adjacent to Ropes Creek to meet the objectives of the <i>Water Management Act 2000</i>.</p>	<p>Not relevant to this FFMP</p> <p>Addressed in the Oakdale West VMP (écologique, 02/10/2019), which was amended under SSD 7348 MOD 6 and is currently being implemented.</p>

Condition	Mitigation and management measures	Reference/Details
D93. Offsets for the WNSLR	<p>Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must:</p> <ul style="list-style-type: none"> (a) Offset 0.42 ha of vegetation lost in the Erskine Park Biodiversity Corridor as a result of the WNSLR by carrying out planting within the area shown in green edging on Figure 9 in Appendix 6; and (b) Plant the area shown in green edging on Figure 9 of Appendix 6 with species similar to those identified for zone 4a, on the south-eastern side of Ropes Creek, in the Biodiversity Management Plan Erskine Park Employment Area (HLA-Envirosciences, 2 May 2006). 	<p>Not relevant to this FFMP.</p> <p>Addressed in the WNSLR OSL Vegetation Management Plan prepared for SSD 7348 MOD 5 (écologique, 01/07/2020) and is currently being implemented.</p>
D94	The Applicant shall monitor and maintain the planting for a period of six months to ensure a minimum 85% survival rate of the planting.	As above
D95	The Applicant must notify the Planning Ministerial Corporation at least one month before the completion of planting to enable the Planning Ministerial Corporation to arrange ongoing maintenance.	As above
D96. Snake Management Measures	<p>Prior to construction of Stage 1, the Applicant must implement snake management measures to limit, to the extent practicable, movement of snakes from the Site into the adjacent school and retirement village on the western boundary of the Site.</p> <p>The measures shall be detailed in the CEMP required by Condition D119 and shall include, but not be limited to, provision of alternative snake habitat on Site, fencing along the western boundary and installation of snake deterrents.</p>	Refer Section 2.2.2 and Table 4-1 (Item no. FF6) of this FFMP.
D115. Pests, Vermin and Noxious Weed Management	<p>The Applicant must:</p> <ul style="list-style-type: none"> (a) Implement suitable measures to manage pests, vermin and declared noxious weeds on the Site; and (b) Inspect the Site on a regular basis to ensure that these measures are working effectively, and that pests, vermin or noxious weeds are not present on Site in sufficient numbers to pose an environmental hazard or cause the loss of amenity in the surrounding area. 	Refer Section 4 and Table 4-1 (Item no. FF5 and FF6) of this FFMP.

Condition	Mitigation and management measures	Reference/Details
	Note: For the purposes of this condition, noxious weeds are those species subject to an order declared under the <i>Biosecurity Act 2015</i> (NSW).	

1.3 Subject area

Within the context of the Estate, Building 3B is located in middle of Precinct 3 and is bounded by Estate Road 3 to the east and the landscaped screen to the west, with Lots 3A and 3B to the north and south (respectively) (see Figure 1-1 and Figure 2-1).

Substantial cut and fill earthworks have been undertaken across the wider Estate area in compliance with the wider Estate's FFMP v7 (écologique, 2020).

Retained native vegetation within the Estate are located outside of the Estate's developable precinct areas. The majority of retained native vegetation is protected in Biodiversity Management Areas (BMAs) with additional patches of native vegetation located in easements that will not be developed (see Figure 1-1)

No native vegetation or fauna habitat features have been retained within the Lot 3B (the subject area).

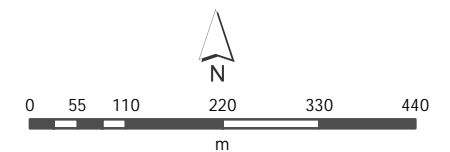
Oakdale West Estate SSD 7348

Fig. 1-1. Site Context



Legend

- Oakdale West boundary
- Precincts
- BMA_areas
- Native vegetation retained



Coordinate System: MGA Zone 56 (GDA 94) | Image sources: Nearmap 5 June 2021

2 Site Flora and Fauna

2.1 Flora

Two native plant community types (PCTs) occur within the north western BMA, each of which are listed as Critically Endangered Ecological Communities (CEECs) under both the NSW *Biodiversity Conservation Act 2016* (BC Act) and Federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). These include:

- PCT 849 Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin
- PCT 850 Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin

All approved clearing of native vegetation under SSD 7348 has been completed. No further clearing of any native vegetation is permitted without first seeking additional approval.

2.2 Fauna

The former agricultural land use of the Estate and surrounding environs has enabled a range of native fauna to coexist with previous land use practices. The most commonly observed terrestrial fauna species within the Estate are *Macropus giganteus* (the eastern grey kangaroo), a range of reptile species (mainly snakes with lizards less conspicuous) and a range of bird species (including large raptor species).

Aquatic fauna common to the Estate prior to the removal of four farm dams included *Chelodina longicollis* (the eastern long-necked turtle) and both *Anguilla australis* and *Anguilla reinhardtii* (short and long finned eels respectively).

2.2.1 Eastern grey kangaroo

The installation of non-rural fencing and replacement of open pasture with hard stand has resulted in the removal of habitat for a resident population of the eastern grey kangaroo (kangaroo).

The provision of the BMA along with peripheral easement areas continue to provide habitat for the kangaroo species albeit substantially reduced in comparison to the pre-development environment. Development has also considerably altered their accustomed movement patterns. It is likely to take some time before the resident kangaroo population adapt their movement patterns to the changed environment.

While kangaroos are more commonly seen around the periphery of the Estate's developed areas, they may still be observed nearer developed and road areas, particularly at dusk at dawn.

2.2.2 Snakes

The most commonly observed snakes across Oakdale West are:

- *Pseudechis porphyriacus* (Red-bellied black snake); and
- *Pseudonaja textilis* (Eastern brown snake).

A tiger snake (*Notechis scutatus*) was reportedly seen on a stockpile during construction but was not accurately identified and potential a banded form of the eastern brown snake.

In response to concerns from the adjacent Emmaus Catholic College a range of snake deterrent measures were implemented to minimise movement of snakes from the Estate into the school and the retirement village (located adjacent the Estate's western boundary). These included the installation of the following:

- Fencing along the western boundary designed for snake deterrence;
- Rock piles (snake refuge habitat) located within the BMA area; and
- Placement of large woody debris (additional snake refuge habitat) located within the BMA area.

In addition to the above snake deterrent measures and relevant to Building 3B is the installation of vermin controls within each building. Vermin, such as *Rattus rattus* (the black rat) and *Mus musculus* (house mouse) are common snake prey and minimising the occurrence of these introduced species is anticipated to minimise snake populations.

The red-bellied black snake and tiger snake are frequently associated with watercourses and wetlands, where they feed on amphibians (frogs). There are numerous urban tolerant frog species that will proliferate following rainfall periods within the Estate's detention / bioretention basins and drainage swales.

In combination with the use of rock rip-rap to construct outflows from basins (which provides ideal snake habitat) there will always be a high likelihood of snakes occurring in these areas.

2.2.3 Aquatic fauna

Four farm dams were decommissioned during the earthworks for the Oakdale West development. Native aquatic fauna were rescued and relocated to various pre-determined locations within Ropes Creek to the east of the Estate.

The majority of relocated fauna comprised long-finned eels, with smaller numbers of short-finned eels and long-necked turtles.

Both eel species are highly territorial and migratory and may attempt to return to the locations of the decommissioned dams. Although the pre-development overland drainage has been modified such that it is highly unlikely to encounter either of these species within Lot 3B.

Turtles are also capable of overland dispersal and may attempt to return to the location where dams were decommissioned. This is more realistic as one turtle has already been captured and relocated from the under construction development area.

Until all construction detention basins are decommissioned and Estate wide detention basins are retro-fitted to become bioretention basins, there is a potential for migratory aquatic fauna to be encountered within the Estate.

Figure 2-1 shows the areas of previous farm dams and existing fauna habitat with respect to Lot 3B.

Oakdale West Estate SSD 7348

Fig. 2-1.
Fauna habitat



- Legend
- Building 3B
 - Precincts
 - Decommissioned dams
 - Endangered vegetation
 - Biodiversity areas
 - Landscape screen

3 Potential Impacts

3.1 Potential direct impacts

3.1.1 Native vegetation

Potential direct impacts on native vegetation include unauthorised clearing of, or accidental damage to, native vegetation.

3.1.2 Native fauna

Potential direct impacts on native fauna include:

- Vehicle / mobile plant strike resulting in injury or death of terrestrial fauna; and
- Injury or death of fauna that inadvertently become stranded in allotments.

3.2 Potential indirect impacts

Indirect impacts occur when activities relating to the construction or operation of a development affect native vegetation, fauna and fauna habitat beyond the subject site.

3.2.1 Native vegetation

Potential indirect impacts on native vegetation include:

- Accidental spills or failure of stormwater management controls and resultant pollution of areas of remnant vegetation;
- Rubbish / litter from the site entering adjacent vegetation, through either accidental drift or deliberate dumping; and
- Introduction of biosecurity risks (such as priority weeds, pathogens or other disease).

3.2.2 Native fauna

Potential indirect impacts on native fauna include:

- Accidental spills or failure of stormwater management controls and resultant pollution of downstream aquatic habitat; and
- Introduction of biosecurity risks (such as feral pests, pathogens or other disease);

4 Mitigation Measures

While Precinct 3 and the wider Estate area have been substantially modified (through vegetation clearance and bulk earthworks), the potential to encounter wildlife must still be considered in accordance with the overarching SSD 7348 - Administrative Conditions that require:

- An obligation to minimise harm to the environment; and
- Compliance with biodiversity management and mitigation measures.

Table 4-1 details mitigation measures that will need to be implemented to ensure consent compliance.

Table 4-1: Flora and fauna management and mitigation measures

ID	Measure/Requirement	Responsibility	Timing / Frequency
[WILDLIFE PROTECTION]			
FF1	All personnel including contractors are to be made aware of the possibility of encountering fauna, through the site works induction process.	Management / Contractors	Pre-construction
FF2	Vehicle and mobile plant operators shall remain vigilant when entering and exiting the works area, particularly at dusk and dawn. Specifically: <ul style="list-style-type: none"> • Should kangaroos be observed transiting across the entrance/exit to the works area, vehicle/mobile plant is to stop until animals have moved to a safe distance to ensure vehicle/mobile plant strike is prevented; • All on site personnel shall alert vehicle/mobile plant entering or existing the works area if kangaroo movement is observed (via two way radio); and • All personnel including contractors are to report any injured or near miss incidents with wildlife. 	Management / Contractors	Ongoing throughout construction
FF3	Should unexpected fauna be encountered within the works site, the stop works procedure provided in Section 5 must be followed.	Management / Contractors	Ongoing throughout construction
[EROSION & SEDIMENT CONTROL]			
FF4	Offsite discharge shall be managed in strict accordance with Erosion & Sediment Control Plans prepared for Lot 3B; and A spill kit should be provided in an easily accessible location in the event that fuel or other contaminant spills occur.	Management / Contractors	Throughout construction

ID	Measure/Requirement	Responsibility	Timing / Frequency
[WEED, PEST SPECIES AND PATHOGEN MANAGEMENT]			
FF5	<p>The following hygiene procedures are to be implemented to avoid the introduction and/or spread of soil borne pathogens and weeds:</p> <ul style="list-style-type: none"> Minimise work during wet/rainy periods; Vehicles, plant and machinery are to be clean and free of soil on arrival to the works area; Truck wash down, rumble grids to be installed and operated to ensure mud, weeds or pathogens are not transported around the region or onto roads; Mud spilt on roads to be immediately removed by a road sweeper. 	Management / Contractors / Employees	Ongoing throughout construction
FF6	Future tenants are to install rodent (electronic or sonar) repellents to minimise prey for snakes	Management / Future tenants	Post construction, operation
[WASTE MANAGEMENT]			
FF7	<p>Waste management shall ensure the following:</p> <ul style="list-style-type: none"> All waste placed in skips or bins for disposal or recycling will be adequately contained to ensure that the waste does not fall, blow, wash or otherwise escape from the site; Lids on skips or bins are to be kept closed at all times; and Employ adequate environmental management controls to prevent off-site migration of waste materials and contamination from the waste. <p>For example, consideration of slope, drainage, proximity relative to waterways, stormwater outlets and vegetation</p>	Management / Contractors / Future tenants	Ongoing throughout construction and operation

5 Stop Works Procedure

All personnel working on the Project will need to be inducted on the potential to encounter wildlife within the wider Estate area but also within the works area. The stop work procedure in the event any fauna unexpectedly occurs is shown in the following flow diagram.

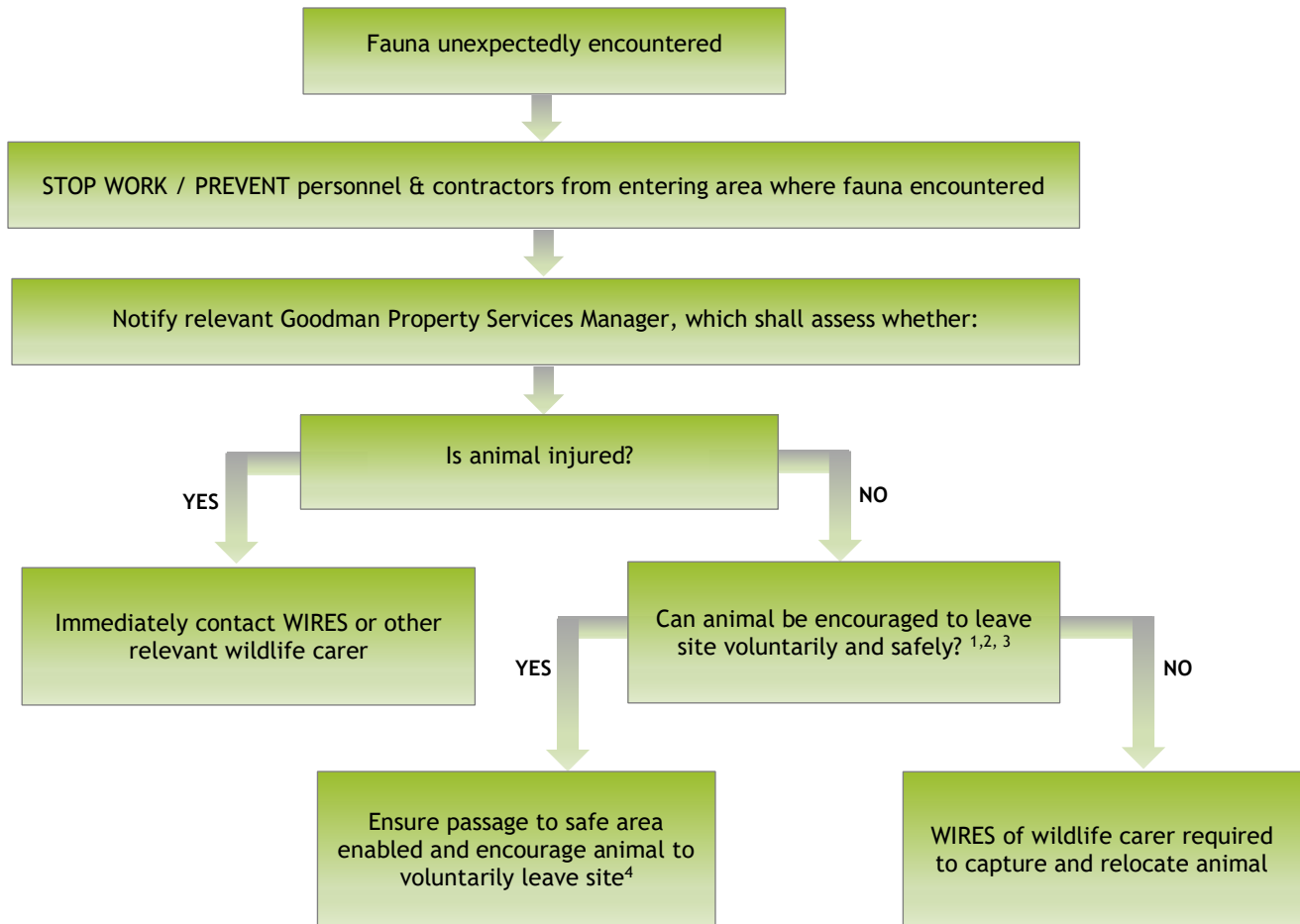


Figure 4-1. Stop work procedure

FOOTNOTES

¹ Snakes are to be left alone and not disturbed. A specialist reptile handler should be engaged for capture and relocation (WIRES to be contacted for advice).

² Nocturnal species (e.g. any small marsupials such as possums) should be left alone until wildlife carer is able to capture and relocate animal at dusk.

³ Nocturnal and injured animals shall be protected from disturbance (through temporary flagging tape or signage and communication to all personnel that the area is a temporary no go zone). If animal is stranded in direct sunlight some form of shading is to be erected to protect the animal until wildlife carer arrives at the site. In the event that attempts to provide protection or shading is too distressing for animal, the animal should be left alone and monitored from a safe distance until wildlife carer arrives at the site.

⁴ Should safe passage be obstructed by fencing or other immovable impedances, Footnote 3 should be implemented.



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APPENDIX L

Unexpected Finds Protocol - Contamination

DRAFT

Lot 3B Unexpected Finds Protocol

Oakdale West Estate

20-Aug-2021
Doc No. 60599325-OWE-Lot 3B-UFP-20210820_0

Lot 3B Unexpected Finds Protocol

Oakdale West Estate

Client: Goodman Property Services (Aust) Pty Ltd

ABN: 40 088 981 793

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Job No.: 60599325

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Quality Information

Document Lot 3B Unexpected Finds Protocol

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Prepared by Stephen Randall

Reviewed by Brad Eismen

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	13-Jul-2021	Draft for comment	Stephen Randall Principal Environmental Scientist	
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Glossary

General Terms	
ACM	Asbestos Containing Material
AEC	Area of Environmental Concern
ASC NEPM	Assessment of Site Contamination National Environment Protection Measure (2013)
BTEXN	Benzene, toluene, ethylbenzene, xylenes and naphthalene
CEMP	Construction Environmental Management Plan
CoPC	Contaminants of Potential Concern
CSM	Conceptual Site Model
DQI	Data Quality Indicators
DQO	Data Quality Objectives
EPA	Environment Protection Authority
FIP	Fill Importation Protocol
Ha	Hectare
HIL	Health Investigation Level
HSL	Health Screening Level
LOR	Limit of Reporting
m	Metre
m bgs	Metres below ground surface
mg/kg	milligrams/kilogram
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
OCP	Organochlorine Pesticides
OPP	Organophosphorus Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PID	Photoionisation detector
QA/QC	Quality Assurance/Quality Control
RPD	Relative Percent Difference
TPH/TRH	Total Petroleum Hydrocarbons/Total Recoverable Hydrocarbons
UFP	Unexpected Finds Protocol
UST/UPSS	Underground Storage Tank/Underground Petroleum Storage System
VOC	Volatile Organic Compound

1.0 Introduction

AECOM Australia Pty Ltd (AECOM) was engaged by Goodman Property Services (Aust) Pty Ltd (Goodman) to prepare an Unexpected Finds Protocol (UFP) for Lot 3B at Oakdale West Estate (OWE), Kemps Creek, NSW.

Lot 3B is approximately 4.62 hectares (Ha) and will be developed for commercial/industrial land use. A UFP was completed by AECOM in October 2019¹ and applied to the bulk earthworks at OWE. Lot 3B will be constructed by bulk cut to fill earthworks. The earthworks plan for Lot 3B indicates that approximately 2 m of cut and up to 12 m of filling will occur.

The October 2019 UFP was a condition of consent for State Significant Development 7348. The October 2019 UFP was reviewed and approved by the Goodman appointed New South Wales Environment Protection Authority (NSW EPA) accredited (land contamination) Auditor.

A Fill Importation Protocol (FIP) was prepared by AECOM in October 2019². The FIP stipulates the soil and aggregates that will be imported to the OWE for construction of the building pads, retaining walls, stormwater and sewer pipe trench backfill etc and the associated (contamination-related) testing requirements. At the completion of bulk earthworks at Lot 3B and assuming that the requirements of the October 2019 FIP and UFP have been met, it is expected that a Site Audit Statement and Site Audit Report will be issued, confirming that Lot 3B is suitable for commercial/industrial land use.

This UFP applies to Lot 3B after the completion of bulk earthworks. At the completion of bulk earthworks, the surface of Lot 3B is expected to comprise engineered shale, siltstone and clay.

Given the cut to fill of the bulk earthworks and requirement to adhere to the October 2019 UFP and FIP, at the completion of bulk earthworks, the potential for the presence of unexpected contamination at Lot 3B is considered to be low to negligible.

This UFP relates to soil contamination and applies to the construction of above-ground assets and it is understood that the development of above ground assets at Lot 3B will be undertaken under conditions of consent for SSD 7348 and PCC DA Consent when issued.

1.1 Objectives

The objectives of this UFP are to:

- Provide a summary of the expected ground conditions.
- Provide a summary of unexpected finds that may be present, based on historical data.
- Provide management and assessment recommendations for any identified unexpected finds encountered during construction of above ground assets at Lot 3B.

1.2 Guidelines

AECOM completed this UFP with reference to the following guidelines:

- National Environment Protection Measure (NEPM), Assessment of Site Contamination (ASC) (National Environment Protection Council [NEPC], 1999 as amended (2013) (the ASC NEPM).
- NSW EPA (2017). Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd Edition).
- NSW EPA. 2020. Consultants Reporting on Contaminated Land, Contaminated Land Guidelines.
- SafeWork NSW (2016a). How to manage and control asbestos in the workplace Code of Practice.
- SafeWork NSW (2016b). How to safely remove asbestos Code of Practice.

¹ Unexpected Finds Protocol, Oakdale West Estate. 31 October 2019 (60599325-OWE-UFP-20191031_3).

² Fill Importation Protocol, Oakdale West Estate. 31 October 2019 (60599325-OWE-FIP(CEMP)-20191031_2).

- WorkCover (2014). Managing asbestos in or on soil. March.

1.3 SSD 7348 and Conditions of Consent

The SSD 7348 Mod 6 Conditions of Development Consent have been issued. MOD 7 and PCC DA is to be issued and will also be covered by this UFP.

2.0 Background Information

This section provides a summary of the expected conditions at Lot 3B, based on previously prepared reports. Lot 3B and previous sampling locations are shown on **Figures 1 to 5** in **Appendix A**.

2.1 Features

Prior to commencement of bulk earthworks, the Site comprised undulating grasslands, spotted with trees. Site features included:

- Unpaved internal access roads.

At the completion of bulk earthworks, Lot 3B will comprise a 'pad' of engineered shale, siltstone and clay sourced from OWE.

2.2 Current Land Use

Lot 3B is not currently used for any purpose. Bulk earthworks have commenced.

2.3 Surrounding Land Use

Land use surrounding Lot 3B includes:

- North: Lot 3A.
- East: Lot 2B
- South: Lot 3C
- West: Residential and commercial properties including Emmaus Catholic College

2.4 Phase I ESA (2007)

The Phase I ESA included the (then) proposed Oakdale development, representing approximately 420 hectares. Lot 3B is situated within the Phase I ESA study area. Background data relevant to Lot 3B are summarised below:

- Lot 3B comprised rural (pastoral lands) since the early to mid 1800s. This was based on historical certificates of title, aerial photographs, internet searches and anecdotal data collected in 2007.
- Soils were expected to comprise clay of the Blacktown and/or Luddenham Soil Landscape Groups, overlying Shale bedrock.
- An old farmhouse was present on the site and noted to be in a dilapidated condition.
- Regional groundwater was likely to occur within sedimentary rock at depths greater than 20 metres below ground surface (m bgs), although seasonal shallow perched groundwater may exist at the soil-bedrock interface and shallow groundwater would likely be present in fluvial soils along drainage lines.
- There were no licensed dangerous goods stores at Lot 3B.
- No burial pits for animal carcasses or cattle dips were known to be present.
- The Department of Defence advised there were no records for OWE being used for military purposes of a nature that may have resulted in ordnance related contamination.
- There was no record of OWE (or nearby properties) being listed by the NSW EPA as a contaminated site under the provisions of the Contaminated Land Management Act 1997.

2.5 Targeted Phase II Assessment (2012)

The Phase I ESA identified a low potential for the presence of soil contamination across the majority of OWE, however one Area of Potential Environmental concern (AEC) was identified on the Site. The AEC associated with Lot 3B was investigated in the targeted Phase II Assessment, as summarised in **Table 2**:

Table 1 AEC and Targeted Assessment

AEC	Investigation	Results
Old Farmhouse	3 test pits (TP38 - TP40) and 3 surface samples (SS01 – SS03)	Concentrations of Contaminants of Potential Concern (CoPC) less than criteria or laboratory limit of reporting (LOR) with exception of metals (lead and arsenic) exceeding Site Acceptance Criteria (SAC) (SS01) and 2 detections of asbestos in SS02 and SS03

Other information from the targeted Phase II included:

- Test pits were excavated to at least 0.5 m into natural soils. These were logged to comprise dark brown sandy clayey silt topsoil overlying orange to grey clays. Sandstone and shale bedrock was encountered.
- Where fill materials were logged, it appeared to comprise re-worked natural soils.
- Groundwater was not observed in the test pits completed.
- No unusual odours or colouration in soil were observed at the test pits completed.
- Soil samples were collected from each test pit and samples submitted for laboratory analysis to evaluate concentrations of the inferred CoPC, which included:
 - Suite of eight metals, including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc (M8).
 - Benzene, toluene, ethylbenzene, xylenes (BTEX).
 - Total Recoverable Hydrocarbons (TRH).
 - Polycyclic aromatic hydrocarbons (PAH).
 - Organochlorine and organophosphorus pesticides (OCP, OPP).
 - Polychlorinated biphenyls (PCB).
 - Asbestos.
- Concentrations of the CoPC investigated at all test pits were below the ASC NEPM 2013 Health Investigation Level (HIL) and Health Screening Level (HSL) for commercial/industrial land use (i.e. HSL D and HIL D).
- Fragments of asbestos containing material (ACM) were identified near an Old Farmhouse and in a Rubbish Disposal Area.

Phase II sampling locations are shown on **Figure 2** in **Appendix A**.

Recommendations following the assessment for the old farmhouse included additional investigation to assess the extent of ACM impacts in soil.

Groundwater was not investigated. Based on the Phase II data, the potential for groundwater contamination to be present was considered to be low.

2.6 ACM Remediation

AECOM was retained by The Austral Brick Company Pty Ltd to provide remediation validation services for the Old Farmhouse and the Rubbish Disposal Area (not in Lot 3B). Sampling locations are shown in **Figure 3 in Appendix A**. In summary:

- To remove the ACM fragments, the Old Farmhouse and Rubbish Disposal Area excavation footprints were approximately 650 m² and 2800 m², respectively. Soil at the base of the excavations comprised natural, orange-brown clays.
- Concentrations of TRH, BTEX, PAH, M8, OCP, OPP, PCB and asbestos were below the ASC NEPM 2013 HIL D and HSL D in the samples analysed.
- No obviously visible fragments of ACM were observed by AECOM at the final excavation surfaces.

2.7 Surface Water and Sediment Sampling

AECOM was engaged by Goodman to undertake surface water and sediment sampling at OWE, to assess:

- The suitability of dam sediments for use in bulk earthworks (i.e. re-use at OWE).
- The suitability of dam water for use in bulk earthworks.
- The suitability of dam water for discharge to Ropes Creek.

Nine sediment samples were collected from the Dams, seven surface water samples were collected from the Dams and three surface water samples were collected from Ropes Creek. Samples were analysed by laboratories utilising NATA certified methods, to evaluate concentrations of CoPC. Laboratory results were compared to assessment criteria endorsed by the NSW EPA.

Concentrations of the CoPC investigated were below the adopted assessment criteria in the sediment samples analysed. The assessment criteria were for residential with garden accessible soil land use. These results were below the commercial/industrial land use criteria.

Concentrations of the CoPC investigated were below the adopted assessment criteria in the surface water samples analysed.

Based on the available data, AECOM considered that:

- Sediment in the Dams would be suitable for re-use at the OWE.
- Water in the Dams would be suitable for use in the bulk earthworks.

No dams were present within Lot 3B, however there was one dam located in the vicinity in Lot 3A (refer **Figure 4 in Appendix A**).

2.8 Status Up-date Report

The principal objective of the report was to document if any significant change in the contamination status of the OWE had occurred since the 2017 remediation sampling and assess whether additional soil contamination investigation would be required.

AECOM reviewed geotechnical assessment reports, heritage assessment reports and a hazardous building materials survey report of the residential house (in lot 2B) and completed site inspections. A Phase I ESA of the Western North-South Link Road (WNSLR) was also reviewed (AECOM, 2016).

AECOM considered that no significant change in the contamination status of the Site had occurred since completion of the remediation validation sampling.

2.9 Unexpected Finds

During the preliminary stage of bulk earthworks, unexpected finds were identified at 13 areas at OWE. Goodman engaged Burton Contractors Pty Ltd (BC) to complete bulk earthworks and BC engaged ADE

Consulting Group Pty Ltd (ADE) to investigate the unexpected finds. All unexpected finds were related to the presence or potential presence of asbestos containing material (ACM).

BC and ADE completed unexpected finds related works with reference to the AECOM *Unexpected Finds Protocol, Oakdale West Estate* (UFP) 31 October 2019. ADE classified each unexpected find as a “UFP”. Some of the UFPs comprised multiple areas and consequently, 13 areas (Area 1 to Area 13) were investigated.

In relation to Lot 3B three unexpected finds were documented:

- Area 4: UFP2 Farmhouse area
- Area 8: UFP3 Adjacent old farmhouse area
- Area 9: UFP5 Old pump slab area

Based on the unexpected finds AECOM considers that:

- Where ACM was identified, it was adequately assessed and removed from the Site.
- Exclusion zones were implemented in areas where ACM was identified. The exclusion zones remained in place until validation of remediation was achieved.
- Materials tracking records and asbestos management procedures were appropriate.
- Concentrations of the CoPC investigated were below the ASC NEPM 2013 HIL D and HSL D in soil in the house footprint, tank and pipe trench excavations.
- The potential for incorporation of contaminated soil into the cut to fill earthworks was negligible.

The locations of the unexpected finds are shown on **Figure 5** in **Appendix A**.

2.10 Summary

Based on the reviewed background data:

- The potential for ‘legacy’ contamination to be present at Lot 3B at the completion of bulk earthworks is low.
- The potential for current activities to contaminate soil and/or groundwater are considered to be low.

In the event that contamination is identified during earthworks at Lot 3B, assessment and remediation mechanisms would be implemented as per the October 2019 UFP.

3.0 Unexpected Finds

3.1 Roles and Responsibilities

Roles and responsibilities for the Lot 3B above ground asset construction works are expected to include:

Table 2 Roles & Responsibilities

Company	Role/Responsibility
Goodman	Owner/Development Manager
TBA	Project Manager/Superintendent
TBA	Construction Contractor
TBA	Environmental Consultant (contamination)

In the event that unexpected finds are encountered:

- The Construction Contractor (CC) will immediately inform the Superintendent.
- The Superintendent will inform Goodman and the Environmental Consultant.
- The Environmental Consultant will inspect the unexpected find (if required).

In the event that any identified unexpected find requires remediation, the following is noted:

- A Remedial Action Plan (RAP) should be prepared by the Environmental Consultant prior to undertaking the remediation works. The RAP will be prepared with reference to applicable NSW EPA approved guideline documents. The RAP will include disposal locations and results of testing of materials identified as contaminated and is to be submitted to the DPIE Planning Secretary, prior to removal from Lot 3B.
- Following any remediation work, a validation report will be prepared, confirming that all requirements of the RAP have been met, including documentary evidence confirming off-Site disposal of contaminated soils (refer **Section 5.0** of this document).
- The validation report will be made available to the DPIE Planning Secretary upon request.

3.2 Asbestos Containing Materials

In the unlikely event that fragments of ACM are identified during above ground asset construction, works will cease in that area and the Environmental Consultant, Goodman and/or the Site Superintendent will be contacted immediately. An exclusion zone will be established around the ACM and an appropriate occupational health and safety (OHS) protocol for entry into the exclusion zone will be implemented.

The CC should collect fragments and store in an appropriate location (e.g. plastic lined skip bin). The ACM will be disposed to an appropriately licensed landfill facility. This disposal process will be tracked via the Materials Tracking Plan (refer to **Section 4.0**) and the landfill documentation included in the Validation Report. All work must be conducted in accordance with SafeWork NSW (formerly WorkCover) policy and licensing requirements.

If large quantities of ACM are identified, excavation and stockpiling is recommended. Excavation should continue until there is no visible ACM. Stockpiles should be placed on impervious material (e.g. hardstand, HDPE sheeting etc), kept moist and covered until disposed off-Site.

Validation sampling of the stockpiles to assess suitability for potential re-use is not recommended. In the event that stockpiles are not placed on impervious material, asbestos validation sampling of the stockpile footprint will be required.

Areas that are excavated will require validation sampling, to confirm removal of the ACM. Validation sampling should be done with reference to the Western Australian Department of Health (DoH)

Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia (May 2009) and ASC NEPM 2013.

With reference to WorkCover NSW (2014) *Managing Asbestos in or on Soil* and Safework NSW (2016b) *How to Safely Remove Asbestos*, implementation of the following management measures are recommended if asbestos is identified:

- Less than 10 m² of bonded asbestos (e.g. fragments of fibro in good condition):
 - Handpick the fragments and double wrap in plastic sheeting. Inspection/handpicking should be completed on a grid basis for a systematic approach
 - Appropriate personnel protective equipment should be worn
 - Appropriately trained personnel should be utilised
 - The area should be inspected by an appropriately qualified hygienist to confirm removal of the asbestos fragments
 - A Licensed asbestos removal contractor (Class A or B) should not be required
 - Air monitoring for asbestos fibres should not be required.
- More than 10 m² of bonded asbestos:
 - A Class B licensed asbestos removal contractor will be required to collect and dispose of the materials
 - Handpick the fragments and double wrap in plastic sheeting. Inspection/handpicking should be completed on a grid basis for a systematic approach
 - Appropriate personnel protective equipment should be worn
 - Appropriately trained personnel should be utilised
 - Air monitoring for asbestos fibres may not be required but should be considered if there are reasonable grounds to expect that exposure standards have been or could be exceeded
 - The area should be inspected by an appropriately qualified hygienist to confirm removal of the asbestos fragments.
- Friable asbestos is identified:
 - Isolate and secure the area by installing warning signs and barriers
 - Keep the soil damp but not flooded and if safe, cover the area with plastic sheeting
 - Class A licensed asbestos removal contractors will be required
 - Air monitoring will be required
 - The area should be inspected by an appropriately qualified hygienist to confirm removal of the asbestos
 - Friable asbestos must be stored in sealed containers
 - Asbestos waste must be transported in a covered, leak proof vehicle.

3.3 Burial Pits

In the unlikely event that burial pits relating to the former grazing activities are exposed, works will cease in that area and the Environmental Consultant, Goodman and/or the Site Superintendent will be contacted immediately. An exclusion zone will be established around the burial pit and an appropriate occupational health and safety (OHS) protocol for entry into the exclusion zone will be implemented. All carcass' and impacted soils will be removed appropriately and disposed off-Site at a registered facility. Soils remaining in the burial pit will be validated for total phosphorus (TP), filterable reactive phosphorus (FRP), total nitrogen (TN), nitrate (NO₃), nitrite (NO₂), total Kjeldahl nitrogen (TKN) and ammonia (NH₄⁺). Investigation for other CoPC may be required (e.g. hydrocarbons, asbestos, M8 etc), depending on the buried materials encountered.

3.4 Other Unexpected Finds

If materials are encountered during the above ground asset construction which are significantly different to those described herein, works will cease in that area and the Environmental Consultant, Goodman and the Site Superintendent will be contacted immediately. An exclusion zone will be established around the unexpected find area and an appropriate OHS protocol for entry into the exclusion zone will be implemented. The Environmental Consultant will inspect the unexpected find and assess if it is the source or has the potential to contaminate the surrounding area. In the case that there is potential for contamination or it has occurred, all materials and impacted soil will be removed appropriately and disposed off-Site at a registered facility. Remaining soils will be validated for CoPC and any additional analytes specific to the unexpected find.

4.0 Materials Tracking Plan

A Materials Tracking Plan (MTP) will be developed and implemented by the CC. All materials handled during the above ground asset construction will be tracked in order to allow verification of the correct movement and handling. The system will track materials from ‘cradle-to-grave’ and will provide information on the location and quantity of all material movements both on and off-Site, so that the material being handled can be identified and accounted for.

The MTP will include confirmation of stockpile locations and contamination status by regular communication between the Environmental Consultant, the CC and the Site Superintendent. Where necessary, stockpiles and/or pit locations will be recorded by surveying, to reduce the risk of cross-contamination between stockpiles.

As part of the MTP, records shall be kept to document that backfilling of excavations and beneficial reuse of material only occurs following the successful validation of the subject materials.

The CC must implement a MTP, to appropriately control and manage the excavation of material at Lot 3B. The purpose of the MTP is to confirm that material movements are controlled at all times and placed in their correct locations.

The MTP should be based on the proformas provided in **Appendix B**, as summarised below:

- **Material Excavation Form:** a record of excavated materials on Lot 3B which includes the date, material type/description, excavated quantity, origin and intended destination.
- **Stockpile Register:** a record of all materials placed in stockpiles which includes the date, material type/description, stockpiled quantity, origin and intended end use (which will be “for characterisation”, “for backfilling” or “for off-Site disposal”). Material excavated and stockpiled will be identified with a marker flag or stake clearly labelled with the stockpile source information and a stockpile ID.
- **Material Placement Form:** a record of all materials placed at Lot 3B during above ground asset construction, which includes the date, material type, quantity backfilled and origin.

Any soil and other waste materials that require off-Site disposal, must be classified in accordance with the NSW EPA (2014) *Waste Classification Guidelines*.

5.0 Validation Reporting

At the completion of the above ground asset construction, the Environmental Consultant will prepare a Validation Report (or reports) in accordance with the requirements of the NSW EPA (2020) *Consultants Reporting on Contaminated Land, Contaminated Land Guidelines* and NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme* (3rd Edition). The Validation Report(s) will include the following information:

- An overview of the above ground asset construction carried out.
- Survey plans outlining the extent and elevations of the relevant works.
- The location of validation samples (if validation sampling is required).
- Descriptions of sampled materials (including visual and olfactory observations, if required).
- Summary tables for soil analytical results.
- NATA registered laboratory analytical certificates.
- Summary of the tracking and fate of all excavated materials (detailed in a Stockpile Register).
- Demonstration that the MTP has been implemented appropriately including copies of the CC's documentation.
- Landfill weighbridge dockets (if required).
- A summary of data reviewed and collected under the Lot 3B FIP.
- Conclusion as to the suitability of Lot 3B for the proposed land use.

6.0 References

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- SafeWork NSW. 2016b. *Code of Practice: How to Safely Remove Asbestos*.
- WA DOH. 2009. *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. May 2009.
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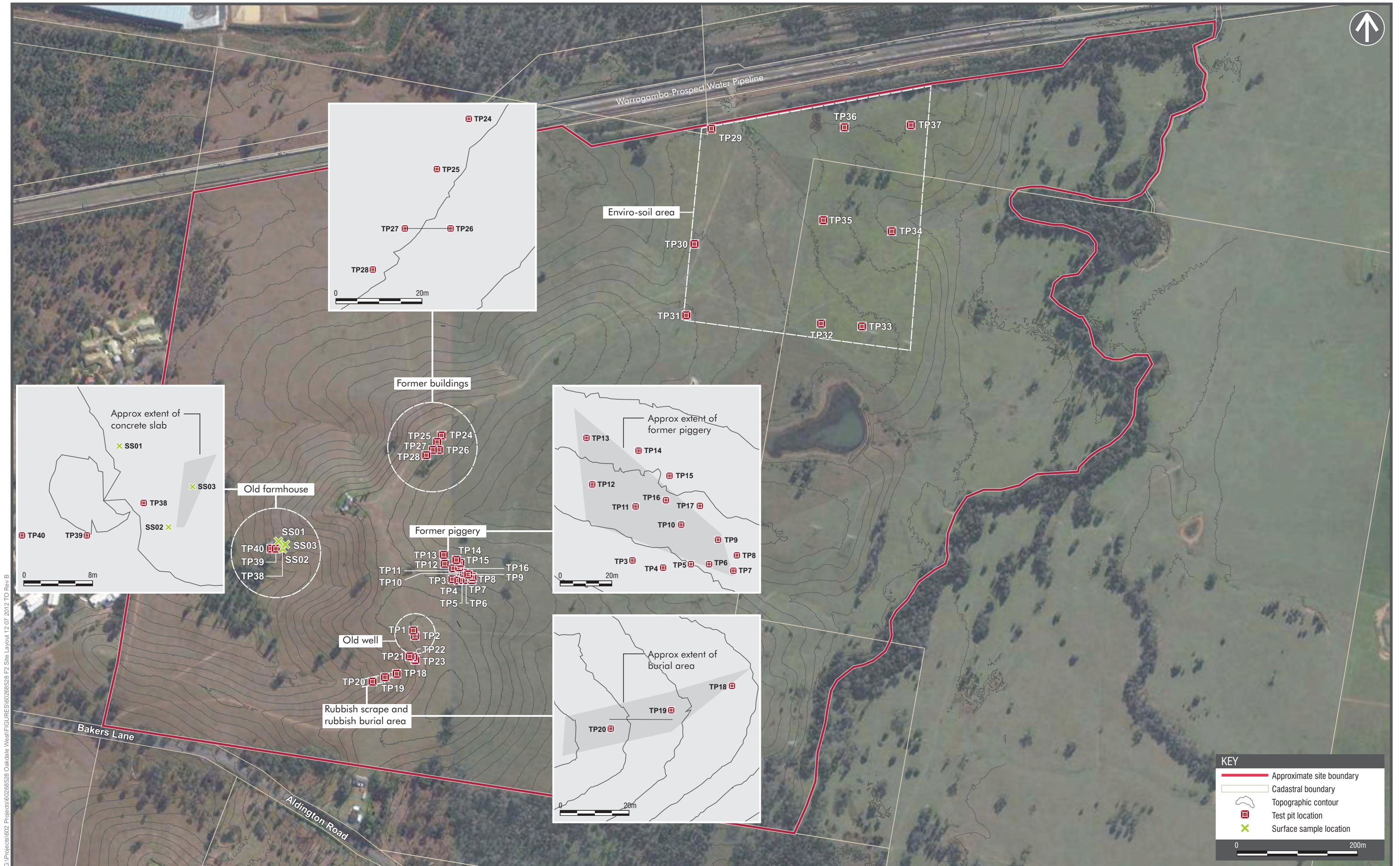
Appendix A

Figures

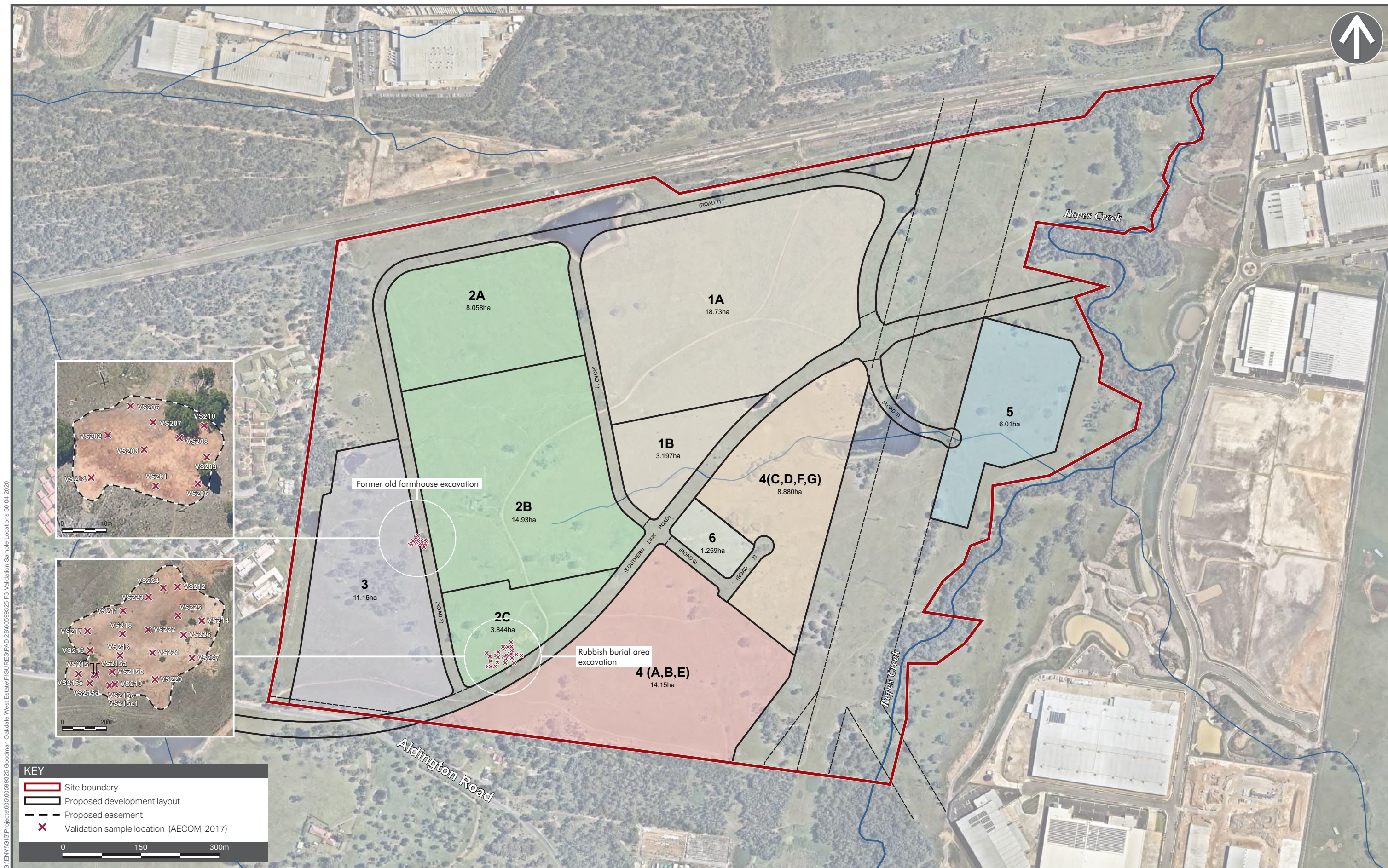
Legend	
	Site Boundary
	Lot Boundary
	3.75m Landscape Setback
	7.50m Building Setback
	7.15 m Landscape Setback along Main Roads
	17.15m Landscape Setback along Main Roads



Site Area Schedule	
Total Site Area	154.12 ha
Less:	
Non Developable Land	21.08 ha
Easements	22.38 ha
Regional Roads	7.51 ha
Services Lot	1.23 ha
Estate Roads	7.71 ha
E2 Zone non developable	1.43 ha
	61.34 ha
Development Areas	
Precinct 1	21.80 ha
Precinct 2	26.69 ha
Precinct 3	11.10 ha
Precinct 4	22.11 ha
Precinct 5	6.01 ha
Proposed Future Development	4.82 ha
Amenities Lot	0.25 ha
Total Developable	92.78 ha
Precinct 1 GLA	88,867 sqm
Precinct 2 GLA	263,090 sqm
Precinct3 GLA	56,759 sqm
Precinct 4 GLA	112,123 sqm
Precinct 5 GLA	35,640 sqm
Amenities Lot GLA	345 sqm
Total GLA	556,824 sqm
Total Warehouse	529,625 sqm
Total Office	22,770 sqm
Others	4,429 sqm
Total GLA	556,824 sqm
Precinct 1 GFA	125,198 sqm
Precinct 2 GFA	269,390 sqm
Precinct 3 GFA	56,759 sqm
Precinct 4 GFA	112,123 sqm
Precinct 5 GFA	35,640 sqm
Amenities Lot GFA	345 sqm
Total GFA	599,455 sqm
Total Warehouse	529,625 sqm
Total Office	22,770 sqm
Others	4,429 sqm
Mezzanines (for Site 1A & 2B)	42,631 sqm
Total GFA	599,455 sqm



G:\Projects\602 Projects\60265528 Oakdale West\FIGURES\60265528 F2 Site Layout 12.07.2012 TO Rev B

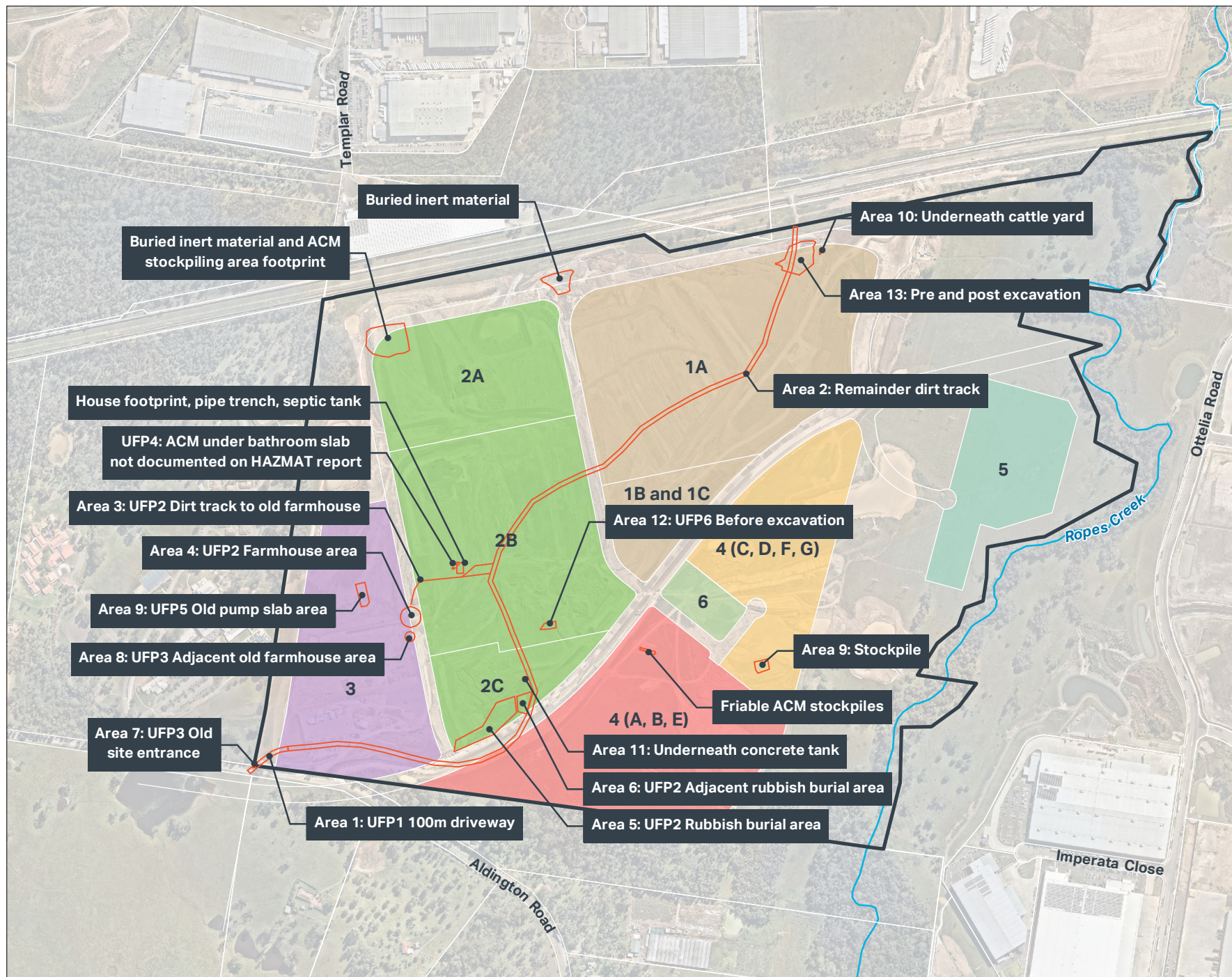


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VALIDATION SAMPLE LOCATIONS
Oakdale West Estate, New South Wales



FIGURE 3:
UNEXPECTED FINDS



Legend

- Oakdale West Estate development
- Watercourse
- Unexpected find

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Appendix B

Materials Tracking Register (proformas)

MATERIALS EXCAVATION FORM

DATE.....

Material Type	Material Description	Source Location	Volume m ³	Intended Destination

Make notes on: Where and when the material is excavated, how long and where it is stockpiled. Take photos and sketch.

Stockpile Materials Tracking System Form

Location of Stockpile (tick one below)

Within bunded work area, designated area (stockpile grid number or excavation number...)	
--	--

The stockpile status/classification: (tick one below)

Import	
Closed – quarantined	
Export	

The material type:

The origin (excavation or another stockpile) of material in the stockpile:

The stockpile volume:

The destination (including intended end use) of material in the stockpile:

For characterization	
Backfill	
Another stockpile (describe)	
Off-site landfill	

Validation samples collected from the stockpile (as appropriate).

MATERIALS PLACEMENT FORM

[illegible]

MATERIALS OFF-SITE TRANSFER FORM

[illegible]

APPENDIX M

Landscape Management Plan

DRAFT



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NATSPEC Subscriber Number: 15125307

Oakdale West Estate, Precinct 3 - Lot 3B Landscape Management Plan

Prepared by: Scape Design Pty Ltd
Prepared for: Goodman Property Services



Revision Schedule

Revision	Date	Issued by
01	27/08/21	CH
02	03/09/21	CH

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2 CONDITIONS

2.1 TABLE OF CONDITIONS

Visual Amenity			
Condition No.		Condition	Action
<i>D35. Prior to the commencement of construction of Stage 1, the Applicant must prepare a Landscape Management Plan (LMP), to the satisfaction of the Planning Secretary. The plan must form part of the CEMP in accordance with Condition D119 and the OEMP in accordance with Condition D130 and must:</i>	(a)	<i>be prepared in consultation with Council</i>	Refer to Section 3.1.4 of this LMP for Council Consultation
	(b)	<i>detail procedures for the retention of existing native vegetation in the north-western corner of the Site and protection of this vegetation from construction impacts</i>	Refer to the <i>Oakdale West Estate – Flora and Fauna Management Plan and Erosion and Erosion and Sediment Control Plan</i> Refer to Section 4.3.1 of this LMP for species specific vegetation management.
	(c)	<i>include visual impact mitigation measures for construction including but not limited to:</i> <i>(i) the location of site sheds, compounds and machinery parking areas, avoiding the western and southern side boundaries, or other locations highly visible from adjacent residential properties.</i> <i>(ii) procedures for progressive grassing of exposed soil, as soon as reasonably practical after disturbance, focusing on the areas where building construction will occur at a later stage</i>	(i) Refer to the Construction Environmental Management Plan and the Oakdale West Estate LMP for location of construction facilities operations. (ii) Refer to the Oakdale West Estate LMP for procedures of progressive grassing techniques.
	(d)	<i>detail the works required to construct the landscape bund along the western boundary of the Site, as shown on Figure 5 in Appendix 2, including provision for the landscaping to incorporate mature tree (no less than 75 litre pot size)</i>	Refer to the Oakdale West Estate LMP for further information.
	(e)	<i>include a schedule of works which prioritises the construction of the landscape bund along the western</i>	Refer to the Oakdale West Estate LMP for further information.

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		<i>boundary of the Site, as shown on Figure 5 in Appendix 2.</i>	
	(f)	<i>include a program for implementing the landscape bund as soon as reasonably practicable and no later than prior to operation of Stage 1.</i>	Refer to the Oakdale West Estate LMP for further information.
	(g)	<i>describe the integration of landscaping with fixed elements, including retaining walls and noise walls</i>	Refer to Section 4.3.1 of this LMP
	(h)	<i>describe the monitoring and maintenance procedures to ensure the success of the landscaping work over the life of the Development.</i>	Refer to Section 5 of this LMP
	(i)	<i>update the LMP to include modifications to the western bund, bio-retention basin 2/3 and the noise wall approved under MOD 3.</i>	Refer to the Oakdale West Estate LMP for further information.
D36. The applicant must:	(a)	<i>not commence construction of Stage 1 until the LMP is approved by the Planning Secretary</i>	N/A
	(b)	<i>must implement the most recent version of the LMP approved by the Planning Secretary</i>	Noted
	(c)	<i>Include the monitoring and maintenance procedures contained in the LMP within the OEMP required in accordance with Condition D130</i>	N/A
Landscaping			
D37. The Applicant must complete the landscape bund along the western boundary of the Site as shown on Figure 5 in Appendix 2 within six months of commencing any construction including bulk earthworks.	-	-	Refer to the Oakdale West Estate LMP for further information.

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<i>D38. The Applicant must maintain all landscaping implemented as part of Stage 1, as shown on Figure 5 in Appendix 2, for the duration of the Development. If the monitoring carried out as part of Condition D35 indicates that any aspect of the landscaping has not been successful, the Applicant must undertake re-planting and rehabilitation works, as soon as reasonably practicable.</i>	-	-	Refer to Section 5 of this LMP for maintenance requirements. Refer to Section 5.3.1 of this LMP for requirements of unsuccessful planting
Management Plan Requirements			
<i>D118. Management plans required under this must be prepared in accordance with relevant guidelines, and include:</i>	(a)	<i>details of:</i> <i>(i) the relevant statutory requirements (including any relevant approval, license or lease conditions)</i> <i>(ii) any relevant limits or performance measures and criteria</i> <i>(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, Stage 1 or any management measures</i>	<i>(i, ii)</i> In relation to landscape softworks, the following Australian Standards are applicable and have guided all landscape works: AS 4419-1998 Soils for landscaping and garden use, AS 4970-2009 Protection of existing trees on development sites (where not covered by council requirements) and AS 2303-2015 Tree stock for landscape use. <i>(iii)</i> Refer to this LMP for more information.
	(b)	<i>a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria</i>	All landscape works have been designed using relevant Australian Standards as a guiding point. Refer to this LMP for more information.
	(c)	<i>a program to monitor and report on the:</i> <i>(i) impacts and environmental performance of Stage 1</i> <i>(ii) effectiveness of the management measures set</i>	<i>(i)</i> Refer to Section 6 of this LMP for maintenance and monitoring schedule <i>(ii)</i> Refer to Section 6 of this LMP for maintenance and monitoring schedule

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		<i>out pursuant to paragraph (b) above</i>	
	(d)	<i>a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible</i>	Refer to Section 6.5 of this LMP for the contingency management plan
	(e)	<i>a program to investigate and implement ways to improve the environmental performance of Stage 1 over time</i>	Refer to Section 5.3 and Section 6 of this LMP for maintenance and monitoring requirements and schedules
	(f)	<i>a protocol for managing and reporting any:</i> <ul style="list-style-type: none"> <i>(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria)</i> <i>(ii) complaint</i> <i>(iii) failure to comply with statutory requirements</i> 	Completed in the Infrastructure CEMP
	(g)	<i>a protocol for periodic review of the plan</i>	Completed in the Infrastructure CEMP

3 INTRODUCTION

3.1 GENERAL

3.1.1 GENERAL CONDITIONS

Contract: Oakdale West Estate (OWE) – *Lot 3B (SSD SSD7348 – MOD7 – Stage 7)*. For further information refer to the Oakdale West Estate LMP

Local Council(s): Penrith City Council

3.1.2 DRAWING REFERENCE

All landscape plans, details and specifications included in the project documents should be read in conjunction with this Landscape Management Plan (LMP), as well as the Oakdale West Estate LMP. All structural and civil works components of the landscape design should be referenced to engineers' details and specifications. Read the LMP in conjunction with these packages. If in doubt about any details or if conflicts are found in the documents, seek advice.

This LMP should be read in conjunction with the Oakdale West Estate LMP as it is intended to support and provide further information and detail regarding the on-lot works for **Lot 3B**.

3.1.3 WORKMANSHIP AND MATERIALS

All landscape works, including detailed design (if relevant), must be carried out by a competent, trained and qualified landscape contractor who is experienced in horticultural practices, landscape construction and planting techniques.

The landscape contractor must hold a current Building Contractors License and/or be a financial member of LNA Landscape Association NSW & ACT or equivalent organisations in other states.

3.1.4 COUNCIL CONSULTATION

Penrith City Council (PCC) were engaged to provide input and comments on the Landscape Drawing set. Any Queries and consultation as a result of this review have been resolved as per the table below:

PCC Query	PCC Advice	Action
Comments Received 28/01/2020		
1. The landscape plans and architectural drawings provide landscape beds within the car parking areas which are not considered to achieve the intention and objectives of the DCP. It is agreed that canopy tree planting is required to ameliorate the massing of built form and hard stand car parking areas, however the landscape beds are too narrow.	<i>It is recommended that landscape beds be consolidated to provide dimensions of no less than 2m wide and the length of a parking space is necessary with greater planting capability at the end of aisles and tree planting in dedicated beds (not diamonds between 4x spaces).</i>	Car parking planting layout has been consolidated to larger beds, capable of supporting grass/groundcover planting and canopy trees. Refer to Appendix 7.1 of this LMP for amended Landscape Plans.

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<i>2. Islands are proposed as resin bonded aggregate. There is opportunity for Water Sensitive Urban Design measures</i>	<i>It is recommended that Water Sensitive Urban Design measures are implemented, with engineered planting pits to ensure optimal healthy root volume and other growing conditions for trees.</i>	Resin bonded aggregate has been removed and replaced with decomposed granite and canopy trees. Refer to Appendix 7.1 of this LMP for amended Landscape Plans.
<i>3. There is inadequate quantity of trees to produce necessary cooling in relation to the expanse of building and pavement footprints. The quantity of perimeter (setback) trees is not adequate as spacings are shown at between 18 and 30m. For street trees, Council typically requires 8-10m spacings, within supplementary planting in landscape setbacks to maximise canopy area.</i>	<i>It is recommended that tree quantities are increased within landscape setbacks, this can be achieved by decreasing spacing between individual trees.</i>	Landscape setback zones have been updated to provide additional tree and planting areas, aiding in the screening of large hardstand and building surfaces. Refer to Appendix 7.1 of this LMP for amended Landscape Plans.
<i>4. Council has consistently raised issue with the streetscape language of street tree plantings (being small groups with ballast mulch at verge large centres planted at 3 trees per 100 linear meters). This does not deliver adequate streetscape outcomes nor best practice for cooling the streets.</i>	<i>It is recommended that street trees are planted at 8-10m centres.</i>	Street tree layouts are located within the Stage 1 infrastructure works. Refer to the CEMP relating to the infrastructure works for further information.
<i>5. There is opportunity for greater variety in tree species adding to climate and biodiversity resilience. Some species suggested are not considered sufficiently resilient to climate change and their longevity and health are potentially compromised.</i>	<i>Small trees are inappropriate for the scale of the built form ie. Crepe Myrtle, Tuckeroo. Tree species diversity is to be increased.</i>	Tree species have been updated to reflect a greater diversity of native canopy trees, providing greater resilience and amenity to the area. Refer to Appendix 7.1 of this LMP for amended Landscape Plans.
<i>6. Council through other project and road approvals has established a Southern Link Road streetscape character (road verge and front setback) of informal yet massed planting with native trees providing full canopy cover.</i>	<i>It is recommended that the Southern Link Road streetscape character is maintained and reflected in the landscape design, creating a consistent landscape design for the precinct.</i>	Refer to the Oakdale West Estate LMP for further information.

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7. Surrounding public road intersections are considered to require additional landscaping.	It is recommended that additional landscaping be added to public road intersections to reinforce spatial definition of the intersection and reduce large scale grey infrastructure.	Landscape in public areas are located in the Stage 1 infrastructure works. Refer to the CEMP of the Oakdale West Infrastructure Project for further information.
8. Ballast as a groundcover is not supported due to its heat attracting properties thus compromising healthy growing conditions for trees.	An alternative product must be provided and established for the precinct.	Ballast has been removed from planting areas and replaced with groundcovers. Refer to Appendix 7.1 of this LMP for amended Landscape Plans.
9. Tensile wire rope for green wall effect	This feature should be designed to be visually effective and attractive without climbers as the climate conditions often results in failure of green walls to achieve their intended forms.	Green walls have been designed as architectural features with climbing plants. Refer to architect's drawings for further information.
10. Irrigation details should be required as security of ongoing maintenance and viability is critical.	Irrigation details required.	Refer to Section 5.2 and Appendix 7.3 of OWE Estate LMP for further information.

3.2 DESCRIPTION

3.2.1 SITE LOCATION

The Oakdale West Estate is located in the Penrith Local Government Area (LGA) at the far south-western extent of the WSEA. The site is bound to the north by the Water NSW Pipeline and to the east by the Ropes Creek riparian corridor. Land along the eastern boundary of the site is also affected by a transmission easement associated with TransGrid infrastructure.

Other boundaries interface with adjoining rural lands used for a mix of rural-residential, agricultural. Emmaus Catholic College and Emmaus Retirement Village is located to the west of the site. To the east of the site is Goodman's Oakdale South estate.

Lot 3B of **Precinct 3** is located centrally along the western edge of the Oakdale West Estate, with the only access points being off Estate Road 3. **Lot 3B** is bordered by Lot 3A to the North, Lot 3C to the South, the vegetated western bund to the West and Lots 2B & 2C to the East.

3.2.2 PURPOSE OF LANDSCAPE MANAGEMENT PLAN

This Landscape Management Plan has been developed as per the Development Consent for the Oakdale West Estate works specifically.

The intended purpose of this LMP is to support the Oakdale West Estate LMP by providing greater detail on site management, visual and landscape treatments, and maintenance works specially for **Lot 3B**. Further information on each of these can be found below within this LMP.

4 SITE MANAGEMENT

4.1 ENVIRONMENTAL ASPECTS

4.1.1 DESCRIPTION

The LMP seeks to manage potential visual impacts as a result of operational activities that may affect local and regional visual receptors. These impacts need to be managed to minimise impacts to sensitive visual receptors, and satisfy the conditions of the DA. It also outlines that ecological impacts are to be mitigated through adherence to the provisions set out Flora & Fauna Management Plan.

4.2 OBJECTIVES & PERFORMANCE CRITERIA

4.2.1 OBJECTIVES

The objectives of this LMP include:

- *ensuring that the conditions of the DA and Goodman Landscape standards are met*
- *managing the visual impacts of the project to comply with the landscape performance criteria*
- *ensuring the visual and landscape treatments are consistent with the ecological revegetation works described in the Oakdale West Estate – Flora & Fauna Management Plan*

4.3 MANAGEMENT ACTIONS

4.3.1 PERMANENT LANDSCAPE MANAGEMENT

Landscape Bund

The major screening element is the environmental bund along the western boundary of the site, which has already been constructed and is well vegetated. Further information is located in the Oakdale West Estate LMP.

On-Lot Landscape Treatment

The major on-lot screening technique used to provide a visual barrier to the large expanses of built form, parking and utility spaces is mass planting, including native canopy trees.

Plant typologies implemented are to be low maintenance and drought resistant, ensuring all new landscaped areas are adaptable to the Western Sydney Climate. Tree planting typologies have referenced the Penrith City Council (PCC) *Native Tree Guide*, ensuring that a proportion of locally endemic tree species are reinstated to the former agricultural site, to also increase the percentage of canopy cover. Landscape setbacks have been designed to foster a clustered and dense approach to tree planting, including native species, underplanted with a range of shrubs and groundcovers.

Car parking areas are to incorporate Water Sensitive Urban Design (WSUD) where possible. Tree pits are to utilise structural soil in order increase soil availability and therefore provide the best possible conditions for tree growth and maturity. ***Refer to L.SK.200 in Appendix 7.1*** for further information.

Integration of landscaping with fixed elements

The Integration of fixed elements and the landscape within Oakdale West Estate **Precinct 4** include elements such as:

Entry Signage

Entry signage is typically to be installed within either gravel surfaces, low planting or TF1 – Turf Rolls. Monitor Maintenance requirements of lawn care with interface elements (Section 5 of this LMP).

Fencing & Gates

All fencing and gates are to be located as per the CIVIL ENG. and ARCHITECT Drawings. Monitor Maintenance requirements with planting and lawn care at fence and gate interfaces where required (Section 5 of this LMP).

Planted Verges (Excluding Turfing)

Where road and car park medians and verges are to be planted, a 250mm wide area of mulch only is to be used next to kerbing to maintain clear sightlines to edges. **Refer to the Oakdale West Estate LMP** for further details.

Retaining Walls

Retaining walls and balustrading are to be finished as per CIVIL ENG. Drawings.

Street Trees and Verge Planting

Street trees and verge planting are to be finished per CIVIL ENG. Drawings and Landscape Infrastructure Stage 1 Drawings. **Refer to the Oakdale West Estate LMP** for further details.

5 VISUAL AND LANDSCAPE TREATMENTS

5.1 GENERAL

5.1.1 QUALITY

This section of the Landscape Management Plan describes the procedures to ensure the success of the landscaping work over the life of the development.

All landscaped areas must be maintained to the approval of the appointed principal's representative and principal's consulting landscape architect.

5.1.2 APPROACH

A proactive approach to all landscape tasks must be adopted to ensure that the appearance of the landscape as a whole is highly presentable at all times, in accordance with Goodman's *Landscape Guidelines*.

5.1.3 REQUIREMENTS

Contractors must submit an annual routine landscape maintenance program to Goodman's Project Superintendent, Landscape Manager and/or the consulting Landscape Architect within two weeks of the contract commencement date.

It is the contractor's responsibility to ensure the success of the landscaping work over the establishment period of the development.

5.2 MAINTENANCE PROGRAMS

5.2.1 GENERAL CONDITIONS

The Contractor shall rectify all defects during installation that become apparent in the works during the defect's liability period (DLP) (**3 months**).

Post the initial 3 month DLP period, the Client (Goodman Property Services Australia Pty Ltd) shall maintain the contract areas by the implementation of industry accepted horticultural practices between the date of practical completion and the date of final completion (**15 months**).

The landscape maintenance works shall include, but not be limited to the following:

- *Replacing failed plants*
- *Pruning*
- *Herbicides/Insect and pest control*
- *Fertilizing*
- *Maintaining mulch*
- *Mowing*
- *Watering/Irrigation*
- *Weeding*
- *Rubbish removal; and Cleaning of the surrounding areas.*
- *Timber stakes and hessian ties*

- Reinforced turf cell system (if required).

Ongoing maintenance: Ongoing maintenance facilitated by the Owner's corporation. Goodman is to contract the management of all landscape areas. The standard specification and reporting requirements of this contract are located in Goodman's Landscape Guidelines. *Refer to Appendix 7.3* for further detail.

Safety: Safety procedures/ plans are to be documented for review by Principal prior to commencement of work.

Failure to maintain the landscape planting in a healthy condition may result in the Principal arranging for the maintenance work to be carried out by others at your expense.

5.2.2 AREAS DEFINED IN LANDSCAPE MAINTENANCE PLAN

All landscape areas are to be maintained throughout the maintenance program, including planting and turf areas, footpaths, gabion walls and landscape features.

5.2.3 PROTECTION OF PERSONS AND PROPERTY

Temporary works: Provide and maintain required barricades, guards, fencing, shoring, temporary roadways, footpaths, signs, lighting, watching and traffic flagging.

Accessways, services: Do not obstruct or damage roadways and footpaths, drains and watercourses and other existing services in use on or adjacent to the site. Determine the location of such services.

Property: Do not interfere with or damage property which is to remain on or adjacent to the site, including adjoining property encroaching onto the site, and trees.

5.2.4 RECTIFICATION

Accessways, services: Rectify immediately any obstruction or damage to roadways and footpaths, drains and watercourses, reinforced turf cell system and other existing services in use on or adjacent to the site. Provide temporary services whilst repairs are carried out.

Property: Rectify immediately any interference or damage to property which is to remain on or adjacent to the site, including adjoining property encroaching onto the site, and trees.

5.2.5 EXISTING SERVICES

General: Attend to existing services as follows:

- If the service is to be continued, repair, divert or relocate. Submit proposals.
- If the service crosses the line of a required trench, or will lose support when the trench is excavated, provide permanent support for the existing service. Submit proposals.
- If the service is to be abandoned, remove redundant parts, and make safe.

Proposals: Submit proposals for action to be taken with respect to existing services before starting this work. Minimise the number and duration of interruptions.

5.2.6 ACCESS FOR MAINTENANCE

Requirement: Provide access for maintenance of plants and equipment.

Standards: Conform to the relevant requirements of AS 1470, AS 1657, AS/NZS 1892.1, AS 2865 and AS/NZS 3666.1.

Work Health and Safety: Conform to the requirements of the applicable Work Health and Safety regulations for all temporary and permanent works.

Protection from injury: Protect personnel from injury caused by contact with objects including those that are sharp or protrude at low level.

5.2.7 LOGBOOK

Ensure a Maintenance Logbook is recorded to demonstrate that maintenance work has been undertaken and what materials, including chemical materials, have been used throughout the maintenance and establishment period.

The logbook must include the date of visit, maintenance works completed, maintenance works in progress and maintenance works required. The logbook must give details of damaged, dead or missing plants and show their locations on the relevant sheets of the Drawings.

Use the logbook to identify chemicals used as well as the reason for their use. Submit the initial logbook for inspection prior to Practical Completion and again at the end of the Defects Liability Period as a prerequisite for granting Practical and Final Completion Certificates.

Record all major events and activities in the logbook. Ensure the logbook is available for inspection on request.

5.3 MAINTENANCE WORKS

5.3.1 PLANT CARE

Planting: Ensure the general appearance and presentation of the landscape and the quality of plant material at date of practical completion is maintained for the full planting establishment period. Trees, shrubs and groundcovers shall at all times display healthy growth. Spent flower heads or stalks shall be removed immediately following flowering.

All shrubs, hedges, ground covers and trees must be trimmed into shape as required to an acceptable presentation standard.

Excessive foliage impacting onto roads, paths, fencing and lighting must be pruned during all site visits. Leaf litter and or all cuttings should be removed from all gardens and site each visit and disposed of at contractor's cost. Any dead or dying plants/shrubs should be removed and replaced with same or comparable species. The Landscape Manager must be consulted when large trees need to be removed and or replaced. The contractor will maintain each plant in a healthy condition to increase the visual appeal of the gardens.

Replacements: Replace failed, dead and/or damaged plants at maximum 3-week intervals as necessary throughout the full plant establishment period. Replacement plants shall be in a similar size and quality and identical species or variety to the plant that has failed. Replacement of plants shall be at the cost of the Contractor unless advised otherwise. If the cause of the failure is due to a controllable situation then correct the situation prior to replacing plants.

Keep all planting areas as specified and free of grass and weed.

Carry out grass and weed removal at intervals of not more than four (4) weeks and ensure that weeds do not flower to form seed heads.

For those species listed by the relevant local government authority as noxious under the [Biosecurity Act 2015](#) take action as required by that local Government Authority (Penrith City Council). [Refer to the Flora and Fauna Management Plan \(FFMP\) for further information regarding Weed Management and Mitigation Measures.](#)

5.3.2 PRUNING

General: Prune to the Pruning schedule and AS 4373.

Any pruning requested by the Landscape Architect shall be performed, including any pruning of damaged growth or miscellaneous pruning considered as beneficial to the condition of the plants. All pruning works shall be undertaken in a manner equal to acceptable horticultural practice.

Pruning to ensure pathways, roads, lighting and services such as fire hydrants, overhead services and signs are kept clear from encroaching growth of plant material at all times.

- *Remove all damaged, dead or diseased wood by pruning to the nearest lateral shoot or active bud with a neat clean cut*
- *No more than 40mm - 50mm of new growth present on hedges at any time*
- *Remove all spent or dead flower heads from plants following flowering*
- *Prune young shrubs for shape by pinching out the growing tips to encourage lateral bushy growth*
- *Hedging shall be carried out to appropriate plants within garden beds. This should be carried out on a regular basis so as to avoid cutting back into 'old wood' in order to achieve the desired form.*
- *All existing hedges on site to be maintained*
- *Removal of suckers from base of trunks*
- *Formative pruning of trees to allow effective canopy development and retain natural or desired shape of the tree*
- *Pruning cuts shall be made and close to the bud at a 45° angle to ensure that any water is shed away from the bud*

5.3.3 SPRAYING

Responsibility for insect and disease control: Contractor

Period of treatment: Until the problem has been eliminated.

Chemical spray: Apply outside of normal working hours.

Avoid spraying:

- *whenever possible*
- *in the case of wet weather*
- *if wet weather is imminent*
- *if target plants are still wet after rain*
- *during windy weather*
- *if adjacent desirable species are too close to the target plants to be avoided.*

Do not spray where herbicide could fall into a watercourse or when wind conditions could cause drift outside the area to be treated or onto desirable plants.

After spraying, lop any dead weeds flush with the ground surface and dispose of the cuttings. Remove by hand any weeds that cannot be controlled by herbicide. Ensure that the entire weed including all roots is removed. Dispose of the weeds off site.

Immediately report to the Project superintendent/landscape manager any evidence of intensive weed infestation, noxious weeds, insect attack or disease amongst plant material. Submit all proposals to apply chemicals and obtain approval before starting this work.

When approved, spray with herbicide, insecticide, fungicide as appropriate in accordance with the manufacturers' recommendations. Record in the logbook all relevant details of spraying activities including:

- *Product brand / manufacturer's name*
- *Chemical / product name*
- *Chemical contents*
- *Application quantity and rate*
- *Date of application and location*
- *Results of application*

5.3.4 FERTILISING

Soil tests: Take samples from planting beds areas and conduct tests.

Fertilising: Base the fertilisation program on the soil testing results. Fertilise trees once every two years. Generally, apply an all-purpose fertiliser of N:P: K (nitrogen: phosphorus: potassium) 10:4:6 at recommended rates. Alternatively apply 12-month slow release fertiliser (such as Nutricote) at the manufacturer's recommended rate. Apply all-purpose fertiliser to shrubs annually in two bands and cultivated into the soil 100 mm deep.

Record in the logbook all relevant details of fertilizing including:

- *Product brand / manufacturer's name*
- *Fertilizer / product name*
- *Application quantity and rate*
- *Date of Application and Location*

5.3.5 STAKES, TIES, TREEGUARDS AND ROOT BARRIERS

Stakes

Generally: If plants are unable to be self-supported or if stakes are damaged, stake or restake the plants

Material: Hardwood, straight, free from knots or twists, pointed at one end.

Installation: Drive stakes into the ground at least one third of their length, avoiding damage to the root system.

Stake sizes and quantities:

- *For plants ≥ 2.5 m high: Three 50 x 50 x 2400 mm stakes per plant.*
- *For plants 1 to 2.5 m high: Two 50 x 50 x 1800 mm stakes per plant.*
- *For plants < 1 m high: One 38 x 38 x 1200 mm stake per plant.*

Ties

General: Provide ties fixed securely to the stakes, one tie at half the height of the main stem, others as necessary to stabilise the plant. Attach ties loosely so as not to restrict plant growth.

Tie types:

- For plants ≥ 2.5 m high: Two strands of 2.5 mm galvanized wire neatly twisted together, passed through reinforced rubber or plastic hose, and installed around stake and stem in a figure eight pattern.
- For plants < 2.5 m high: 50 mm hessian webbing stapled to the stake.

Marker stakes

Material: Timber offcuts 25 x 25 x 1200 mm. Dip the top 200 mm in white paint.

Installation: Drive firmly into the ground at least 300 mm from the plant. Do not tie to the plant.

Location of marker stakes:

- Trees in grass: Mark each tree.
- Rip line planting areas: Mark each rip line at every fifth plant along the line.

Trunk protection/Tree guards

Collar guards: For trees planted in turf, including those with mulched surrounds, provide 200 mm length of 100 mm diameter agricultural pipe split lengthways.

Removal: If plants are robust with well-developed systems and are strong enough to no longer require support, remove stakes and ties at the end of the planting establishment period (Defects Liability Period).

- Adjust and replace as required to ensure plants remain correctly staked.
- Repair any tree ties that have been broken and replace any missing stakes.
- Maintain the tree guards around each plant so that the natural plant growth is not impeded or restricted. Replace damaged and missing tree guards as soon as practicable after being identified.
- Remove tree guards progressively as plants mature and where it is deemed that the tree guard provides no further benefit to the establishment of the plant.

Root Barriers

Type/ location: Street Trees. *Refer to the Oakdale West Estate LMP* for further details. City Green 'ReRoot' 600mm Depth

Supplier: City Green. Ph: +61 1300 066 949

<https://citygreen.com/products/reroot/>

5.3.6 MULCHED SURFACES

The contractor is required to maintain all areas of mulch cover within garden beds. Displaced mulch should be returned to the garden beds wherever possible. All areas of mulch cover must be packed to a depth of 75mm. If replacement of mulch is required, the contractor must notify the Landscape Manager and provide quotation for approval. Specific mulch must be approved prior to installation.

5.3.7 HYDROMULCHING

General: Maintain temporary and permanent grassing areas.

Weeding: Remove weeds that emerge in newly established hydroseeded/hydromulched areas.

Reseeding: Repair topsoil, supplementing if necessary, to achieve design surface levels. Reseed over the course of the contract to maintain required densities and repair bare patches.

Watering: Until germination, keep the surface damp and the topsoil moist but not waterlogged.

After germination: Water to maintain a healthy condition, progressively hardened off to the ambient climatic conditions

5.3.8 MOWING AND TOPDRESSING

Mow and edge all turf areas and remove all grass clippings. Do not mow if there is litter, roadside rubbish and debris left on the turf as the litter may be transformed into confetti-like pieces after mowing.

Unless directed otherwise, the cut grass height must not be less than 35 mm or greater than 75 mm. Do not remove more than 50% of the height of the uncut grass at any one time. The upper limit may be varied to account for terrain, species of grass and presence of debris.

Clippings may remain where they fall, except for those that fall on road surfaces, line drains, footways or paved areas where they must be swept clear.

Lawn care

Lawn areas, including nature strips and reinforced turf cell system must be neatly mown and edged weekly in the high season (summer months), fortnightly in the low season (winter months), or weekly if required due to abnormal weather condition. All clippings must be removed from the site. All lawns must be fertilized once a year with an approved lawn fertilizer.

Interface Issues

Where landscape treatments requiring lawn care interface fixed elements such as signage, fencing and walling ensure optimal care to avoid damaging the fixed element.

5.3.9 IRRIGATION & WATERING

Maintain the irrigation system to be sure that each individual plant receives the required amount of water to maintain healthy growth, adjust and rectify as required.

Provide additional hand watering, if irrigation system fails or is yet to be installed.

Undertake watering at two-day intervals for four weeks after completion of each planting area.

The irrigation system must be fully functional at all times to ensure that all plants, trees and lawns receive adequate water at optimal frequency. The system should be tested during each site visit to ensure proper operation timing is set correctly. Adjustments must be made where necessary.

It is the contractor's responsibility to submit a bi-monthly report throughout the defect's liability period. This report should include a comprehensive report on the operational function of the system.

Notification as to when the system is in need of major repair must be done so immediately as the cost of major repairs to the system can be claimed as variation to the contract price and should be invoiced separately.

When water restrictions prevent the use of the irrigation system, arrangements must be made by the contractor to provide an alternative system of watering. Under no circumstances should plant stock be allowed to perish through lack of water.

Locations of water supply points have been marked indicatively on Landscape Drawings; all irrigation supply conduits are subject to Sydney Water Approval.

5.3.10 EROSION CONTROL MEASURES

Where necessary, maintain the erosion control devices in a tidy and weed free condition and reinstate as necessary to ensure control measures are effective where deemed necessary. Refer to the *Erosion and Sediment Control Plan* for erosion control measures.

5.3.11 FINAL CLEANING

Lamp and filter replacement and the like are dealt with in the various SERVICES worksections.

General: Before practical completion, clean throughout, including interior and exterior surfaces exposed to view. Clean debris from the site, roofs, gutters, downpipes and drainage systems. Remove waste and surplus materials.

The contractor shall target weeds that are noxious and/or capable of producing a major infestation of unwanted plants by seed distribution. Whenever possible, time weed removal to precede flowering and seed set.

Samples: Remove non-incorporated samples, prototypes and sample panels.

5.3.12 REINSTATEMENT

General: Before practical completion, clean and repair damage caused by installation or use of temporary work and restore existing facilities used during construction to original condition.

5.3.13 ADJOINING PROPERTY

Evaluation: At practical completion, for properties described in the Adjoining properties to be Recorded schedule inspect the properties with the project superintendent, recording any damage that has occurred since the pre-commencement inspection.

5.3.14 REMOVAL OF PLANT

General: Within 10 working days after practical completion, remove temporary works and construction plant no longer required. Remove the balance before the end of the defect's liability period.

5.3.15 URGENT WORKS

Notwithstanding anything to the contrary in the Contract, the Project Superintendent may instruct the Contractor to perform urgent maintenance works that place the completed contract works at risk.

If the Contractor fails to carry out the work within seven (7) days of such notice, the Project Superintendent (or representative) reserves the right without further notice to employ others to carry out such urgent and specified work and charge the cost to the Contractor. Such work shall include but not be limited to the inspection and clearing of drains in the pavement and gardens.

5.4 COMPLETION

A final inspection shall be made by the Project Superintendent, Contractor and Landscape Architect before the completion of the Plant Establishment Maintenance Period (Defects Liability Period).

Any items requiring rectification shall be repaired before completion of the relevant works and finally approved prior to certification.

Maintenance requirements should extend for a minimum of 18 months after the completion of works (i.e. Practical Completion or PC). Prior to handover, the contractor(s) is/are required to submit all maintenance records, progress reports and a final monitoring report. The final monitoring report shall provide a summary of all works undertaken during the plant establishment period.

6 MAINTENANCE SCHEDULES

The following Maintenance Schedule is only applicable to the 'Defects Liability Period' and/or 'Establishment Period'.

6.1 MAINTENANCE REPORT SCHEDULE

General

Landscape Maintenance Schedule, Landscape Maintenance Procedure Schedule and Landscape Specification are to be read in conjunction with one another

* Key: D – Daily, W – Weekly, F – Fortnightly, M – Monthly, 3-6M – Quarterly or Half Yearly, Y – Yearly

Task	Activity	Frequency						Action
		D	W	F	M	3-6M	Y	
1	Logbook				x		x	Complete a logbook entry when at site and at a minimum every two weeks. Upon request, make the logbook available for inspection. Submit copies of new entries in the logbook to the Contract Administrator on a monthly basis. Maintenance requirements should extend for a minimum of 1 year after the completion of works or until such time as a minimum 80% survival rate for all plantings and a maximum five percent (5%) weed cover for the treated riparian corridors, basins and verge/median planting is achieved.
2	Planting and Replacement			x	x			Inspect planting every 2 weeks and remove spent flowers and dead stalks as they become apparent. Inspect and replace failed plants within 2 weeks of observation of failure. Match species with original planted sizes and location of new with old.
3	Pruning			x				Inspect every 2 weeks and prune as necessary to remove dead wood.

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								Pruning should Improve plant shape and promote healthy new growth.
4	Spraying			x				Inspect every 2 weeks and action as necessary. Do not spray if other nonchemical methods will satisfy the need to remove pests. Spray for disease control only when absolutely necessary.
5	Fertilising					x		Fertilise gardens every 3 months or in accordance with fertiliser manufacturer's directions.
6	Stakes and Ties			x			x	Inspect every 2 weeks, adjust and/or replace as necessary but remove as plants mature and are able to support themselves.
7	Mulching							Inspect and replace mulch deficiencies within 2 weeks of observation. Prior to placing new mulch aerate the soil by fork turning to a depth of at least 100mm, roughly level the soil and then place mulch. Do not disturb major plant roots while aerating soil. It can be expected that mulch will have significantly broken-down after an estimated 12-month period following initial application. It is therefore, recommended that all mulch beds are topped-up with a 50mm layer of woodchip/leaf mulch (Compliant with AS 4454) at this stage. This should be accompanied by a topdressing application of a 9-month, slow release, low phosphorous fertilizer to ensure that semi-established plantings do not suffer as a result of potential nitrogen draw-down that may be associated with the application of the 50mm mulch layer at yearly period.
8	Hydroseeding		x		x		x	Remove weeds monthly that emerge in newly established hydroseeded/hydromulched areas. Reseed monthly over the course of the contract to maintain required densities.

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								Water until germination, keep the surface damp and the topsoil moist but not waterlogged. After germination: Water to maintain a healthy condition, progressively hardened off to the ambient climatic conditions
9	Mowing and Topdressing (including reinforced turf cell system)			x	x	x		Summer fortnightly. Winter monthly. Top-dress 6 monthly.
10	Irrigation and Watering	x		x				Water when and where necessary every day at site and at least every 2 weeks generally. Do not allow soil and plants to dehydrate. Allow for prolonged rain, windy and dry periods. Water in the early morning or late afternoon to avoid excessive evaporation during the heat of the day.
11	Erosion Control Measures							Refer to the Erosion and Sediment Control Plan for erosion control measures.
12	Final Cleaning		x				x	Inspect and remove litter immediately upon observation. Leave no waste on site. Dispose of waste material at a designated waste disposal site. All herbaceous weeds should be managed to be at very-low percentage cover levels, (as a minimum), or better. Pasture grasses should be prevented from spreading into any bushland zones by applying a spot glyphosate herbicide spray application on the 1-metre wide buffer zone, on a monthly basis or as required. Maintenance weeding for a period of 12 months after the completion of primary works with an increase in maintenance hours occurring throughout the warmer growing months.

13	Urgent Works		x					Complete within 1 week (7 days) of notification. Inspect and clear drains as required.
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6.2 MAINTENANCE PROCEDURE SCHEDULE

Maintenance Scope of Works

The Maintenance procedure schedule should be used as a check list of tasks when in attendance

Week	Spring (Sep, Oct, Nov)	Summer (Dec, Jan, Feb)	Autumn (Mar, April, May)	Winter (June, July, Aug)
1	Mow and trim lawns	Mow lawns, weed	Mow Lawns	Weed
2	Weed; trim and adjust trees and shrubs	Weed; mow lawns, trim and adjust trees and shrubs	Weed; mow lawns, trim and adjust trees and shrubs	Mow and trim lawns Trim and adjust trees and shrubs
3	Mow and fertilise lawns; treat plant material for insects and disease	Mow lawns; weed; treat plant material for insects and disease	Mow and trim lawn	Weed
4	Weed; topdress, condition lawns and oversow bare patches; issue logbook	Weed; mow and trim lawns; issue logbook	Weed; mow lawns; issue logbook	Mow lawns; issue logbook
5	Fertilise all trees and shrubs in garden beds; mow and trim lawns	Mow lawns; weed	Mow lawns	Mow lawns
6	Weed; inspect mulch for deficiencies in cover; check and adjust irrigation	Mow lawns; check and adjust irrigation	Weed; inspect mulch for deficiencies in cover; check and adjust irrigation	Mow and trim lawns; treat for insects and disease; check and adjust irrigation
7	Reinstate mulch as required; treat plant material for insects and disease; mow lawns	Mow lawns; weed	Reinstate mulch as required; mow, trim and fertilise lawns	Weed
8	Weed; inspect condition of paving and furniture; issue logbook	Mow and trim lawns; inspect condition of paving & furniture; issue logbook	Weed; inspect condition of paving and furniture; issue logbook	Mow lawns; Inspect condition of paving and furniture; issue logbook

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9	Mow and trim lawns	Mow lawns; treat plant material for insects and disease	Mow lawns	Weed
10	Weed; mow lawns	Mow and topdress lawns	Weed; treat plant material for insects and disease	Mow and trim lawns
11	Mow and fertilise lawns; trim and adjust trees and shrubs	Mow lawns; trim and adjust lawns; weed	Weed	Mow lawns; treat plant material for insects and disease
12	Weed; mow lawns; treat plant material for insects and disease	Mow, trim & fertilise lawns	Weed	Mow lawns; treat plant material for insects and disease
13	Check and adjust irrigation; mow lawns; issue logbook	Check and adjust irrigation; mow lawns; weed; issue logbook	Check and adjust irrigation; mow lawns; weed; issue logbook	Check and adjust irrigation; weed; issue logbook

6.3 IRRIGATION SCHEDULE

The following Irrigation Schedule is only applicable to the 'Defects Liability Period' and/or 'Establishment Period'.

Irrigation Maintenance Schedule

The Irrigation Maintenance Schedule should be used as a check list of minimum attendance

Task	Timeframe
Filters – Mainline	Monthly
Electrical Source Output (auto system)	Monthly
Controller (automatic system)	Monthly
Operation – Progression	Monthly
Activation of Valves	Monthly
Timing of Stations	Bi-Annually
Time and Day Readings	As Required
Exterior Appearance	Bi-Annually
Valve Operation	Bi-Annually
Open/Close Weeping	As Required
Sprinkler Operation	As Required
Rotaries – Clogged Nozzles	Bi-Monthly
Plant Obstructed Pattern	Bi-Monthly
Arc Coverage	Bi-Monthly
Radius Adjustment	Bi-Monthly
Pop-up Action	Bi-Monthly
Riser Seal Leaks	Bi-Monthly
Set to Grade	Bi-Monthly

Coverage Pressure	Bi-Monthly
Rotational Speed	Bi-Monthly
Clogged Screens	Bi-Monthly
Head Damage	Bi-Monthly
Piping	Bi-Monthly
Leaks – Broken or Cracked	As Needed
Poor Welding or Threading	As Needed
Connection	As Needed
Clogged Piping	As Needed
Irrigation Report	Bi-Monthly

6.4 PRUNING SCHEDULE

The contractor is to prune all plants or shrubs species as required to satisfy Goodman's presentation standard. Pruning should be carried out on a 'needs-basis' specific to each plant. Pruning should be carried out to encourage new growth that will result in a dense canopy density. No more than 30mm of new growth should be seen before pruning takes place. All plant pruning should be carried out using best horticultural techniques. No hedging of native grasses permitted at any time.

6.4.1 PRUNING SCHEDULE – OAKDALE WEST ESTATE

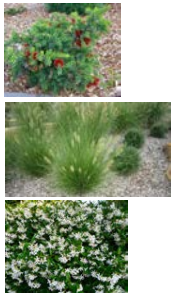


Plant Mix	Shape/description	Critical issues	Pruning Frequency	Planting Palette
PM1A	Car Park Edge Mix - Sun <i>Callistemon viminalis</i> 'Little John' <i>Pennisetum alopecuroides</i> <i>Trachelospermum jasminoides</i>	Shrubs/Grasses/ Groundcovers Drought tolerant, low water and fertiliser requirements.	Shrubs/Grasses/ Groundcovers Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM1B	Car Park Edge Mix - Shade <i>Hibbertia scandens</i> <i>Pennisetum alopecuroides</i> 'Nafay' <i>Viola hederacea</i>	Grasses/Groundcovers Drought and shade tolerant, low water and fertiliser requirements.	Grasses/Groundcovers Remove spent flowers and any dieback. Only prune to maintain safe access.	
PM2A	Car Park Island Mix - Sun <i>Gazania tomentosa</i> <i>Pennisetum alopecuroides</i>	Grasses/Groundcovers Drought tolerant, low water and fertiliser requirements.	Grasses/Groundcovers Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	

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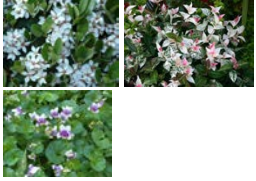







Plant Mix	Shape/description	Critical issues	Pruning Frequency	Planting Palette
PM3A	Side Edge Mix Low - Sun <i>Callistemon 'White Anzac'</i> <i>Gazania tomentosa</i> <i>Pennisetum alopecurioides</i>	Shrubs/Grasses/ Groundcovers Drought tolerant, low water and fertiliser requirements.	Shrubs/Grasses/ Groundcovers Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM3B	Site Edge Mix Low – Shade <i>Rhaphiolepis indica 'Oriental Pearl'</i> <i>Trachelospermum jasminoides 'Tricolor'</i> <i>Viola hederacea</i>	Shrubs/Grasses/ Groundcovers Drought tolerant, low water and fertiliser requirements.	Shrubs/Grasses/ Groundcovers Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM4	Site Markers Mix <i>Nandina domestica 'Gulf Stream'</i> <i>Pennisetum alopecurioides</i>	Shrubs/Grasses Drought tolerant, low water and fertiliser requirements.	Shrubs/Grasses Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM5A	Feature Planting Mix <i>Doryanthes excelsa</i> <i>Lorapetalum chinense rubrum 'China Pink'</i> <i>Photinia x fraseri 'Red Robin'</i>	Shrubs/Grasses Drought tolerant, low water and fertiliser requirements.	Shrubs/Grasses Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM6A	Site Hedge Mix – Sun <i>Acmena smithii 'Hot Flush'</i> <i>Metrosideros thomasi</i> <i>Rhaphiolepis indica 'Oriental Pearl'</i> <i>Rhaphiolepis indica 'Snow Maiden'</i>	Shrubs Drought tolerant, low water and fertiliser requirements.	Shrubs Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM7A	Groundcovers Mix A <i>Gazania tomentosa</i>	Groundcovers Drought tolerant, low water and fertiliser requirements.	Groundcovers Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	

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Plant Mix	Shape/description	Critical issues	Pruning Frequency	Planting Palette
PM7B	Groundcovers Mix B <i>Trachelopsernum jasminoides</i> 'Tricolor'	Groundcovers Drought tolerant, low water and fertiliser requirements.	Groundcovers Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM9A	Climbers Mix – Sun <i>Hibbertia scandens</i>	Climbers Drought tolerant, low water and fertiliser requirements.	Climbers Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	
PM9B	Climbers Mix – Shade <i>Trachelopsernum jasminoides</i>	Climbers Drought tolerant, low water and fertiliser requirements.	Climbers Prune after flowering to remove spent flowers, encourage healthy growth and maintain safe access.	

Tree Mix	Shape/description	Critical issues	Pruning Frequency	Planting Palette
Trees	General Trees <i>Angophora bakeri</i> <i>Angophora floribunda</i> <i>Corymbia eximia</i> <i>Corymbia maculata</i> <i>Cupaniopsis anacardioides</i> <i>Eucalyptus amplifolia</i> <i>Eucalyptus crebra</i> <i>Eucalyptus moluccana</i> <i>Glochidion ferdinandi</i> <i>Lagerstroemia indica</i> 'Tuscarora' <i>Magnolia grandiflora</i> 'Exmouth' <i>Melaleuca linarifolia</i> <i>Pyrus calleryana</i> 'Capital' <i>Tristanopsis laurina</i> 'Luscious' <i>Waterhousea floribunda</i>	Street Trees Plant in moist but well drained soils with full or partial sun.	Trees Prune during flower dormancy, to encourage dense canopy and maintain safe access.	

6.5 CONTINGENCY MANAGEMENT PLAN

Contingency Management Plan – Oakdale West Estate

Key Element	Trigger/ Response	Condition Green	Condition Amber	Condition Red
Irrigation	<i>Trigger</i>	Irrigation system operating at optimum frequency.	Irrigation system yet to be installed.	Irrigation system fails.
	<i>Response</i>	No response required. Continue to monitor.	Provide additional hand watering until system is installed.	Provide additional hand watering until system is repaired. The irrigation system must be fully functional at all times to ensure that all plants, trees and lawns receive adequate water at optimal frequency.
Plant Failure	<i>Trigger</i>	No significant plant failure is present. Monitoring verifies that there is <5% of plants failing.	Monitoring verifies there is plant failure at a rate between 5% -10%.	Monitoring verifies there is plant failure at a rate greater than 10%.
	<i>Response</i>	No response required. Continue to monitor.	If the cause of failure is due to a controllable situation then correct situation prior to replacing plants. All planting areas are to be free of grass and weed. Replace plants with one of similar size and quality and identical species. of variety of the ones failed.	If the cause of failure is due to a controllable situation then correct situation prior to replacing plants. All planting areas are to be free of grass and weed. Replace plants with one of similar size and quality and identical species. of variety of the ones failed.
Revegetation Failure	<i>Trigger</i>	Revegetation is growing to desired design surface levels	Monitoring verifies that weed emergence has occurred.	Monitoring verifies that weed emergence and plant failure has occurred.

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Key Element	Trigger/ Response	Condition Green	Condition Amber	Condition Red
	<i>Response</i>	No response required. Continue to monitor.	Refer to LMP for monitoring requirements once problem has been identified. Possible solutions include the removal of weeds as per <i>Section 5.3.7 of this LMP</i> .	Refer to LMP for monitoring requirements once problem has been identified. Possible solutions include removal of weeds and re-seeding of revegetation cover crop as per <i>Section 5.3.7 of this LMP</i> .
Slope Failure	<i>Trigger</i>	No significant erosion is present that would constitute a safety hazard or compromise the capability of supporting the end land use. Monitoring verifies there are no gully or tunnel erosion features, or rill erosion >200mm deep.	Monitoring verifies there is gully or tunnel erosion features, or rill erosion 200mm deep.	Monitoring verifies there is gully or tunnel erosion features, or rill erosion > 200mm deep.
	<i>Response</i>	No response required. Continue to monitor.	A suitably trained person to inspect the site. Investigate opportunities to install water management infrastructure to address erosion. Remediate as appropriate.	Undertake a review of the drainage of the area and provide recommendations to appropriately remediate the erosion. Remediate as soon as practicable.

7 APPENDICES

7.1 REFERENCED LANDSCAPE DRAWINGS

7.2 REFERENCED LANDSCAPE SPECIFICATION

SD-163-18 Oakdale West Estate

Landscape – Planting

Quantity of Soil Additive

Plant Size	Quantity
"Viro-Tube"	Nil
"Forestry Tube"	20 grams
"Semi Advanced"	40 grams
"Advanced"	80 grams
"Super Advanced"	400 grams
"Semi Mature"	One kilogram

3.8 STAKES AND TIES

Stakes

Material: Hardwood, straight, free from knots or twists, pointed at one end.

Installation: Drive stakes into the ground at least one third of their length, avoiding damage to the root system.

Stake sizes:

- For plants \geq 2.5 m high: Three 50 x 50 x 2400 mm stakes per plant.
- For plants 1 to 2.5 m high: Two 50 x 50 x 1800 mm stakes per plant.
- For plants < 1 m high: One 38 x 38 x 1200 mm stake per plant.

Ties

General: Provide ties fixed securely to the stakes, one tie at half the height of the main stem, others as necessary to stabilise the plant. Attach ties loosely so as not to restrict plant growth.

Tie types:

- For plants \geq 2.5 m high: Two strands of 2.5 mm galvanized wire neatly twisted together, passed through reinforced rubber or plastic hose, and installed around stake and stem in a figure of eight pattern.
- For plants < 2.5 m high: 50 mm hessian webbing stapled to the stake.

Trunk protection

Collar guards: 200 mm length of 100 mm diameter agricultural pipe split lengthways.

3.9 SEED PREPARATION

Where site conditions are not suitable for the pre-treatment and mixing of native and grass seed, this work may be done off site in conditions conducive for this purpose.

HOLD POINT	
Process Held:	Use of seed pre-treated off site.
Submission Details:	At least 3 working days prior to delivery, submit the accompanying certificate showing the species, variety, weight and place of pre-treatment.
Release of Hold Point:	The Principal will consider the submitted documents and may inspect the seed prior to authorising the release of the Hold Point.

Pre-treatment to Assist Germination

Where hot water is the specified pre-treatment, place the seed in a calico bag together with camphor granules as an insect repellent at the rate of 50 g per 10 litres of water. Immerse the bag in hot water

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with temperature of around 90°C for a minimum period of 60 minutes and then remove from the water, drain and allow to dry. When dry, mix the treated seed with the remaining seed and broadcast when conditions are suitable.

Seed that has been pre-treated must be used within five days of pre-treatment.

Where proprietary products are used to assist germination, use as recommended by the manufacturer.

Preparation for Hydromulching, Hydroseeding and Straw Mulching

Storage tanks, containers and equipment to be used in hydromulching, hydroseeding and straw mulching must be clean and free of contamination from previous operations.

Table– Application Rates for Materials

Material	Rate per Hectare
Hydromulching	
Water	35,000 litres
Organic fertiliser: pelletised poultry manure	250 kg
Seed	See Planting Schedule
Cellulose fibre mulch:	
– Sugar cane mulch, mixed with 20% (by weight) of shredded paper	3,500 kg
– Wood fibre mulch	2,500 kg
Binder: granulated 'Guar gum'	60 kg
Biodegradable green dye	As recommended
Hydroseeding	
Water	20,000 litres
Organic fertiliser: pelletised poultry manure	250 kg
Seed	See Planting Schedule
Biodegradable green dye	As recommended
Straw mulching	
Straw	5,000 kg
Binder	
– Undiluted residual bitumen emulsion	2,500 litres
– Granulated 'Guar gum'	100 kg

Produce hydromulch / hydroseed slurry mixtures by adding the specified materials into the tank and agitate until a homogenous blend is obtained.

Sowing Methods

Unless otherwise shown on the Drawings, sow areas with slopes of 5 to 1 or flatter, using one of the following methods:

- dry sowing
- for small areas only, by hand.

Unless otherwise shown on the Drawings, sow areas with slopes steeper than 5 to 1 in any direction, using one of the following methods:

- hydroseeding and straw mulching
- hydromulching
- for rock face batters, hydroseeding
- for small areas only, by hand.

Stepped batters must be topsoiled as described and hydroseeded or hydromulched.

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*Landscape – Planting***WITNESS POINT**

Process Witnessed: Sowing

Submission Details: Notify the Principal, not less than 5 clear working days prior to the intended time of sowing, giving details of the area to be sown.

3.10 DRY SOWING

Undertake dry sowing using either:

- a tractor drawn seed drill to place seed at a depth of 5 mm
- a spreader followed immediately by a single pass with an unweighted diamond harrow.

Where practicable, tractor passes with the seed drill or harrow must follow finished surface contours. Distribute seed and fertiliser evenly over the areas to be sown at the rates specified. Apply fertiliser concurrently with the seeding operation.

Gauge the application rate of the seed mix to ensure an even distribution over the areas sown, in accordance with the nominated rates. Maintain records of measurements and calculations to determine actual distribution rates for each lot.

Hydromulching and Hydroseeding

Carry out hydromulching / hydroseeding within 2 days of completion of soil preparation or, if delayed by weather conditions, as soon as weather conditions permit.

Agitate continuously the slurry to maintain a uniform consistency during application.

The sprayed hydromulch layer within 48 hours of application must have a minimum thickness at any location of 5 mm when using sugar cane mulch (mixed with shredded paper), or 2 mm when using wood fibre.

Straw Mulching

The straw mulch must comprise the materials and application rates set out in Table R178.1.

Apply the straw mulch uniformly using a purpose-made blower unit. Incorporate the emulsion as a spray into the air stream of the mulch blower or apply it in a separate operation within 12 hours from the application of straw mulch.

The straw mulch layer within 48 hours of application must have a minimum thickness at any location of 25 mm.

Weather Conditions for Hydroseeding, Hydromulching and Straw Mulching

Do not apply hydroseeding, hydromulching and straw mulching:

- when winds exceed 15 km/hr
- when temperatures exceed 37°C
- where the surface is too wet
- during rain periods or when rain appears imminent.

Signposting

Supply and install information signs approximately 1,500 x 600 mm stating, "NATIVE PLANT REGENERATION AREA—PLEASE KEEP OFF", including the requisite posts, brackets and fittings, where shown on the Drawings or as directed by the Principal. Support each sign at a height of 1.5 metres on two 75 mm dia steel posts set in concrete 500 mm deep into the ground at a distance of 900 mm apart.

7.3 GOODMAN MAINTENANCE GUIDELINES

Appendix 2 | Specification

system again to re-flush if blockages are apparent and re-seal tube ends

Commissioning

The entire system should be tuned and tested to deliver an adequate amount of water to all plants and turf. Test the system in the presence of the Landscape Architect and/or irrigation designer to facilitate the issue of a Certificate of Practical Completion.

Maintain the system for the duration of the establishment maintenance period as detailed elsewhere in the specification. Replace any faulty, broken or stolen components. Leave the system operating as if it was newly installed upon acceptance of the completed work.

Maintenance

General

Gardens, lawns and landscaped areas must be maintained to Goodman's presentation standard and condition at all times. Goodman places a heavy emphasis on a high standard of landscaping to support their market image.

Plants and shrubs should be cultivated to maintain optimal growth while individual plants that don't thrive should be replaced with healthy specimens. Plants and shrubs should be pruned appropriately to promote growth. Where necessary, all plants should be dead headed to maintain optimal appearance.

Weeds should be removed at all visits while measures should be taken to discourage weed growth. Weeds must be removed from all garden beds, fence lines and surrounding areas, all paved areas and walkways, construction joints and any entrance areas. All large weeds should be removed by hand, small weeds are to be sprayed with appropriate industrial strength weed killer with blue dye additive.

A prophylactic chemical weeding program should be implemented. Goodman Building Manager must be notified and approve any application of chemical weed treatment. The contractor must specify the type of chemical weed treatment product used, where it was used and quantity used. The contractor must submit a certificate or signed documentation received from chemical weed treatment supplier confirming application of chemical treatment to Goodman Landscape Manager. Spraying is to occur during non-office hours to reduce any health hazard for occupants of the commercial offices or industrial estates.

Every effort must be made to ensure that all plants are adequately watered at all times. When irrigation is not permitted, alternative methods of watering should be discussed with the Building Manager.

A proactive approach must be adopted to ensure that appearance of the landscape as a whole is highly presentable at all times. Recommendations on new plant or shrub specimen, landscape design, modifications etc should be made to Goodman Landscape Manager where opportunities exist to enhance the appearance of the landscape generally or in specific areas.

Contractors must submit annual routine landscape maintenance program to Goodman Landscape Manager within two weeks of contract commencement date.

Lawn care

Lawn areas, including nature strips must be neatly mown and edged weekly in the high season (summer months), fortnightly in the low season (winter months), or weekly if required due to abnormal weather condition. All clippings must be removed from the site.

All lawns must be fertilized once a year with an approved lawn fertilizer.

Tree shrub and plant care

All shrubs, hedges, ground covers and trees must be trimmed into shape as required to an acceptable Goodman presentation standard. Flowering plants/shrubs should be pruned to promote optimal flowering at the appropriate times.

Excessive foliage impacting onto roads, paths, fencing and lighting must be pruned during all site visits.

Leaf litter and or all cuttings should be removed from all gardens and site each visit and disposed of at contractor's cost.

Any dead or dying plants/shrubs should be removed and replaced with same or comparable species. Goodman Landscape Manager must be consulted when large trees need to be removed and or replaced.

The contractor will maintain each plant in a healthy condition to increase the visual appeal of the gardens.

Guidelines for landscaping

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Appendix 2 | Specification

Remove faded leaves, fronds and flowers to encourage new growth.

The contractor will prune all plants or shrubs species as required and satisfy Goodman's presentation standard. Pruning should be carried out on a 'needs-basis' specific to each plant. Pruning should be carried out to encourage new growth that will result in a dense canopy density. No more than 30mm of new growth should be seen before pruning takes place. All plant pruning should be carried out using best horticultural techniques. No hedging of native grasses permitted at any time.

Replacement of any plant or shrub which may die, fail to thrive, or are damaged due to contractors negligence must be replaced by the contractor without cost to Goodman. The replacement plant or shrub must be of a similar size, quality and identical species or variety to the plant or shrub which has failed, unless otherwise directed by Goodman Landscape Manager

Where plants fail due to vandalism, or where plants are stolen, the cost of replacement of the plants will be met by Goodman.

Mulch

The contractor is required to maintain all areas of mulch cover within garden beds. Displaced mulch should be returned to the garden beds wherever possible. All area of mulch cover must be packed to a depth of 75mm. If replacement of mulch is required, the contractor must notify Goodman Landscape Manager and provide quotation for approval. Specific mulch must be approved by Goodman representative prior to installation.

Guidelines for landscaping

Irrigation

The irrigation system must be fully functional at all times to ensure that all plants, trees and lawns receive adequate water at optimal frequency. The system must be tested during each site visit to ensure proper operation timing is set correctly. Adjustments must be made where necessary.

It is the contractors responsibility to submit a monthly report to Goodman which includes a comprehensive report on the operational function of the system.

Goodman Landscape Manager must be notified when the system is in need of major repair. The cost of major repairs to the system can be claimed as variation to the contract price and should be invoiced separately.

When water restrictions prevent the use of the irrigation system, arrangements must be made by the contractor to provide an alternative system of watering. Under no circumstances should plant stock be allowed to perish through lack of water.

Herbicide / pesticide application

Apply pesticide treatment to lawn areas to eliminate weeds/pests and diseases as soon as any attack is noticed. At any given time no more than 2% may be effected by weeds/pests and diseases. Spraying must occur during non-office hours to reduce any health hazard for occupants of the commercial offices or industrial estates. Do not use pesticides near streams, ditches, wetlands, or shorelines.

Rubbish

All rubbish generated by landscaping maintenance activities and from garden beds must be removed from the site at each visit and deposited at an approved waste collection depot at contractor's cost.

General rubbish accumulating within the driveways, car parks etc. will be removed by the landscape contractor on each weekly visit.

Fertilizing

Apply slow-release fertiliser in liquid form or in pellet form to all plants as required to maintain healthy growth conditions.

Fertilising of individual trees, individual palms, garden beds containing shrubs and groundcovers, and lawns should occur as required by individual species to maintain healthy growth conditions. All garden plants are to be fertilised in March and September of every year.

Seasol or other seaweed extract type fertilises and/or Dynamic Lifter or other organic fertiliser in pelletised form should be used. Do not use soluble fertilizers near streams, ditches, wetlands, or shorelines. Do not use blood and bone. All fertiliser is to be odourless.

Turf topdressing

The contractor is to review the condition of lawn areas to assess the need to provide topdressing. If topdressing is required, the contractor must report to Goodman Landscape Manager for approval. Premium topdressing mix must be 80% sand and 20% soil.

Appendix 2 | Specification

Repairs

Any repairs required to lawn areas should occur immediately following notification of the extent of works and approval to proceed by Goodman Landscape Manager.

Restaking

Where trees, palms, or shrubs require staking during plant establishment, the contractor will ensure that staking remains intact and rigid for its intended purpose. Staking that has failed must be repaired immediately to ensure no plant stress from winds.

Garden edging

The contractor is to review the condition of garden bed edging and ensure that no damage, sinking, or lifting has occurred. If any repair is required, contractor must notify Goodman Landscape Manager for approval. Contractor is to ensure that all garden edging is maintained in original condition.

Planters

The maintenance of any planter box (especially on-slab) requires careful attention to ensure that the waterproofing element is not affected. Any work done within planter box must be by hand. Neither machinery nor tools are to be used within any planter box that may cut and damage the waterproofing elements. The contractor will replenish soil nutrients and fertilisers in each planter box on a regular basis to ensure healthy continual growth of any plant species.

Letterboxes / directory boards

The contractor is to clean and wipe down directory boards and letter boxes at the entrance to the property and remove unwanted material (this is limited to a height accessible by ladder).

All hedges or shrubbery near directory boards must be kept trimmed, so that clear visual recognition by any emergency services can be ascertain the clear address of the site or direction to any part of the site.

Drains

All grated stormwater drains or strip drains in all car park levels and driveways zones must be inspected monthly and cleared of accumulation of debris, leaves and soil, so that there is no hindrance or impediment of their correct operation as stormwater drains.

All grated stormwater drains or strip drains in all gardens, lawn zones and pavement areas must be inspected weekly or after storms and maintained free of and accumulation of debris, leaves and soil, so that there is no hindrance or impediment of their correct operation as stormwater drains.

Any drains grate or section of strip drains that is rusted, faulty or may constitute a hazard to the site's tenants or visitors must be reported to Goodman Landscape Manager. Recommendation and replacement cost is to be submitted to Goodman Landscape Manager for approval.

Equipment

The contractor will supply all necessary equipment required to conduct landscape maintenance in the most efficient manner and with minimal interruption to tenants. All necessary equipment will be tested and tagged to comply with all relevant OH&S legislation and regulations.

Supervision / communication

Contractor is to appoint one point of contact (Supervisor/Operation Manager) to represent the contractor for the term of the agreement. The nominated point of contact should provide regular supervision to the on-site staff undertaking the works. Goodman anticipates that this supervisor should attend all sites as a minimum weekly to ensure presentation standards and workmanship is within required KPI's. The supervisor will also to attend site meetings with the relevant Goodman Landscape Manager to inspect the site and review any landscape maintenance issues and or variations each month.

A works report will be required to be filled out by the contractor and sent to Goodman, including relevant information regarding the following (Photos, Summary of works for period, works to be completed next month, safety issues, enhancement ideas, general issues). This report should be forwarded to Goodman on a monthly basis.

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