# OAKDALE WEST INDUSTRIAL ESTATE

## Building 4E
## Construction Environmental Management Plan
## SSD 22191322

**Prepared for:**

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

SLR Ref: 630.30203-R01
Version No: -v1.1
November 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 |
|---|---|---|---|---|
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# 1 Introduction

## 1.1 Development Overview

Goodman Property Services (Aust) Pty Ltd (Goodman) obtained Development Consent SSD 7348 on 13 September 2019 for the staged development of Oakdale West Industrial Estate (Oakdale West) comprising a warehousing and a distribution hub at Kemps Creek in Western Sydney (**Figure 1**).

SSD 7348 incorporates the approval of a 'Concept Proposal' to guide the future development of the estate and consent for the 'Stage 1 Development'. The Stage 1 Development includes construction of the proposed Western North South Link Road (WNSLR – now referred to as Compass Drive)), 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.

SSD 7348 has since been modified seven times with the most recent modification (MOD 7) being approved on 8 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).

The Concept Proposal consent did not approve the construction and operation of Stage 5 and this is subject to a separate Development Application (SSD 22191322) submitted to the Department of Planning, Industry and Environment (DPIE). SSD 22191322 was approved on 29 October 2021.

A copy of Development Consent SSD 22191322 (as modified) is attached as **Appendix A**.

This Construction Environmental Management Plan (CEMP) has been prepared for the construction of Building 4E, in Precinct 4 as part of Stage 5 works at Oakdale West (**Figure 2**). Building 4E comprises the construction, use, and fit out of a warehouse and distribution centre including:

- ancillary office spaces and gatehouse;
- associated truck and car parking areas;
- loading bays;
- site landscaping;
- signage;
- fit out (office area and warehouse racking);
- 24/7 hours of operation; and
- subdivision.

The layout of Building 4E is shown in **Figure 3**.

For the purposes of this document, the development is described in *Oakdale West Industrial Estate Concept Plan and Stage 1 Modification (MOD 7 SSD 7348)* and *Environmental Impact Statement State Significant Development Application (SSD 22191322) Oakdale West Industrial Estate – Stage 5* prepared by Keylan Consulting (2021), including all specialist assessments and other appendices.

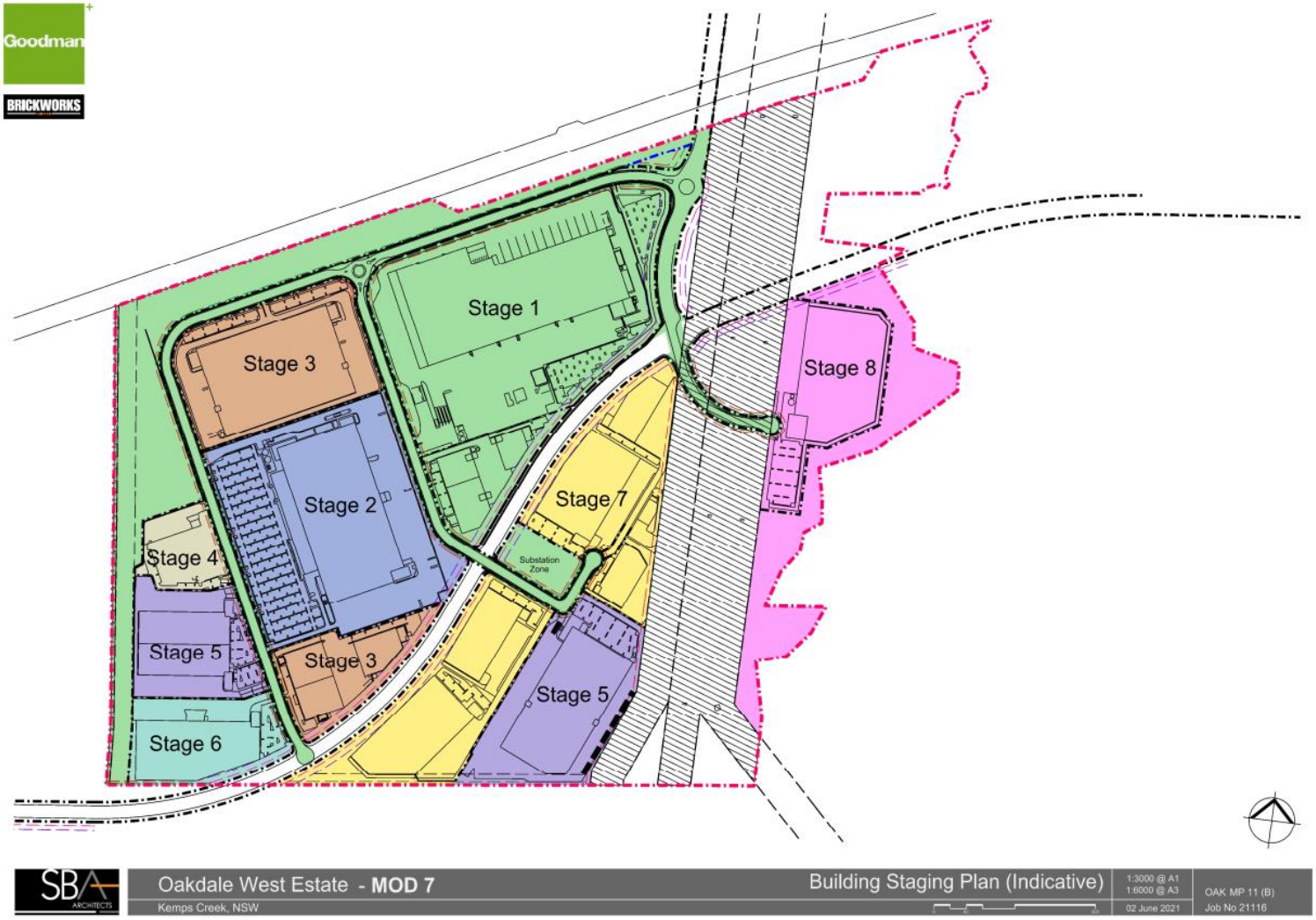



**Figure 1 Oakdale West Staging Plan**

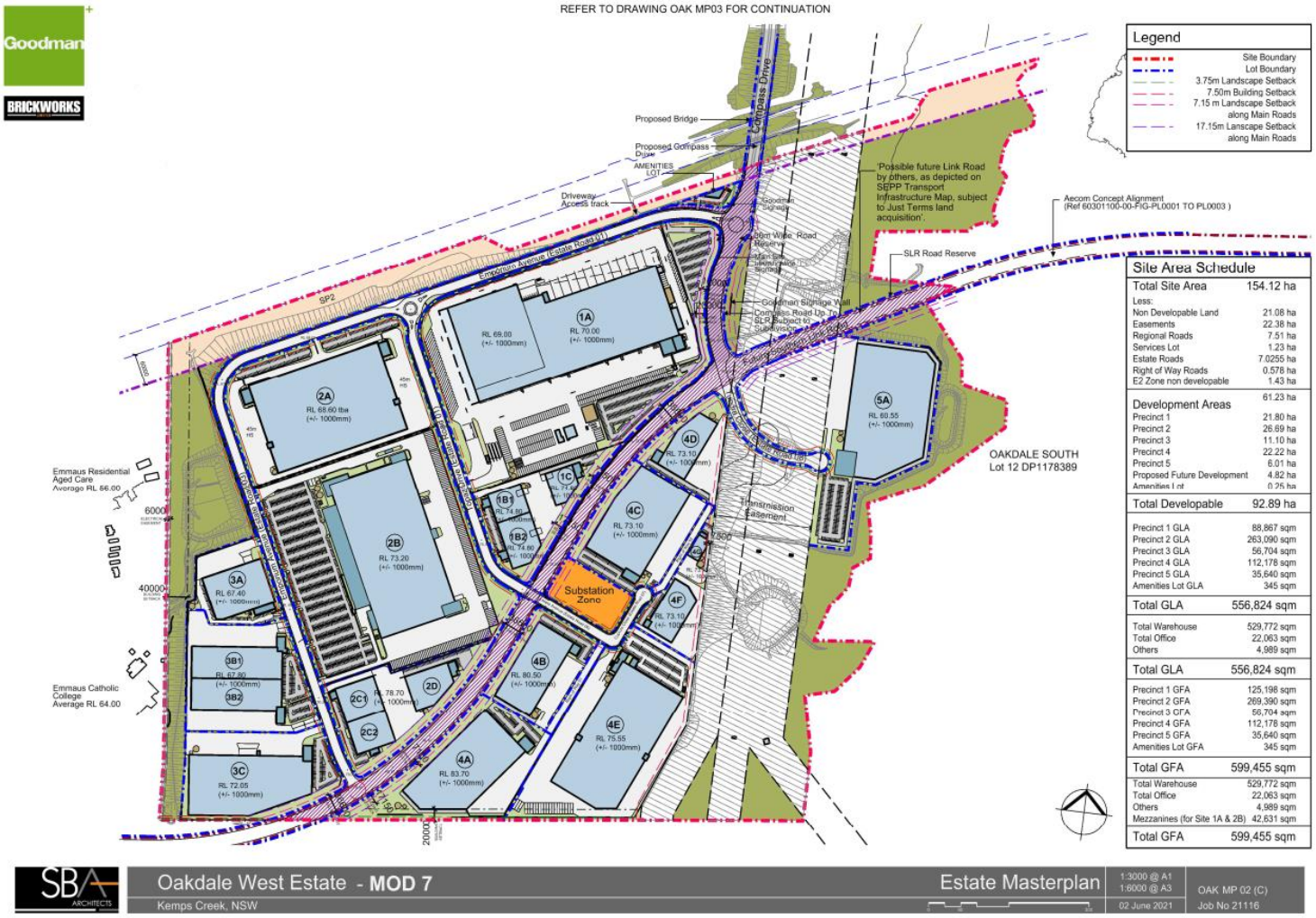



**Figure 2 Oakdale West Precinct Plan**

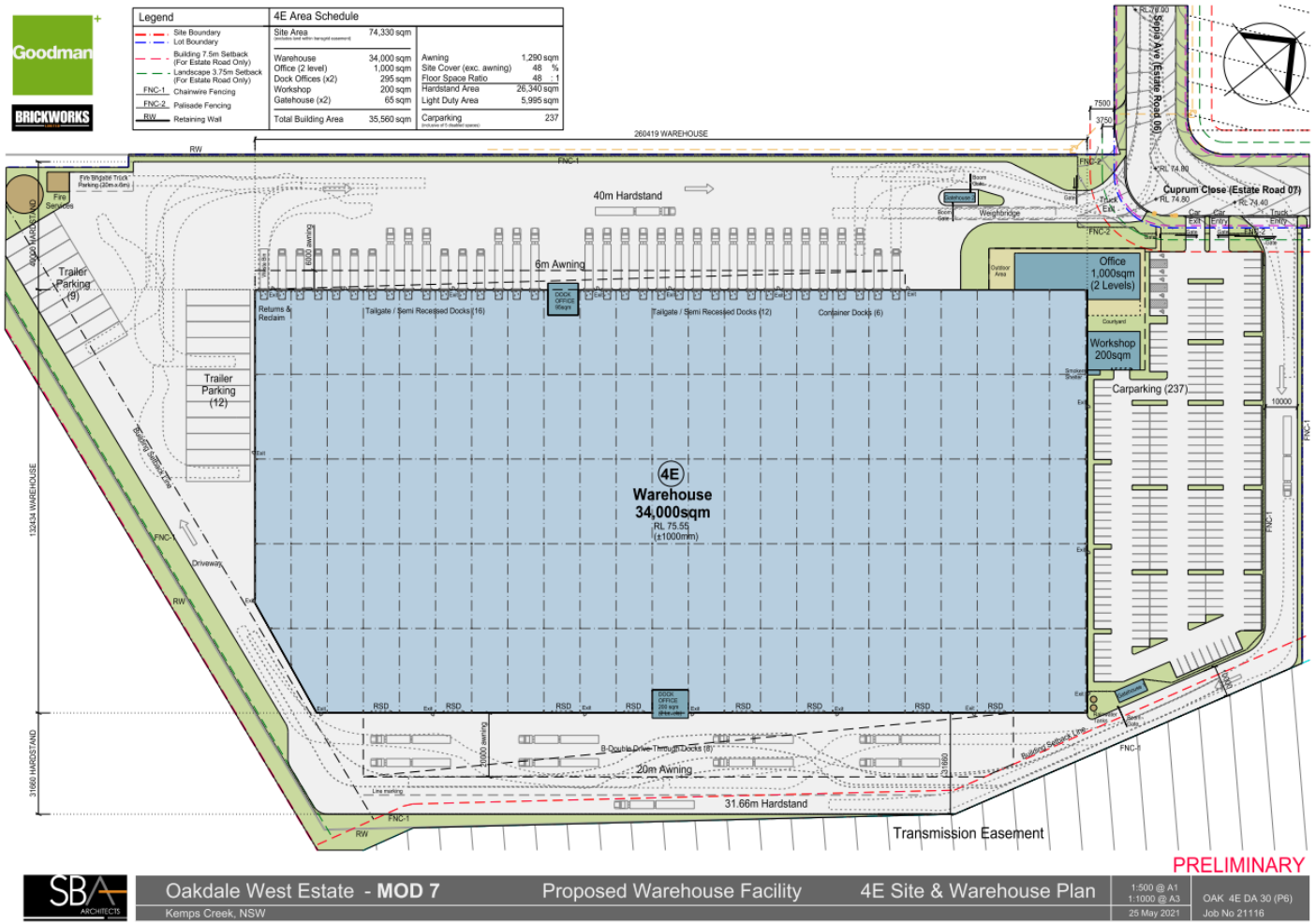



**Figure 3 Building 4E Layout**

## 1.2 Construction Environmental Management Plan

The CEMP has been prepared to address the specific requirements of SSD 21131922 and in consideration of the *Guideline for the Preparation of Environmental Management Plans* (Department of Infrastructure, Planning and Natural Resources 2004).

The following specialist management plans have been prepared to support this CEMP:

- Construction Noise and Vibration Management Plan (CNVMP) (SLR);
- Construction Air Quality Management Plan (CAQMP) (SLR);
- Community Consultation Strategy (CCS) (SLR);
- Construction Traffic Management Plan (CTMP) (ASON);
- Soil and Water Management Plan (SWMP) (Rubicon);
- Erosion and Sediment Control Plan (ESCP), appended within the SWMP (Rubicon);
- Flora & Fauna Management Plan (Ecologique);
- Unexpected Finds Protocol – Contamination (AECOM); and
- Waste Management Plan (WMP) (SLR).

### 1.2.1 Scope

This CEMP has been prepared to satisfy C1, C2, C3 and C4 of SSD 21131922. 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 SSD 22191322 CEMP Context

| SSD 22191322 Consent Condition | CEMP Section |
|---|---|
| C1. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include: | |
| a) details of:<br>(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);<br>(ii) any relevant limits or performance measures and criteria; and<br>(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures; | (i) Section 3.3<br>(ii) Section 4<br>(iii) Refer to specialist management plans |
| b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria; | Section 4 |
| c) a program to monitor and report on the:<br>(i) impacts and environmental performance of the development; and<br>(ii) effectiveness of the management measures set out pursuant to paragraph (c) above; | Section 5 |
| 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 5.4 |
| e) a program to investigate and implement ways to improve the environmental performance of the development over time; | Section 6 |
| f) a protocol for managing and reporting any:<br>(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);<br>(ii) complaint;<br>(iii) failure to comply with statutory requirements; and | (i) Section 3.5 and 5.2<br>(ii) Section 3.6 and 5.2<br>(iii) Section 5.2 |
| g) a protocol for periodic review of the plan.<br>***Note:*** *The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans* | Section 6 |
| C2. The Applicant must prepare a Construction Environmental Management Plan (CEMP) in accordance with the requirements of Condition C1 and to the satisfaction of the Planning Secretary. | This Plan |
| C3. As part of the CEMP required under Condition C2 of this consent, the Applicant must include the following: | |
| a) measures for managing construction traffic as detailed in Appendix 2; | Section 4.5 |
| b) a Driver Code of Conduct (see Condition B6); | Section 4.5 |
| c) an Erosion and Sediment control Plan (see Condition B12); and | Section 4.6 |
| d) measures to protect retained native vegetation adjacent to the site (see Condition B36). | Section 4.9 |
| C4. The Applicant must:<br>a) not commence construction of the development until the CEMP is approved by the Planning Secretary; and<br>b) carry out the construction of the development in accordance with the CEMP approved by the Planning Secretary and as revised and approved by the Planning Secretary from time to time. | Noted |

### 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 EIS (Keylan Consulting 2021) and Response to Submissions (RTS) (Keylan Consulting 2021), including relevant management plans, that are required to be implemented with during construction;
- Demonstrate to DPIE how the applicant proposes to meet all of its regulatory obligations including those outlined in the Conditions of Consent;
- Outlines the controls to be implemented by the contractor in order to meet those obligations;
- Clearly and concisely document the conditions imposed by SSD 22191322 that are required to be implemented and/or complied with during the construction phase; and
- Assist to establish Building 4E 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 Plan*s (Department of Infrastructure, Planning and Natural Resources 2004).

### 1.2.4 Consultation

SSD 22191322 does not require consultation for this CEMP.

# 2 Development Description

## 2.1 Location

Oakdale West is legally described as Lot 111 DP 1262310 at the far south-western extent of the Western Sydney Employment Area (WSEA) within the Penrith Local Government Area (LGA).

Oakdale West 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**, Building 4E is at the southern boundary of Oakdale West.

## 2.2 Construction Activities and Staging

Construction will include the works to be undertaken on Lot 4E at Precinct 4 (**Figure 2**).

No vegetation clearing, bulk earthworks or supporting infrastructure will be required as part of Stage 5 as this has been approved and undertaken as part of Stage 1 in accordance with SSD 7348.

All works will be undertaken in accordance with the Approved Development Consent SSD 22191322.

## 2.3 Construction Hours

Construction hours will be in accordance with Conditions B1 and B2 of Development Consent SSD 22191322, which are reproduced below:

> *B1. The Applicant must comply with the hours detailed in Table 1, unless otherwise agreed in writing by the Planning Secretary.*

*Table 1: Hours of Work*

| Activity | Day | Time |
|---|---|---|
| Construction | Monday – Friday<br>Saturday | 7 am to 6 pm<br>8 am to 1 pm |

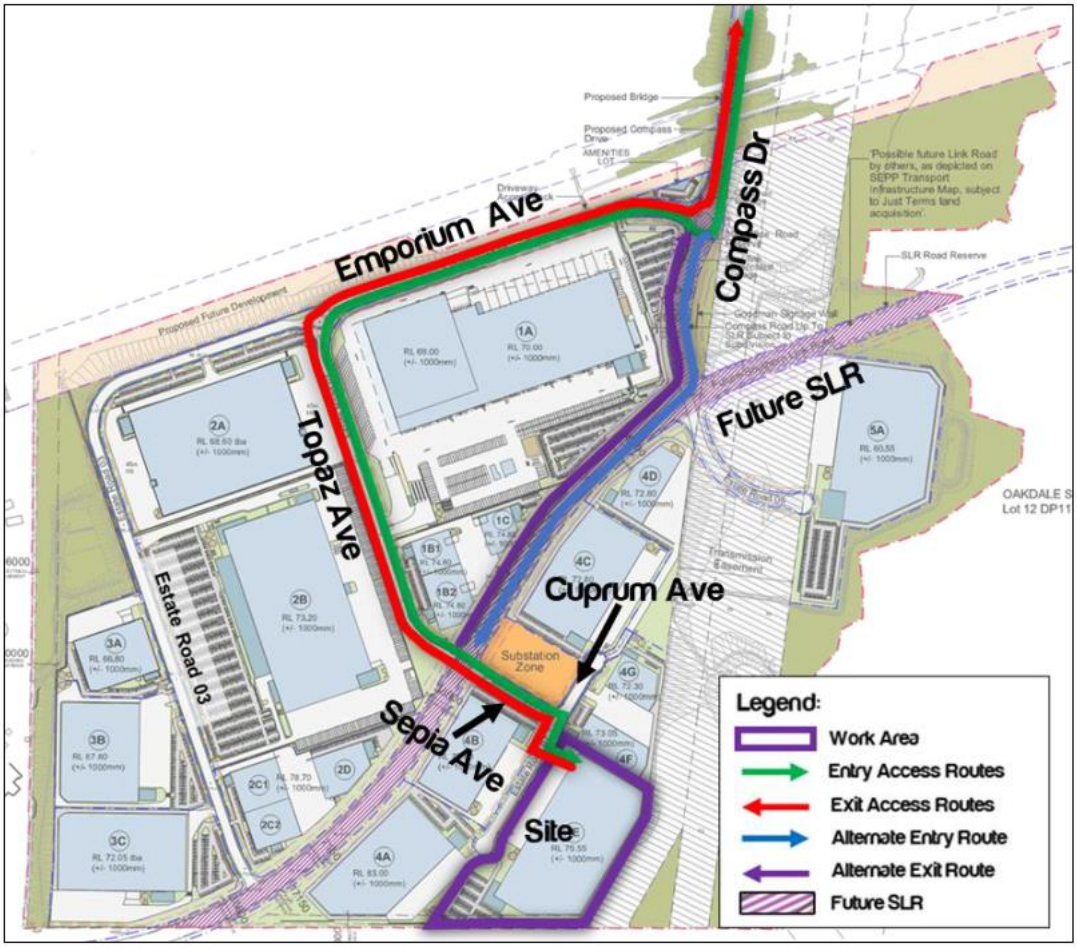
> *B2. Works outside of the hours identified in Condition B1 may be undertaken in the following circumstances:*
>
> *a) works that are inaudible at the nearest sensitive receivers;*
>
> *b) works agreed to in writing by the Planning Secretary;*
>
> *c) for the delivery of materials required outside these 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.

## 2.4 Construction Site Access

The primary construction access will be from Compass Drive via the Link Road, and an ancillary connection via Emporium Ave, Topaz Ave and Sepia 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 4**.

**Figure 4 Site Access Routes**




## 2.5 Contractor Car Parking

All contactor parking areas will be wholly within dedicated parking areas in the Oakdale West Estate. Qanstruct shall nominate Contractor parking zones that do not obstruct any vehicle manoeuvre routes. The location of Contractor parking lots are expected to change as construction continues and encompasses various portions of the Site.

## 2.6 Construction Contact Details

**Table 2** lists the key contacts during the construction of Building 4E.

**Table 2 Construction Contact List**

| Role | Name | Company | Contact Details |
|---|---|---|---|
| Project Principal/Superintendent | Ben Milner | Goodman | 0410 557 543<br>Ben.milner@goodman.com |
| Site Manager | Allistair Morris | Qanstruct | 0417 204 875<br>AMorris@Qanstruct.com.au |
| Contractor's Project Manager | Daniel Lipari | Qanstruct | 0411 414 096<br>dlipari@qanstruct.com.au |
| Contractor's NSW OHSE Manager | Wes Ellington | Qanstruct | wellington@qanstruct.com.au |
| Environmental Representative | Carl Vincent | ERSED | 0424 203 046<br>carl.vincent@ersed.com.au |
| Communications and Community Liaison Representative | Dan Thompson | SLR | 0428 060 995<br>dthompson@slrconsulting.com |

# 3 Environmental Management Framework

## 3.1 Qanstruct's Environmental Policy

Qanstruct is committed to conducting business in an environmentally responsible way, aimed at prevention of pollution to air, ground and water. As a result, Qanstruct have developed and implemented an Environmental Policy. This Environmental Policy will be implemented throughout the duration of the construction of Building 4E.

Qanstruct's Environmental Policy is certified to ISO 14001. A copy of the Environmental Policy is attached as **Appendix C**.

## 3.2 Roles and Responsibilities

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

Where Goodman is nominated as having responsibility as the Applicant, this may be delegated to their specialist consultants and their contractors.

**Table 3 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. |
| Contractor's Project Manager | • Overall responsibility for environmental management and compliance;<br>• Oversee the implementation of this CEMP and request adequate resources to enable implementation of this CEMP;<br>• Report on the performance of the CEMP to the Project Manager for review and as a basis for system improvement;<br>• Liaise with Goodman to keep them informed of the project's progress;<br>• Coordinate environmental inspections and reporting and authority liaisons;<br>• Record, notify, investigate and respond to any environmental incidents and, where necessary, develop and implement corrective actions;<br>• 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.<br>• Attend the Environmental Review Group (ERG) meetings if ERG meetings are deemed necessary by the Environmental Consultant; and<br>• Provide adequate environmental inductions/training to employees and contractors regarding their requirements under this CEMP. |

| Role | Responsibilities |
|---|---|
| Contractor's National OHSE Manager | • Ensure the legislative and corporate safety, health and environment management measures and controls are implemented and maintained;<br>• Participate in risk and hazard identification and control;<br>• Participate in incident investigations and management; and<br>• Participate in health and safety inspections. |
| All employees, contractors and subcontractors | • Ensure familiarity, implementation and compliance with this CEMP and appended management plans;<br>• Support Goodman's commitment to sustainability, environmental management and compliance;<br>• Work in a manner that will not harm the environment or impact on surrounding receptors;<br>• Report all environmental incidents and complaints to the Project Manager without delay; and<br>• Report any inappropriate construction practices and/or environmental management practices to the Project Manager without delay. |

## 3.3 Statutory Requirements

### 3.3.1 SSD 22191322

The Development will be constructed in accordance with SSD 22191322, including the documents referenced under Condition A2 of the Consent:

- The Conditions of Consent;
- Written directions from the Planning Secretary;
- The EIS (Keylan 2021) and Response to Submissions (Keylan 2021), including all specialist assessments and other appendices;
- The development layout plans and drawings attached to the Development Consent as Appendix 1; and
- The management and mitigation measures attached to the Development Consent as Appendix 3.

If there is any inconsistency between the plans and documentation referred to in Condition A2, the most recent document shall prevail to the extent of the inconsistency. However, the conditions of SSD 22191322 prevail to the extent of any inconsistency. The Project Manager will be notified if any inconsistencies are identified.

SSD 22191322 imposes a number of environmental performance and management requirements applicable to the construction of Building 4E.

A copy of the Consent for SSD 22191322 is attached at **Appendix A.**

### 3.3.2 SSD 7348

The works at Building 4E 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.

## 3.4 Inductions and Environmental Training

The Contractor's Project Manager will ensure that all employees and contractors involved in the construction of Building 4E 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;
- the environmental sensitivity of all retained native vegetation, which are critically endangered ecological communities under both State and Federal legislation (Section 4 FFMP);
    - Legal duty of care to ensure that no deliberate or inadvertent clearing or damage resulting from the activities being undertaken;
    - The penalties that apply under both State and Federal legislation for any deliberate or inadvertent clearing or damage resulting from the activities being undertaken;
    - The stop work procedure required should any damage occur to native vegetation (refer Section 5).
- Site-specific issues including:
    - Sound erosion and sediment control practices, 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;
    - The potential to encounter wildlife; and the protocols that will be implemented in the event wildlife is encountered;
    - 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 4.7**);
- Identification, reporting and management of contaminated land (see **Section 4.11**); 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); and
- Outline the mitigations measures for the works and the area (see **Section 4**).

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 22191322 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 22191322 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 Building 4E 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 Oakdale West's Environmental Representative (ER) 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 Building 4E 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 ER) 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 4** 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 4 Regulatory Authority Contact List**

| Regulatory Authority / Stakeholder | Key Contact | Contact Details | |
|---|---|---|---|
| **Department of Planning, Industry and Environment (DPIE)** | Compliance Unit | 1300 305 695 or 02 9228 6111<br>compliance@planning.nsw.gov.au | |
| **Environment Protection Authority (EPA)** | Environment Line | 131 555<br>info@environment.nsw.gov.au | |
| | Head office (Sydney) | 02 9995 5000 | |
| **Penrith City Council** | Main switchboard | 02 4732 777<br>council@penrith.city | |
| **Water NSW** | Main switchboard | 1300 662 077<br>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<br>After hours: 02 9515 6111 | |
| **SafeWork NSW** | Incident Notification Hotline | 131 050<br>Select Option 3 to report a "Serious Incident or Fatality" – this will result in the incident being recorded and the appropriate person being contacted. | |
| **Emergency Services** | NSW Police<br>NSW Fire and Rescue<br>NSW Ambulance Service | 131 444<br>1300 729 579<br>- | In case of emergency – 000 |

In accordance with Condition C7 of Development Consent SSD 22191322, once Goodman becomes aware of an incident Goodman is required to immediately (within 24 hours) provide a written incident notification via the Major Projects website 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 C8 of SSD 22191322, the DPIE will be notified in writing via the Major Projects website within seven days of becoming aware of any non-compliance.

C9 and C10 of SSD 22191322 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 C7 and Appendix 4 of Development Consent SSD 22191322 require 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 Qanstruct's Incident Report Form (**Appendix D**). A copy of the completed report will be maintained for at least five years by Qanstruct.

Condition C7 and Appendix 4 of Development Consent SSD 22191322 requires that a detailed incident report be provided to the DPIE within 30 days of the incident occurring.

The Incident 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 C9 of SSD 22191322.

### 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 Qanstruct'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 (RMS 2018).

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 Oakdale West's 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 2020a) (see **Appendix L**).

### 3.6.1 Performance Objective

To ensure that all environmental complaints in relation to the construction of Building 4E 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 Qanstruct's Complaint Form (**Appendix E**). 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 Qanstruct's Complaint Form (see **Appendix E**); 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 Building 4E at 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.

Additional information can be located in the CCS (SLR 2020a) attached as **Appendix L**.

# 4 Environmental Management Commitments

Environmental aspects with the potential to be impacted through the construction of Building 4E are addressed in the following sub-sections. These issues have specific regulatory requirements imposed 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 5** lists the general environmental controls that will be implemented throughout the construction of Building 4E to minimise the potential for adverse impacts on the local environmental and surrounding receptors.

**Table 5 General Construction Environmental Management Controls**

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| The total area of warehousing and office space at the development must not exceed a maximum gross lettable area of 35,560 square metres. | Qanstruct/Goodman | Ongoing | SSD 22191322 Condition A5 |
| The Applicant must:<br>(a) provide safe and unobstructed access for TransGrid plant and personnel to access the transmission towers, lines and easement on and adjacent to the site, 24 hours a day, 7 days a week;<br>(b) comply with the requirements of TransGrid for any works in the TransGrid easement; and<br>(c) advise TransGrid of any proposed amended or modified encroachment into the easement. | Qanstruct | Ongoing | SSD 22191322 Condition A31 |
| All monitoring records will be maintained to demonstrate compliance with the CEMP, including:<br>• Site environmental inspection reports<br>• Environmental monitoring data<br>• Internal and external audit reports<br>• Reports of environmental incidents, environmental, associated actions taken, and follow-up actions<br>• Minutes of management review meetings<br>• Induction and training records | Qanstruct | For 5 years after completion date | Best practice |
| 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 relating to Building 4E works will be managed in accordance with the CNVMP (SLR 2021c) prepared to support this CEMP, attached as **Appendix F**.

**Table 6** outlines the project specific Noise Management Levels (NMLs) to be adhered to during construction as outlined in the CNVMP (SLR 2021c).

**Table 6 Project Specific Construction Noise Management Levels**

| Receiver | Period | $L_{Aeq,15min}$ 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.

The environmental management controls in **Table 7** will be implemented to minimise the potential for adverse noise emissions from the construction of Building 4E.

**Table 7 Environmental Management Controls for Noise**

| Measure | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| The development must be constructed to achieve 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 management and mitigation measures in the Appendix 2. | Qanstruct | Ongoing | SSD 22191322 Condition B4 |
| **Project Planning** | | | |
| Less noise and vibration intensive construction techniques for rock breaking and concrete sawing will be used. | Qanstruct | Ongoing | CNVMP / Best practice |
| 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. | | | |
| **Scheduling** | | | |

| Measure | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| 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.<br>Consultation with these receivers will be undertaken to determine appropriate respite periods, such as exam periods for schools. | Communications and Community Liaison Representative | Ongoing | CNVMP / Best practice |
| 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. | | | |
| 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. | Qanstruct | Ongoing | CNVMP / 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. | Qanstruct | Ongoing | CNVMP / Best practice |
| **Plant and Equipment Source Mitigation** | | | |
| All construction plant and equipment used on Site must be, in addition to other requirements:<br>a) regularly inspected and maintained in an efficient condition;<br>b) operated in a proper and efficient manner. | Qanstruct | Ongoing | SSD 22191322<br>Condition A22 |

| Measure | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| 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). | Qanstruct | Ongoing | 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. | | | |
| 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 | CNVMP / 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 3.6**. | | | |
| **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. | Qanstruct | Ongoing | CNVMP / 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 5** for full details of monitoring requirements. | | | |

## 4.3 Vibration

Vibration during the construction of Building 4E will be managed in accordance with the CNVMP (SLR 2021c) prepared to adhere to best practice standards, and attached as **Appendix C**.

The vibration dose values (VDVs) recommended in the EPA's *Assessing Vibration: a technical guideline* (2006) for vibration of an intermittent nature are listed in **Table 8**.

**Table 8 Acceptable Vibration Dose Values for Intermittent Vibration**

| 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.

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 Safe Working Distances for Vibration Intensive Plant**

| 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 RMS (2016) Construction Noise and Vibration Guideline (CNVG).

Note 2: Criteria reference from German Institute for Standardisation (Deutsches Institut für Normung) (1999) DIN 4150 – Structural vibration - Effects of vibration on structures.

The environmental management controls in **Table 10** will be implemented to minimise the potential for adverse vibration impacts from the construction of Building 4E.

**Table 10 Environmental Management Controls for Vibration**

| Measure | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| **Vibration** | | | |
| Where works are required within the minimum working distances, vibration monitoring will be undertaken to confirm that vibration is within acceptable levels. | Qanstruct | Ongoing | CNVMP / Best practice |
| 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 | |
| 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. | | | |

## 4.4 Air Quality

Construction air quality will be managed in accordance with the CAQMP (SLR 2021) prepared to support this CEMP, attached as **Appendix G**.

The CAQMP will be implemented during the construction of Building 4E at Oakdale West to ensure that acceptable levels of amenity are maintained for surrounding residents and the relevant ambient air quality criteria are complied with for particulate matter at surrounding receptor locations.

The environmental controls in **Table 11** will be implemented to minimise the potential for adverse dust emissions and impacts during the construction.

Note: **Table 11** is replicated as Table 7 in the CAQMP.

**Table 11 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 | 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. | Qanstruct | | |
| 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. | Qanstruct | 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. | Qanstruct | Ongoing | SSD 7348 Condition D98 SSD 22131922 Condition 34 |
| Exposed surfaces and stockpile will be suppressed by regular watering or use of approved dust suppressants. | Qanstruct | Ongoing | SSD 7348 Condition D99a |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| Land stabilisation works will be carried out in such a way on site to minimise exposed surfaces. | Qanstruct | Ongoing | SSD 7348 Condition D99e |
| Construction of Lot 4E will not cause or permit the emission of any offensive odour, as defined in the POEO Act. | | | 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.<br>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. | Qanstruct | 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:<br>• General - 20km/h<br>• High risk area - 10km/h<br>• Haul 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. | Qanstruct | | |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| **Operations** | | | |
| Only cutting, grinding or sawing equipment fitted with suitable dust suppression systems, such as water sprays will be used. | Qanstruct | 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. | | | |
| Water carts will be used on all denuded or exposed surfaces and unsealed roads to minimise dust emissions. | Qanstruct | 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.<br>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. | Qanstruct | 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. | Qanstruct | 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 Qanstruct 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. | Qanstruct | 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. | Qanstruct | 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. | Qanstruct | 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 H**.

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 are as follows:

- Building 4E 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. See Section 4.1.2 of the CTMP for further details.

The environmental management controls in **Table 12** will be implemented to ensure road safety and network efficiency during construction.

**Table 12 Environmental Management Controls for Traffic**

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| Emergency vehicle access to and from the Site will be available at all times while the site is occupied by construction activities. | Drivers / Qanstruct | Ongoing | CTMP Section 2.3 |
| All construction vehicles will use the primary access Topaz Ave as shown in Figure 4. | Drivers / Qanstruct | Ongoing | CTMP Section 2.3 |
| Drivers will not use Bakers Lane for access to and from the Site. | Drivers / Qanstruct | Ongoing | CTMP Section 2.3, 4.1.3 and 5.2 |
| A schedule for deliveries of materials and goods will be established on the previous day, and Traffic Controllers will maintain radio contact with construction vehicles at all times. | Qanstruct | Ongoing | CTMP Section 4.1.3 |
| At no stage will queueing occur on the public road network. In the event that vehicles are required to use a layover prior to arrival at site, they will laydown within Compass Drive before arriving to site in order to avoid any on-street queuing. | | | |
| 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, as per Section 4.1.3 of the CTMP. | | As required | |
| All endeavours will be undertaken to limit vehicular movements with the easement areas, wherever practicable. | Qanstruct | Ongoing | CTMP |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| No vehicle circulation will be undertaken within 5 m of any transmission structure or guy-wires. | Qanstruct | Ongoing | Section 4.1.4 |
| All drivers will adhere to the Driver Code of Conduct outlined in Section 5 of the CTMP. | | | CTMP Section 4.2.1 |
| Contractors 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. | | | CTMP Section 4.2.2 |
| 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. | | | CTMP Section 4.2.3 |
| All material loading will occur within the construction site boundary. | | | CTMP Section 4.2.4 |
| No loading will 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 Sepia Ave and Cuprum 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. | | | |
| 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. | | As required | CTMP Section 4.2.5 |
| 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. | | Prior to commencing construction and ongoing | CTMP Section 4.2.6 |
| Site access gates would 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. | | Prior to commencing construction and ongoing | CTMP 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). | | Ongoing | CTMP Section 4.2.8 |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| 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. | Qanstruct | Ongoing | CTMP Section 4.2.9 |
| 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. | | | |
| Safety to motorists and pedestrians throughout the area will be maintained during construction through the preparation and execution of TGS's, which will be monitored and updated accordingly throughout the project. | Qanstruct | | CTMP Section 6.2 |
| Any TGS shall maintain a suitable level of access past work areas for pedestrians or cyclists at all times. | Qanstruct | | CTMP Section 3.2 |
| Drivers will be responsible and accountable for their actions when operating a company vehicle or driving for the purposes of work. | Drivers | | CTMP Section 5.3 |
| The highest level of professional conduct will be displayed when driving a vehicle at work. | | | |
| All drivers will have a current driver licence for the class of vehicle they are driving, and this licence is to be carried at all times. | Drivers / Qanstruct | | |
| Management will be immediately notified if their drivers licence has been suspended, cancelled, or has had limitations applied. | Drivers | | |
| All traffic and road legislation will be complied with when driving. | | | |
| Hazards will be assessed while driving. | | | |
| Daily pre-start checks of oil, tyre pressures, radiator and battery levels of all company vehicles regularly used will be undertaken. | Drivers / Qanstruct | | |
| All drivers will drive within the legal speed limits, including driving to the conditions. | Drivers | | |
| All drivers will not drive outside of the approved Heavy Vehicle routes. | Drivers / Qanstruct | | |
| All drivers will obey the weight, length and height restrictions imposed by the National Vehicle Regulator, and other Government agencies. | | | |
| Heavy Vehicles will adhere to the routes outlined in **Section 2.4.** | | | |
| Drivers will be cognisant of the noise and emissions requirements imposed within the EIS, and in a broader sense, the NSW/ Australian Road Rules. | Drivers | | |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| Drivers will not queue on public roads unless a prior approval has been sought. | Drivers | Ongoing | CTMP Section 5.3 |
| No tracked vehicles will be driven on a paved road. | Drivers | | |
| Drivers will not 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. | Drivers / Qanstruct | | |
| All drivers to report to their supervisor if they have been prescribed medication prior to the start of work. | Drivers | | |
| A safety seat belt will be worn at all times when in any vehicle. | Drivers | | |
| All drivers will avoid distractions when driving i.e. the driver will adjust car stereos/mirrors etc. before setting off, or pull over safely to do so. | Drivers | | |
| All near-hits, crashes and scrapes will be reported to management. | Drivers / Qanstruct | | |
| All infringements will be reported to management at the earliest opportunity. | | | |
| Vehicle defects will be reported to management. | | Prior to the next vehicle use | |
| The authorised site access and egress route will be followed. | | Ongoing | |
| The speed limits within the construction site will be adhered to. | Drivers | | |
| Loads will be covered at all times | Drivers | | |
| Ensure that all drivers adhere to the designated heavy vehicle routes, shown as entry and exit routes in **Section 2.4**. If a driver accesses the Site contrary to the approved routes, then approval to drive to and from the Site will be revoked by Management. | Qanstruct | | CTMP Section 5.4 |
| Pre-commencement checks will be undertaken for all new traffic related plant arriving on site and prior to undertaking any work. | Drivers / Qanstruct | Prior to first use | |
| Prestart inspections will be completed for all traffic related plant and equipment currently on-site. | Drivers / Qanstruct | Daily | |
| All construction plant will be fitted with a flashing light, fire extinguisher and reverse alarms. | Qanstruct | Prior to first use | |
| All operators onsite will have a current verification of competency (VOC) for their current driver's licence of the appropriate class. | Qanstruct | Ongoing | CTMP Section 5.4 |
| All maintenance requirements will be completed. | Qanstruct | Ongoing | CTMP Section 5.4 |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| Appropriate driver training or re-training will be arranged (where required), including:<br>• Operator assessment as part of all inductions;<br>• Regular Toolbox talks on safety features, managing fatigue, approved heavy routes, driver responsibility and drink-driving (see **Section 3.4**). | Qanstruct | Ongoing | CTMP Section 5.4 |
| Management will not cover or reimburse staff speeding or other infringement notices. | | | |
| Only legal use of mobile phones in vehicles while driving will be undertaken. | | | |
| Improved fuel efficiency will be encouraged by:<br>• Use of other transport modes or remote conferencing, whenever practical;<br>• Providing training on, and circulating information about, travel planning and efficient driving habits. | | | |
| If a vehicle crash occurs, the vehicle will be stopped as close as possible to the scene without hindering traffic. Ensure your own safety first, then help any injured people and seek assistance immediately if required. | Drivers / Qanstruct | Following a vehicle crash | CTMP Section 5.5 |
| If a vehicle crash occurs, follow the instructions listed in Section 5.5 of the CTMP. | | | |
| No dirt or debris from the construction vehicles is tracked on to the public road network. | Drivers / Qanstruct | Ongoing | CTMP Section 5.6 |
| 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. | | | |
| 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. | Qanstruct | Ongoing | CTMP Section 6.3 |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| The CTMP will be reviewed in accordance with Section 7.1 of the CTMP. | Qanstruct | 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 Building 4E :

- Soil and Water Management Plan (SWMP) (Rubicon Enviro 2021) – attached as **Appendix I**. The SWMP aims to 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.
- Erosion and Sediment Control Plan (ESCP) (Rubicon Enviro 2020a) – attached as **Appendix Ia**. The ESCP aims to reduce the potential for risk of environmental impacts caused by erosion and sedimentation associated with project activities.

While these documents should be referred to for specifics, the environmental management controls are summarised in **Table 13**.

**Table 13 Environmental Management Controls for Water and Soil**

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| **General** | | | |
| Prior to the commencement of any construction or other surface disturbance for the development, the Applicant must install and maintain suitable erosion and sediment control measures on-site, in accordance with the relevant requirements of the Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book (Landcom, 2004) guideline and the Erosion and Sediment Control Plan included in the CEMP required by condition C2. | Goodman / Qanstruct | Prior to construction | SSD 22131922 Condition B12 |
| Construction will comply with section 120 of the POEO Act, which prohibits the pollution of waters. | Qanstruct | Ongoing | SSD 22131922 Condition B123 |
| Planning, permits and personnel for soil and water management activities and controls will be managed as per Table 9 in the ESCP. | | Ongoing | ESCP Section 9 |
| 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. | | Pre-construction / Ongoing | SWMP Section 6 |

| Environmental Management Control | 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). | Qanstruct | Pre-construction / Ongoing | SWMP Section 6 |
| Environmental Work Method Statements (EWMSs) may be required to be prepared and implemented to manage soil and water impacts for activities assessed as having high environmental risk (see SWMP Section 6 for further examples of these activity types). | | Ongoing | SWMP Section 6 |
| Contaminated soils and Acid Sulfate Soils and / or Potential Acid Sulfate Soils are to be managed in accordance with the ESCP (see **Appendix Ia**). | | Pre-construction / Ongoing | SWMP Section 6 |
| **Erosion and Sediment Control** | | | |
| The Primary ESCP 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. This ESCP is to be referred to and considered when preparing progressive erosion and sediment control plans. | Qanstruct / Project Soil Conservationist | Pre-construction / Ongoing | SWMP Section 6 |
| Sediment Controls for soil and water management activities and controls will be managed as per Table 9 in the ESCP. | Qanstruct | Ongoing | ESCP Section 9 |
| Progressive Erosion and Sediment Control Plans (PESCPs) will be prepared and implemented in advance of construction. PESCPs will be updated as required. | Qanstruct / Project Soil Conservationist | Pre-construction / Ongoing | SWMP Section 6 |
| Prior to the commencement of any construction or other surface disturbance for the development, suitable erosion and sediment control measures to be installed and maintained on-site, in accordance with the relevant requirements of the Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book (Landcom, 2004) guideline and the approved Erosion and Sediment Control Plan included as **Appendix Ia**. | Qanstruct | Pre-construction / Ongoing | SWMP Section 6 |
| 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. | Qanstruct | Pre-construction / Ongoing | SWMP Section 6 |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| Site compounds, access tracks, stockpile sites and temporary work areas will be designed and located to minimise erosion. | Qanstruct | Pre-construction / Ongoing | SWMP Section 6 |
| Works will be programmed to minimise the extent and duration of unstabilised soil surfaces. | | Pre-construction / Ongoing | SWMP Section 6 |
| 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 / Ongoing | SWMP Section 6 |
| 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). | | Ongoing | SWMP Section 6 |
| 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.<br>Lip berms and batter chutes with velocity dams will be progressively formed and maintained on fill formations. | | Ongoing | SWMP Section 6 |
| Staged re-vegetation and/or other permanent stabilisation will be implemented in Site areas as work proceeds. | | Ongoing | SWMP Section 6 |
| 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. | | As required | ESCP Section 7.4 |
| A structured erosion and sediment control training program will be implemented for all relevant site personnel in the form of inductions, toolbox talks and workshops / training presentations. | | Ongoing | ESCP Section 7.4 |
| The extent and duration of construction disturbance will be minimised. | | Ongoing | ESCP Section 7.4 |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| Off-site water flows around or across site will be controlled and diverted. | Qanstruct | Ongoing | ESCP Section 7.4 |
| On-site flows to installed sediment controls and sediment basins will be controlled and diverted. | | | |
| Topsoils for site rehabilitation and revegetation will be conserved. | | | |
| Progressive erosion methods and techniques will be implemented throughout various work stages. | | | |
| Suitable sediment controls including sediment filters, traps, sumps and basins will be constructed and managed. | | | |
| A thorough inspection and maintenance program will be developed to monitor, record and schedule actions for maintenance and upgrades of controls, rectification works, and sediment removal and handling. | | | |
| A procedure will be established to monitor forecast weather events and implementing response plans for significant wind or rainfall events and flooding. | | | |
| Timely and progressive stabilisation will be undertaken of disturbed areas prior to final landscaping. | | | |
| Stabilisation measures will be monitored, and prompt and effective revegetation and permanent stabilisation promoted. | | | |
| 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 of the 'Blue Book' Volume 2D: Main Road Construction 2007.<br>Commonly employed methods and techniques that may be likely to be utilised on the Project are detailed in Table 9 of the ESCP. | | | |
| **Stockpiles** | | | |
| Stockpiles will be located in designated stockpile sites, above 10-year flood levels, and at least 5 m from likely areas of concentrated water flows and drainage lines, | Qanstruct | Ongoing | ESCP Section 7.4 |
| Topsoil stockpiles will be formed to heights 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. | Qanstruct | Ongoing | ESCP Section 7.4 |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| Stockpiles will be established so that any slump of the stockpile will not affect erosion and sediment control measures or infringe on specified minimum clearance requirement. | Qanstruct | Ongoing | ESCP Section 7.4 |
| Stockpiles will be 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. | | Ongoing | ESCP Section 7.4 |
| Stockpiles will be 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 | ESCP Section 7.4 |
| Clearing, site establishment, topsoil stripping and stockpiling will be managed as per Table 9 in the ESCP | | Pre-construction / Ongoing | ESCP Section 9 |
| **Sediment Basins** | | | |
| Construction sediment basins will be designed and constructed in accordance with the requirements and procedures detailed in the Blue Book Volume's 1 & 2D.<br>The construction sediment basin design/s, restoration and revegetation methodology will be formulated and/or reviewed by the Project Soil Conservationist. | Qanstruct | Pre-construction / Ongoing | ESCP Section 7.4 |
| All sediment basins will have depth indicators installed that clearly show the sediment storage zone together with basin identification signage basin number. | | Ongoing | ESCP Section 7.4 |
| 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. | | Ongoing | ESCP Section 7.4 |
| Suitable all-weather access will be constructed and maintained to sediment basins to allow for basin testing, treatment, discharge and maintenance. | | Pre-construction / Ongoing | ESCP Section 7.4 |
| 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 | | Ongoing | ESCP Section 7.4 |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| 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. See Table 7-4 in SWMP for discharge water quality criteria. | Qanstruct | Ongoing | ESCP Section 7.4 |
| 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 storage capacity to any individual construction water quality basin prior to the next rainfall event shall not exceed 5 days. | | | |
| 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. | | | |
| A sediment basin management register will be maintained for each sediment basin that records;<br>• personnel approving the dewatering activities;<br>• time & date;<br>• water quality test results and estimated volumes for each discharge. | | | |
| **Dewatering** | | | |
| Personnel responsible for approval and/or carrying out dewatering activities will be adequately trained and inducted on the dewatering procedures and requirements. | Qanstruct | Ongoing | ESCP Section 7.4 |
| Water to be discharged from site will be discharged in accordance with a Site Dewatering Procedure.<br>In accordance with NSW EPA water quality criteria, the water quality parameters for discharge from site discharge points will be:<br>• Total Suspended Solids <50mg/L<br>• pH 6.5 - 8.5<br>• Oil & grease – not visible. | Qanstruct | Ongoing | ESCP Section 7.4 |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| 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;<br>• dewatering procedure;<br>• date and time for each discharge at each location;<br>• water quality test results for each discharge;<br>• personnel approving the dewatering activities;<br>• evidence of discharge monitoring, or risk assessment and mitigation; and<br>• measures used to eliminate the risks of pollution or erosion. | Qanstruct | Pre-construction / Ongoing | ESCP Section 7.4 |
| 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. | | Ongoing | ESCP Section 7.4 |
| All dewatering activities will be subject to prior approval from relevant project personnel. The dewatering activities will be monitored to ensure:<br>• intake suction devices are positioned to prevent extraction or disturbance of settled sediments,<br>• no erosion is occurring at discharge locations and/or downstream areas,<br>• no inadvertent or intentional controlled discharge of untreated waters occurs. | | Ongoing | ESCP Section 7.4 |
| **Site stabilisation and restoration** | | | |
| Management and procedures for site stabilisation will be in accordance with the primary Erosion and Sediment Control Plan **(Appendix Ia)**. | Qanstruct | Ongoing | ESCP Section 7.4 |
| 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. | Qanstruct | Ongoing / Post-construction | ESCP Section 7.4 |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| Restoration of these areas will include;<br>• topsoiling of the areas;<br>• seeding, planting, watering and maintenance;<br>• removal of temporary erosion control devices and of accumulated sediments;<br>• removal of unused construction materials and waste materials. | Qanstruct | Ongoing / Post-construction | ESCP Section 7.4 |

## 4.7 Waste

Construction waste will be managed in accordance with the Waste Management Plan (WMP) (SLR 2021d) prepared support the EIS and attached as **Appendix M**.

The environmental management controls in **Table 14** will be implemented to minimise the potential for adverse waste impacts from the construction of Building 4E.

**Table 14 Environmental Management Controls for Waste**

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| 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. | Qanstruct | Ongoing | SSD 22191322 Condition B29 |
| All waste materials removed from the site must only be directed to a waste management facility or premises lawfully permitted to accept the materials. | | | SSD 22191322 Condition B31 |
| 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. | | | SSD 22191322 Condition B32 |
| Waste generated outside the site must not be received at the site for storage, treatment, processing, reprocessing, or disposal. | | | SSD 22191322 Condition B33 |
| Suitable measures will be implemented to manage pests, vermin and declared noxious weeds on the Site. | | | 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**<br>In accordance with Council's Development Control Plan (DCP) and better practice waste management waste avoidance measures listed in the WMP should be followed. | | | |
| **Reuse, Recycling and Disposal**<br>In accordance with Council's DCP and better practice waste management waste reuse, recycling and disposal measures listed in the WMP should be followed. | | | |

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| **Waste Storage and Servicing**<br>In accordance with Council's DCP and better practice waste management waste reuse, recycling and disposal measures listed in the WMP should be followed. | Qanstruct | Ongoing | Best Practise |
| 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. | | | |
| 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. | | | |

## 4.8 Visual Amenity

As outlined in the EIS (Keylan 2021), Building 4E is designed to ensure it will be consistent with surrounding development and the Concept Plan approval for the site (as modified by MOD 7). The proposed design reflects high commercial and industrial standards and provides a visually balanced form.

Potential visual impacts during construction of Stage 5 would include the use of cranes and scaffolding during the erection of Building 4E and temporary infrastructure commonly associated with construction activities such as site compounds and lighting. These visual impacts are considered insignificant given their temporary nature.

**Table 15** outlines the mitigation measures to be implemented during construction to manage the impacts to visual amenity.

**Table 15 Environmental Management Controls for Visual Amenity**

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| The development must be consistent with the minimum building setbacks as outlined in Table 1 Development Controls in the Conditions of Consent. | Qanstruct | Ongoing | SSD 22191322 Condition A7 |
| The Applicant must construct Building 4E in accordance with the EIS and RTS and as shown on the figures in Appendix 1. | | Ongoing | SSD 22191322 Condition B16 |
| Lighting will comply with the latest version of AS 4282. | | Prior to commencing construction and ongoing | SSD 10397 Condition B19 |
| Lighting will be mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network. | | | |
| All signage and fencing will be erected in accordance with the plans included in the EIS and RTS. | | | SSD 10397 Condition B20 |
| Suitable measures will be implemented to manage pests, vermin and declared noxious weeds on the Site. | | Ongoing | Best practice |
| 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. | | During Environmental Consultant inspections | |

## 4.9 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.

**Table 16** outlines the mitigation measures to be implemented during construction to manage the impacts to flora and fauna.

**Table 16 Environmental Management Controls for Flora and Fauna**

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| **Protection of Native Vegetation** | | | |
| All contractors will be made aware during site induction of the environmental sensitivity of all retained native vegetation, which are critically endangered ecological communities under both State and Federal legislation. | Management / Contractors | Pre-construction | FFMP Table 3.1 (FF1) |
| Site induction will clearly describe the following:<br>• Legal duty of care to ensure that no deliberate or inadvertent clearing or damage resulting from the activities being undertaken;<br>• The penalties that apply under both State and Federal legislation for any deliberate or inadvertent clearing or damage resulting from the activities being undertaken; and<br>• The stop work procedure required should any damage occur to native vegetation (refer Section 5). | | | |
| Retained vegetation will be appropriately demarcated with readily visible signage to plant operations that it is a 'no go' construction zone;<br>• Erosion and sediment controls must be installed to protect the retained vegetation from potential sediment laden runoff during construction and must stay in place until the embankment is adequately stabilised; and<br>• All control materials are collected from the site once site stability is achieved. | Management / Contractors | Pre-construction | FFMP Table 3.1 (FF2) |
| Erosion and sediment controls will be installed to protect the retained vegetation from potential sediment laden runoff during construction and must stay in place until the embankment is adequately stabilised. | | | |
| All control materials will be collected from the site once site stability is achieved. | | | |

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| **Wildlife Protection** | | | |
| All personnel including contractors will be made aware through the site induction process of the potential to encounter wildlife; and the protocols that will be implemented in the event wildlife is encountered. | Management / Contractors | Ongoing throughout construction | FFMP Table 3.1 (FF3) |
| Vehicle and mobile plant operators shall remain vigilant when entering and exiting the works area, particularly at dusk and dawn; | | | |
| 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; and | | | |
| All on site personnel including contractors are to report any injured or near miss incidents with wildlife. | | | |
| Should unexpected fauna be encountered within the works site, the stop works procedure provided in Section 5 of FFMP will be followed. | Management / Contractors | Ongoing throughout construction | FFMP Table 3.1 (FF4) |
| **Erosion and Sediment Control** | | | |
| Offsite discharge shall be managed in strict accordance with Erosion & Sediment Control Plans prepared for Lot 4E; | Management / Contractors | Throughout construction | FFMP Table 3.1 (FF5) |
| A spill kit should be provided in an easily accessible location in the event that fuel or other contaminant spills occur. | | | |
| The contractor will continually monitor works to ensure that erosion and sediment controls are functioning optimally and compliance with site induction requirements are being adhered to. Refer to FF2 for additional control requirements relevant to protection of retained native vegetation. | | | |
| **Weed, Pest Species and Pathogen Management** | | | |
| The following hygiene procedures are to be implemented to avoid the introduction and/or spread of soil borne pathogens and weeds:<br>• Minimise work during wet/rainy periods;<br>• Vehicles, plant and machinery are to be clean and free of soil on arrival to the works area;<br>• 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;<br>Mud spilt on roads to be immediately removed by a road sweeper. | Management / Contractors / Employees | Ongoing throughout construction | FFMP Table 3.1 (FF6) |
| Future tenants are to install rodent (electronic or sonar) repellents to minimise prey for snakes | Management / Future tenants | Post construction, operation | FFMP Table 3.1 (FF7) |

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| Waste management shall ensure the following:<br>• All waste placed in skips or bins for disposal<br>or recycling will be adequately contained to ensure that the waste does not fall, blow, wash or otherwise escape from the site;<br>• Lids on skips or bins are to be kept closed at all times; and<br>• Employ adequate environmental management controls to prevent off-site migration of waste materials and contamination from the waste.<br>For example, consideration of slope, drainage, proximity relative to waterways, stormwater outlets and vegetation | Management / Contractors / Future Tenants | Ongoing throughout construction | FFMP Table 3.1 (FF8) |

## 4.10 Hazardous Goods and Contamination

The environmental controls that will be implemented to minimise the potential for environmental incidents relating to the hazardous goods and contamination are presented in **Table 17.** This includes an Unexpected Finds Protocol - Contamination (AECOM 2019), which has been prepared for Oakdale West to ensure that potentially contaminated material is appropriately managed, attached as **Appendix J**.

**Table 17 Environmental Management Controls for Dangerous Goods**

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| **Hazardous Goods** | | | |
| The quantities of dangerous goods stored and handled at the Site will be below the threshold quantities listed in *Hazardous and Offensive Development Application Guidelines - Applying SEPP 33* at all times. | Qanstruct | Ongoing | SSD 22191322 Condition B21 |
| Chemicals, fuels and oils will be stored in bunded areas in accordance with relevant Australian Standards and/or the *Storing and Handling of Liquids: Environmental Protection – Participants Manual* (Department of Environment and Climate Change 2007). | | | SSD 22191322 Condition B22 |
| Any material identified as contaminated will be disposed off site, with the disposal location and results recorded prior to its removal from the site. | Qanstruct / Environmental Consultant | As required | Best practice |
| The Contractor's Project Manager and the Environmental Consultant 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. | Qanstruct | Immediately | |
| Adequate quantities of suitable material will be kept on site to counteract spillage readily available i.e. Emergency spill kits. | | Prior to commencing construction and ongoing | |
| Emergency spill kits will be kept on site at all points of transfer for fuels and hydrocarbons, and at all other locations deemed necessary. | | Prior to commencing construction and ongoing | |
| Safety Data Sheets (SDS) will be kept in the Site office and/or safety system for any potentially hazardous goods stored and/or used on site. | | Ongoing | |
| The actions specified on the respective SDS will be implemented in the event of a minor chemical or fuel spill. | | | |
| Appropriate signage and spill kits will be maintained at key locations according to the construction schedule. | | | |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| All employees and contractors required to use potentially dangerous goods will be appropriately trained in the proper storage, use and handling. | Qanstruct | Ongoing | Best practice |
| 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. | Qanstruct | Ongoing | Best practice |
| **Unexpected Finds - Contamination** | | | |
| 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 G36 and the UCP (AECOM 2019). | Qanstruct / Project Manager / AECOM | As required | UCP Section 3.1 |
| In the event that unexpected contamination finds are encountered:<br>• Qanstruct will immediately inform the Project Manager and AECOM.<br>• The Project Manager will inform Goodman.<br>AECOM will inspect the unexpected find (if required). | | | UCP Section 3.1 |
| In the event that fragments of Asbestos Containing Materials (ACM) are identified during the earthworks, works will cease and the procedure outlined in Section 3.3 of the UCP will be implemented. | | | UCP Section 3.3 |
| In the event that burial pits relating to the former grazing activities are exposed, works will cease in that area and the procedure outlined in Section 3.4 of the UCP will be implemented. | | | UCP Section 3.4 |
| In the event that other contaminated materials are identified during the earthworks, works will cease and the procedure outlined in Section 3.5 of the UCP will be implemented. | | | UCP Section 3.5 |
| A Materials Tracking Plan (MTP) will be developed and implemented in accordance with Section 4 of the UCP. | Qantruct | Ongoing | UCP Section 4 |
| AECOM will prepare a Validation Report in accordance with the requirements of the NSW OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites* and EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*. | Qanstruct / AECOM | At the completion of the earthworks and if any unexpected finds were encountered that required remediation | UCP Section 5 |

## 4.11 Fire Safety and Emergency

The environmental controls that will be implemented to minimise the potential for environmental incidents relating to fire during the construction of Building 4E are presented in **Table 18**.

**Table 18 Environmental Management Controls for Fire Safety and Emergency**

| Environmental Management Control | 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. | Qanstruct | 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. | | 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. | | | |

## 4.12 Community

As required by Condition B52 of SSD 22191322, community engagement shall be undertaken in accordance with the Community Consultation Strategy (CCS) for Oakdale West, prepared by SLR (2020a) and is attached as **Appendix L**.

The community management controls in **Table 19** will be implemented during the construction of Building 4E.

**Table 19 Environmental Management Controls for the Community**

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| The community must be consulted with regularly throughout the development, including consultation with the nearby sensitive receivers identified in Appendix 2 of the consent conditions, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. | Communications and Community Liaison Representative | Ongoing | SSD 22191322 Condition B52 |
| Community engagement shall be undertaken in accordance with the Community Communication Strategy for the OWE. | | | |
| Sensitive receptors will be consulted prior to actions likely to generate noise, vibration, air quality of traffic impacts. | | No less than 48 hours prior | CCS Section 3.2 |
| Should any works be likely to generate impacts beyond those identified within the approval's documentation, consultation will be undertaken with the applicable managing agency. | | As required | |
| A Communications and Community Liaison Representative will be appointed as a single point of contact responsible for receiving and disseminating information requests and complaints, along with addressing any interface issues | | Prior to commencing construction and ongoing | CCS Section 4 |
| Community consultation meetings will be held to provide a project update and act as an opportunity for the community and stakeholders to discuss recent experiences and upcoming construction activities. | Community Consultation Team | Monthly. Frequency to be revised subject to the level of interest and the construction program | CCS Section 5.3 |
| Community workshops will be held to identify the overarching construction program and communications protocols, with the event advertised via local newspaper and letter box drop. | | Prior to commencing construction | |

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| A Consultation Register will be maintained and record community and stakeholder interactions, along with associated remedial actions as required. | Communications and Community Liaison Representative | Ongoing | CCS Section 5.3 |
| ERG Meetings will be held with key environmental stakeholders and will be briefed on upcoming project tasks with key environmental implications, along with complaints and enquiries received. | ER | As required | |
| Individual Community Meetings will be held with stakeholders as required to discuss a specific item. | Community Consultation Team | | |
| Newspaper Advertisements will be published in The Western Weekender and Mt Druitt – St Marys Standard identifying the project hotline number and web page address. | | Prior to commencing construction and ongoing | |
| Notification Letterbox Drop will be provided to specific receivers identified as being potentially affected by construction. This could be undertaken in tandem with door knocking. | | As required in accordance with Table 7 of the CCS | |
| Site Signage will display project information details including the hotline and web page, along with relevant project and safety information. | | Prior to commencing construction and ongoing | |
| Online Feedback Forms will be available on the web page, with feedback provided to be incorporated into the consultation register and actioned as required. | | | |
| A 24 hour Project Information and Complaints Number will be available for reporting project feedback. | Communications and Community Liaison Representative | | |
| Staff and Visitor Induction and Training will be undertaken in accordance with **Section 3.4**. | Qanstruct | | |
| Text Message and Email Alerts will provide important information at short notice to potentially affected receivers. Text message details to be recorded in the consultation register. | Community Consultation Team | As required | |
| A dedicated web page will be established to provide project updates, along with real time environmental performance monitoring. | | Prior to commencing construction and ongoing | |
| Notification requirements will be undertaken in accordance with Table 6, 7 and 8 of the CCS. | | Ongoing | CCS Sections 5.3.2 and 5.3.3 |

## 4.13 Heritage

The environmental management controls in **Table 20** will be implemented to minimise the potential for adverse heritage impacts from the construction of Building 4E.

These controls outline the Unexpected Finds Protocol from Conditions B37, B38 and B39 of SSD 22191322 to be followed in the event that unanticipated archaeological items are uncovered.

In addition to this, if any further instruction is required, please refer to the Oakdale West Estate-Wide Unexpected Finds Protocol – Archaeological Items, prepared by Artefact (2019) and attached as **Appendix N**.

**Table 20 Environmental Management Controls for Heritage**

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| B37. If any item or object of Aboriginal heritage significance is identified on site:<br>a) all work in the immediate vicinity of the suspected Aboriginal item or object must cease immediately;<br>b) a 10 m wide buffer area around the suspected item or object must be cordoned off; and<br>c) Heritage NSW must be contacted immediately. | Qanstruct | Ongoing | SSD 22191322 Condition B37 |
| B38. 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*. | Qanstruct | Ongoing | SSD 22191322 Condition B38 |
| B39. If any archaeological relics are uncovered during the course of the work, then all works must cease immediately in that area. Unexpected finds must be evaluated and recorded in accordance with the requirements of Department of Premier and Cabinet, Heritage Division. | | | SSD 22191322 Condition B39 |

# 5 Monitoring and Reporting

## 5.1 Environmental Monitoring and Inspections

**Table 21** summarises the monitoring requirements for the construction of Building 4E at Oakdale West as set out in SSD 22191322 and relevant management plans.

**Table 21 Monitoring and Inspection Requirements**

| Monitoring / Inspection Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| **General** | | | |
| Inspection and maintenance of all plant and equipment items to ensure optimal operating condition. | Qanstruct | As specified by the manufacturer / supplier | Best practise |
| Qanstruct will 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 CEMP and SSD 22191322. | Environmental Consultant | Weekly | SSD 22191322 Condition C1(a)(iii) |
| All monitoring will be undertaken in accordance with Division 9.4 of Part 9 of the EP&A Act. | Environmental Consultant / Qanstruct | Ongoing | SSD 22191322 Condition C13 |
| 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. | Qanstruct | Weekly | Best practice |
| **Noise** | | | |
| 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 | Qanstruct | Prior to commencing noise intensive works | CNVMP Section 8.1 |
| Attended monitoring will also be undertaken in response to any complaints regarding construction noise and will take place during the expected noisiest construction periods and be representative / indicative of any impact across all potentially affected sensitive receivers. | Qanstruct | Following a noise-related complaint | CNVMP Section 8.1 |

| Monitoring / Inspection Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| All items of acoustic instrumentation utilised will be designed to comply with applicable guidelines and carry current calibration certificates. | Qanstruct | Ongoing | CNVMP Section 8.1 |
| **Vibration** | | | |
| Vibration will be monitored continuously within the minimum working distances (see **Table 10**) 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. | Qanstruct | Continuously | CNVMP Section 8.2 |
| 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. | | Prior to commencing vibration intensive works | |
| 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 | |
| **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 | Qanstruct | 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 Building 4E. | Goodman | Ongoing | CAQMP Section 10 |

| Monitoring / Inspection Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| **Traffic** | | | |
| Monitoring of movements to ensure drivers are adhering to the approved construction hours, and to ensure that the approved traffic generation, and subsequent impacts on the road network, are in line with those approved | Qanstruct | Fortnightly | CTMP Section 7.1 |
| Monitor designated heavy vehicle routes being used on site | Qanstruct | Ongoing | CTMP Section 5.4 |
| Delivery volumes will be monitored against the volumes outlined within report, including rego and time of entry. | | | CTMP Section 7.1 |
| Regular checks will be undertaken to ensure all loads are entering and leaving site covered. | | | |
| A Dilapidation report shall be undertaken 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. | Qanstruct | Monthly | CTMP Section 7.1 |
| Monitor designated heavy vehicle routes being used on site | | Ongoing | |
| A program will be developed to monitor the effectiveness of the CTMP. | | Ongoing | |
| **Soil and Water** | | | |
| Any material transported onto road surfaces to be removed. | Qanstruct | Daily and before rainfall | Best practice |
| Environmental Site Inspection to evaluate the effectiveness of erosion and sediment control measures in accordance with Table 6-1 of SWMP. | Environmental Site Representative | 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.<br>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. | |
| Establish 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. | Qanstruct | Ongoing | ESCP Section 7.4 |
| Monitor forecast weather events and implement response plans for significant wind or rainfall events and flooding. | | | |

| Monitoring / Inspection Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| Stabilisation measures will be monitored, and prompt and effective revegetation and permanent stabilisation promoted. | Qanstruct | Ongoing | ESCP Section 7.4 |
| **Waste** | | | |
| As per Council's DCP, records of waste volumes recycled, reused or contractor removed are to be maintained. | Qanstruct | 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. | Qanstruct / ER | During Environmental Consultant inspections | Best practice |
| **Community** | | | |
| The following will be monitored:<br>• Total number of complaints<br>• Number of complaints relating to lack of consultation / misinformation / confusion<br>• Number of enquiries relating to information previously disseminated<br>• Number of complaints / enquiries within defined categories based on theme or subject<br>• Response timeframes | Communications and Community Liaison Representative | Monthly | CCS Section 6.1 |

## 5.2 Reporting

**Table 22** summarises the reporting requirements for the construction of Building 4E at Oakdale West as set out in SSD 22191322 and relevant management plans.

**Table 22 Reporting Requirements**

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| **General Environmental Performance** | | | |
| Compliance Reports of the Development will be carried out in accordance with the *Compliance Reporting Post Approval Requirements (Department 2020)*. | Goodman | As set out in the DPE guidelines | SSD 22191322 Condition C11 |
| Each Compliance Report will be made publicly available. | | No later than 60 days after submitting it to the DPIE and notify the DPIE in writing at least 7 days before this is done. | SSD 22191322 Condition C12 |
| Regular reporting on environmental performance will be uploaded on the dedicated website as per the reporting arrangements in any plans or programs approved under the conditions of SSD 22191322. | | 48 hours prior to commencing construction and ongoing | SSD 22191322 Condition C14 |
| The Qanstruct will report environmental performance during regular management meetings and/or 'toolbox talks'. Items to be discussed include:<br>• Results of any monitoring activities undertaken<br>• Any environmental incidents that have occurred during the previous period, including the management / corrective actions taken<br>• Any complaints that have been received during the previous period, including any management / corrective actions taken | Qanstruct | Weekly | Section 3.4 |
| A copy of all environmental records will be maintained, including:<br>• Site environmental inspection reports<br>• Environmental monitoring data<br>• Internal and external audit reports<br>• Reports of environmental incidents, environmental, associated actions taken, and follow-up actions<br>• Minutes of management review meetings<br>• Induction and training records | Qanstruct | For at least 5 years after completion | Best practice |
| Meteorological data including rainfall will be recorded. | | Daily | |

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| **Incident / Non-Compliance Reporting** | | | |
| The DPIE will be notified of any incident in writing via the Major Projects website and include the requirements outlined in Appendix 4 of SSD 22191322. | Goodman / Qanstruct | Within 7 days after Goodman becomes aware of the incident | SSD 22191322 Condition C7 and Appendix 4 |
| A detailed incident report will be provided to the Planning Secretary and include the requirements outlined in Appendix 4 of SSD 22191322. | | Within 30 days of the incident occurring | |
| The DPIE will be notified of any non-compliance in writing via the Major Projects website. | | Within 7 days after Goodman becomes aware of the non-compliance | SSD 22191322 Condition C8 |
| A register of all complaints and non-compliances will be kept. | | For at least 5 years after completion | Best practice |
| **Noise** | | | |
| Monitoring reports will be produced following each monitoring survey and provided to Goodman for review. | Qanstruct | Following each monitoring survey | CNVMP Section 8.1 |
| **Vibration** | | | |
| Vibration monitoring reports will be prepared at the following stages:<br>• Prior to commencement of works (baseline report)<br>• Monthly during works (at a minimum)<br>• Within one week of an exceedance of the vibration limit alarm level (15 mm/s PPV)<br>• Upon completion of construction | Qanstruct | Monthly at minimum | CNVMP Section 8.2 |
| **Traffic** | | | |
| Reporting of movements to ensure drivers are adhering to the approved construction hours, and to ensure that the approved traffic generation, and subsequent impacts on the road network, are in line with those approved. | Qanstruct | Fortnightly | CTMP Section 6.2 |
| **Hazardous Goods and Contamination** | | | |
| Any material identified as contaminated will be disposed off site, with the disposal location and results of testing recorded prior to its removal from the site. | Qanstruct / Environmental Consultant | As required | Best practice |

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| 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 G36 and the UCP (AECOM 2019). | Qanstruct | As required | UCP Section 3.1 |
| AECOM will prepare a Validation Report in accordance with the requirements of the NSW OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites* and EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*. | Qanstruct / AECOM | At the completion of the earthworks and if any unexpected finds were encountered that required remediation | UCP Section 5 |
| **Community** | | | |
| The monthly community consultation summary will be made publicly available on the project web page and shall include:<br>• A summary of community consultation activities undertaken within the preceding month<br>• A summary of community consultation activities proposed within the following month<br>A summary of all enquiries and complaints received within the preceding month, including details of response and/or remediation activities | Communications and Community Liaison Representative | Monthly | CCS Section 6.2 |

## 5.3 Auditing

**Table 23** summarises the auditing requirements for Building 4E works as set out in SSD 22191322 and relevant management plans.

**Table 23 Audit Requirements**

| Reporting Requirement | Person Responsible | Timing / Frequency | References / Notes |
|---|---|---|---|
| All audits will be undertaken in accordance with Division 9.4 of Part 9 of the EP&A Act. | Environmental Consultant / Qanstruct | Ongoing | SSD 22191322 Condition C13 |
| A project audit will be undertaken to ensure all aspects of the project are implemented. | Environmental Consultant | Within 6 months of the commencement of construction | Environmental Consultant recommendation |
| **Soil and Water** | | | |
| An audit program will be developed:<br>• Noting the condition of installed erosion and sediment controls onsite<br>• Detailing maintenance requirements (if any) for installed erosion and sediment controls<br>• Recording the volumes of sediment removed from sediment controls and sediment traps, where applicable<br>• Recording the location to where extracted sediments are disposed. | Qanstruct | 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. | Qanstruct | As required | SWMP Section 7.6 |

## 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 Oakdale West's 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 | 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.<br>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.<br>Undertake all feasible and reasonable mitigation and management measures to ensure vibration levels are below applicable limits.<br>If vibration 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 |
|---|---|---|---|---|
| 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:<br>• *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 |
| Dust deposition reading of >4g/$m^2$/month | Trigger | Dust deposition rates are less than 4 g/$m^2$/month at all the dust gauges. | Dust deposition rate greater than 4 g/$m^2$/month is recorded by any of the dust gauges | Dust deposition rates greater than 4 g/$m^2$/month are recorded by two or more dust gauges for two months in a row. |

| Key Element | Trigger / Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|
| | Response | Continue monitoring program as normal. | • OWE Project Manager to analyse data to try to identify the source(s) of dust.<br>• Qanstruct to review operations to reduce dust emissions from the identified key source(s). Implement any additional mitigation measures as required, such as additional watering. | • OWE Project Manager to review and investigate construction activities and respective control measures for the monitoring period.<br>• If it is concluded that construction activities at Lot 4E 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), Qanstruct 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 |

| Key Element | Trigger / Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|
| | Response | Continue monitoring program as normal. | • Report the complaint to the regulator, in line with complaints handling procedure (See **Section 3.6.3**).<br>• 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 (see **Appendix D**). |
| | 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/$m^3$ |

| Key Element | Trigger / Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|
| Real-time suspended particulate matter monitoring (TSP and $PM_{10}$) | Response | Continue monitoring program as normal. | OWE Project Manager to review and investigate construction activities and respective control measures.<br>Where appropriate, implement additional remedial measures, such as:<br>• Deployment of additional water sprays, water trucks etc<br>• Relocation or modification of dust-generating sources<br>• Record findings of investigations and actions taken to reduce dust levels<br>• Continue to closely monitor dust levels to ensure they are decreasing<br>If elevated dust levels are due to regional dust event (fire, dust storm etc) – still take action to minimise dust from the Lot 4E site to minimise cumulative impacts, but also record details of the cause of the elevated background levels. | • 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**).<br>If it is concluded that construction activities at Lot 4E 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), Qanstruct to submit an incident report to government agencies. |

| Key Element | Trigger / Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|
| Construction movements | Trigger | Construction traffic does not exceed the permissible volume and time constraints. | Construction traffic just exceeds the permissible volume and time constraints. | Construction traffic far exceeds the permissible volume and time constraints. |
| | Response | No response required.<br>Continue monitoring program. | Review and investigate construction activities, and where appropriate, implement additional remediation measures such as:<br>• Temporary halting of activities and resuming when conditions have improved<br>• Review CTMP and update where necessary<br>• Provide additional training | 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. Where appropriate, implement additional remediation measures such as:<br>• Temporary halting of activities and resuming when conditions have improved<br>• Stop all transportation into and out of the site<br>• Review CTMP and update where necessary<br>• Provide additional training |

| 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.<br>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 . | 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. Where appropriate, implement additional remediation measures such as:<br>• Temporary halting of activities and resuming when conditions have improved<br>• Stop all transportation into and out of the site<br>• Review CTMP and update where necessary<br>• 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.<br>Continue monitoring program. | 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 must be utilised. |

| Key Element | Trigger / Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|
| Traffic Guidance Scheme | 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.<br>Continue monitoring TCPs. | Traffic Controller to amend TGS on site and to keep a log of all changes. | Stop work until an investigation has been undertake 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.<br>Continue monitoring program. | Review and investigate construction activities and respective control measures, where appropriate. Implement additional remedial measures, such as:<br>• Deployment of additional water sprays<br>• Relocation or modification of dust-generating sources<br>• Check condition of vibrating grids to ensure they are functioning correctly<br>• Temporary halting of activities and resuming when conditions have improved | Review and investigate construction activities and respective control measures. 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. |
| Waste | Trigger | Weekly Environmental Consultant inspections identified no waste outside of dedicated bins and stockpiles. | Weekly Environmental Consultant inspections identified minimal waste outside of dedicated bins and stockpiles. | Weekly Environmental Consultant 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. |

| Key Element | Trigger / Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|
| 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 assess the contamination according to the UFP (AECOM 2019). | Stop work immediately and a RAP is to be prepared. A validation report is to be prepared following remediation. |
| Heritage Find | Trigger | No unknown heritage items uncovered. | Potential heritage item uncovered. | Potential heritage item uncovered causing significant delays to project. |
| | Response | Continue CEMP implementation. | Stop work and follow unexpected finds protocol as outlined in SSD22191322 B49. | Stop work and follow unexpected finds protocol as outlined in SSD22191322 B51. Heritage item to be salvaged and removed from site by a qualified archaeologist. |
| Submission | Trigger | General feedback/comment (no complaint or query). | Enquiry made by formal or informal channels. | Complaint made by formal or informal channels. |

| Key Element | Trigger / Response | Condition Green | Condition Amber | Condition Red |
|---|---|---|---|---|
| | 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.<br>No further response required. | Record in consultation register and advise Goodman media/marketing team.<br>No further response required. | Record in consultation register and advise Goodman Project Team for further action and response.<br>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.<br>Identify opportunities for improvement to manage potential future events. | Contact relevant person for actioning and response within 48 hours.<br>Acknowledge in consultation register.<br>Identify opportunities for improvement to manage potential future events. | Contact relevant person for actioning and response immediately.<br>Acknowledge in consultation register.<br>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.<br>Record in consultation register. | Community consultation team in conjunction with Goodman Project Team to prepare and provide response within 48 hours.<br>Record in consultation register. | Community consultation team in conjunction with Goodman Project Team to prepare and provide response within 24 hours.<br>Record in consultation register. |

# 6 Review and Improvement of Environmental Performance against CEMP

As per Condition C1(e) of SSD 22131922, 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.

Condition C5 of SSD 22131922 also states that all strategies, plans and programs required under SSD 22131922 will be reviewed and the Planning Secretary notified in writing of any outcomes of the review within three months of:

- the submission of a Compliance Report under condition C11;
- the submission of an incident report under condition C7;
- the approval of any modification of the conditions of this consent; or
- the issue of a direction of the Planning Secretary under Condition A2(b) which requires a review.

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.

Notwithstanding the review requirements outlined above, in accordance with the requirements of Condition C1(g) the following is provided as the protocol for periodic review of this CEMP and all management plans required under SSD 22131922.

- All management plans required under SSD 22131922 are to be reviewed every 6 months by their original Author.
- The periodic review is to take account of any required changes to procedures, updates or changes to best practice, any non-compliances in the proceeding 6 month period and whether changes can be made to improve the environmental performance of the development.

As per Condition C6 where documents are revised under the above reviews the revised documents will be sent to DPIE within 6 weeks of review. 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 (2019) *Unexpected Finds Protocol – Contamination*

Artefact (2019) *Unexpected Finds Protocol – Archaeological*

Ason (2021) *Construction Traffic Management Plan*

Australian Bushfire Protection Planners Pty Limited (2020) *Bushfire Protection Assessment for the Oakdale West SSD 7348 Modification 3 and the proposed SSD 22191322 Building 4E Development Application*

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

Ecologique (2021) *Flora and Fauna Management Plan*

Keylan Consulting (2021) *Environmental Impact Statement (EIS) State Significant Development Application (SSD 22191322)*

*Keylan Consulting (2021) Response to Request for further Information*

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

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

*SLR (2020) Oakdale West Industrial Estate Construction Environmental Management Plan (CEMP) SSD 7348*

SLR (2020a) *Community Consultation Strategy*

SLR (2020b) *Construction Air Quality Management Plan*

SLR (2020c) *Construction Noise and Vibration Management Plan*

# APPENDIX A

## Development Consent SSD 22191322

# 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 26 April 2021, I approve the Development Application referred to in Schedule 1, subject to the conditions specified in Schedule 2.

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.

Chris Ritchie
**Director**
**Industry Assessments**

Sydney 29 October 2021 File: SSD-22131922

**SCHEDULE 1**

| | |
|---|---|
| **Application Number:** | SSD-22131922 |
| **Applicant:** | Goodman Property Services (Aust) Pty Ltd |
| **Consent Authority:** | Minister for Planning and Public Spaces |
| **Site:** | Lot 111 DP 1262310<br>2 Aldington Road, Kemps Creek NSW 2178 |
| **Development:** | Oakdale West Estate Stage 5 Development including construction, subdivision, fit out, operation and use of warehouse building 4E, associated office space, internal roads and parking |

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**DEFINITIONS**

| | |
|---|---|
| **Applicant** | Goodman Property Services (Aust) Pty Ltd, or any person carrying out any development to which this consent applies |
| **BCA** | Building Code of Australia |
| **BC Act** | *Biodiversity Conservation Act 2016* |
| **Carrier** | Operator of a telecommunication network and/ or associated infrastructure, as defined in section 7 of the *Telecommunications Act 1997* (Cth) |
| **Certifier** | A council or an accredited certifier (including principal certifiers) who is authorised under section 6.5 of the EP&A Act to issue Part 6 certificates |
| **CEMP** | Construction Environmental Management Plan |
| **Conditions of this consent** | Conditions contained in Schedule 2 of this document |
| **Construction** | The carrying out of works for the purpose of the development, including detailed earthworks, erection of building 4E, internal fit-out and construction of associated infrastructure permitted by this consent |
| **Council** | Penrith City Council |
| **Day** | The period from 7 am to 6 pm on Monday to Saturday, and 8 am to 6 pm on Sundays and Public Holidays |
| **Department** | NSW Department of Planning, Industry and Environment |
| **Development** | The development described in Schedule 1, the EIS and RTS, including construction and operation of a warehouse and associated office space and infrastructure |
| **Development layout** | The plans at Appendix 1 of this consent |
| **DPIE** | Department of Planning, Industry and Environment |
| **EES** | Environment, Energy and Science Group of the Department |
| **EIS** | The Environmental Impact Statement titled *Oakdale West Industrial Estate – Stage 5 2 Aldington Road, Kemps Creek*, prepared by Keylan Consulting Pty Ltd dated July 2021, submitted with the application for consent for the development |
| **Environment** | As defined in section 1.4 of the EP&A Act |
| **EPA** | NSW Environment Protection Authority |
| **EP&A Act** | *Environmental Planning and Assessment Act 1979* |
| **EP&A Regulation** | Environmental Planning and Assessment Regulation 2000 |
| **Evening** | The period from 6 pm to 10 pm |
| **Fibre ready facility** | As defined in section 372W of the *Telecommunications Act 1997* (Cth) |
| **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 *Heritage Act 1977,* and assessed as being of local, State and/ or National heritage significance, and/or an Aboriginal Object or Aboriginal Place as defined under the *National Parks and Wildlife Act 1974'*, the World Heritage List, or the National Heritage List or Commonwealth Heritage List under the *Environment Protection and Biodiversity Conservation Act 1999* (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<br>Note: "material harm" is defined in this consent |
| **Land** | Has the same meaning as the definition of the term in section 1.4 of the EP&A Act |
| **Material harm** | Is harm that:<br>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 |
| **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 |
| **Operation** | The use of Building 4E for storage and distribution of goods as described in the EIS and RTS |
| **OWE** | Oakdale West Estate including the approved Concept Plan for 22 warehouse buildings and associated infrastructure and Stage 1 development including bulk earthworks across the site, construction and operation of 3 warehouses and the Western North-South Link Road, as described in the development consent SSD 7348, approved on 13 September 2019, as modified |
| **Principal Certifier** | The certifier appointed as the principal certifier for the building work under section 6.6(1) of the EP&A Act or for the subdivision work under section 6.12(1) of the EP&A Act |
| **Planning Secretary** | Secretary of the Department, or delegate |
| **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 "*Aboriginal cultural heritage consultation requirements for proponents 2010*" (DECCW) |
| **Rehabilitation** | The restoration of land disturbed by the development to a good condition, to ensure it is safe, stable and non-polluting |
| **Response to submissions (RTS)** | The Applicant's response to issues raised in submissions received in relation to the application for consent for the development under the EP&A Act and includes the document titled *Oakdale West Estate (SSD 22191322) Stage 5 – Response to Request for further information* prepared by Keylan Consulting Pty Ltd and dated 15 September 2021 |
| **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 Schedule 1 |
| **SLR** | Proposed Southern Link Road as shown in the WSEA SEPP and the document titled *Broader WSEA SLRN Options Refinement Report* prepared by AECOM, 2014 |
| **TfNSW** | Transport for New South Wales, incorporating the former Roads and Maritime Services |
| **Waste** | Has the same meaning as the definition of the term in the Dictionary to the POEO Act |
| **WNSLR** | Western North-South Link Road as shown in the WSEA SEPP and approved under the OWE development consent SSD 7348 |
| **WSEA** | Western Sydney Employment Area |
| **WSEA SEPP** | State Environmental Planning Policy (Western Sydney Employment Area) 2009 |
| **Year** | A period of 12 consecutive months |

## SCHEDULE 2

## PART A ADMINISTRATIVE CONDITIONS

### OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

A1. 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 the development, and any rehabilitation required under this consent.

### TERMS OF CONSENT

A2. 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 Development Layout in Appendix 1; and

(e) in accordance with the management and mitigation measures in Appendix 2.

A3. 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 A3(a).

A4. 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 A2(c) or A2(e). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in Condition A2(c) or A2(e), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict.

### LIMITS OF CONSENT

#### Lapsing

A5. This consent lapses five years after the date from which it operates, unless the development has physically commenced on the land to which the consent applies before that date.

#### Development Controls

A6. The total area of warehousing and office space at the development must not exceed a maximum gross lettable area of 35,560 square metres.

A7. The development must be consistent with the development controls in the OWE, as shown in **Table 1**.

***Table 1:*** *Development Controls*

| Development Aspect | Control |
|---|---|
| Minimum building setbacks from: | |
| • Southern Link Road | 17.15 m |
| • Compass Drive | 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 |

| Development Aspect | Control |
|---|---|
| - Building 2A | 18 m |
| - Building 2B | 28 m |
| Minimum lot size | 5,000 $m^2$ |
| Minimum frontage | 40 m (excluding cul-de-sacs)<br>35 m minimum lot width at the building line |
| Site coverage | Maximum of 65 per cent (excluding awnings) |

**NOTIFICATION OF COMMENCEMENT**

A8. The date of commencement of each of the following phases of the development must be notified to the Planning Secretary in writing, at least one month before that date, or as otherwise agreed with the Planning Secretary:

(a) construction;

(b) operation; and

(c) cessation of operations;

A9. If the construction or operation of the development is to be staged, the Planning Secretary must be notified in writing, at least one month before the commencement of each stage (or other timeframe agreed with the Planning Secretary), of the date of commencement and the development to be carried out in that stage.

**EVIDENCE OF CONSULTATION**

A10. 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**

A11. 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).

A12. 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.

A13. 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**

A14. Before the commencement of construction of the development, the Applicant must consult with the relevant owner and provider of services that are likely to be affected by the development to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure.

A15. 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 the development; and

(b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development.

**STRUCTURAL ADEQUACY**

A16. 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 BCA.

*Note:*

- *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.*

**SUBDIVISION**

A17. Prior to the issuing of a Subdivision Certificates for any stage of the development, detailed work-as-executed drawings shall be prepared and signed by a Registered Surveyor, which show the finished surface levels of the access road, internal roads, drainage and any areas of fill, carried out under this consent. The work-as-executed drawing must be submitted to the Certifier and Council prior to the issue of a Subdivision Certificate.

A18. Prior to the issuing of a Subdivision Certificates for any stage of the development, the Applicant must provide to the Certifier evidence that all matters required to be registered on title, including easements, have been lodged for registration or registered at the Land Registry Services.

A19. Prior to the issuing of a Subdivision Certificates for any stage of the development, a certificate from an electricity and telecommunications provider must be submitted to the Certifier certifying that satisfactory service arrangements to the site have been established.

**COMPLIANCE**

A20. 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 the development.

**CONTRIBUTIONS TO COUNCIL**

A21. Before the issuing of an occupation certificate for any part of the development, a payment of a levy of 1% of the proposed cost of carrying out the development must be paid to Council under section 7.12 of the EP&A Act.

*Note: There are approval requirements for imposing a condition under section 7.12 in respect of land within a special contributions area.*

**OPERATION OF PLANT AND EQUIPMENT**

A22. All plant and equipment used on site, or to monitor the performance of the development, must be:

(a) maintained in a proper and efficient condition; and

(b) operated in a proper and efficient manner.

**EXTERNAL WALLS AND CLADDING**

A23. The external walls of all buildings including additions to existing buildings must comply with the relevant requirements of the BCA.

A24. Prior to the issuing of:

(a) any Construction Certificate relating to the construction of external walls (including the installation of finishes and claddings such as synthetic or aluminium composite panels); and

(b) an Occupation Certificate,

the Applicant must provide the Certifier 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 BCA.

A25. The Applicant must provide a copy of the documentation given to the Certifier to the Planning Secretary within seven days after the Certifier accepts it.

**UTILITIES AND SERVICES**

A26. Before the construction of any utility works associated with the development, the Applicant must obtain relevant approvals from service providers.

A27. Before the commencement of operation of the development, the Applicant must obtain a Compliance Certificate for water and sewerage infrastructure servicing of the site under section 73 of the *Sydney Water Act 1994*.

A28. Before the issuing of a Subdivision Works or Construction Certificate for any stage of the development, the Applicant (whether or not a constitutional corporation) is to provide evidence, satisfactory to the Certifier, that arrangements have been made for the provision of communication facilities to the development.

A29. The Applicant must demonstrate that the carrier has confirmed in writing they are satisfied that the fibre ready facilities are fit for purpose.

A30. The Applicant must obtain any other relevant approvals from Endeavour Energy, prior to the commencement of construction.

**TRANSGRID EASEMENT**

A31. The Applicant must:

(a) provide safe and unobstructed access for TransGrid plant and personnel to access the transmission towers, lines and easement on and adjacent to 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.

**WORK AS EXECUTED PLANS**

A32. Before the issuing of the Occupation Certificate for the development, work-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 Principal Certifier.

**APPLICABILITY OF GUIDELINES**

A33. 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.

A34. 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 the development. No condition of this consent removes any obligation to obtain, renew or comply with such licences, permits, approvals and consents.

## PART B SPECIFIC ENVIRONMENTAL CONDITIONS

### NOISE

#### Hours of Work

B1. The Applicant must comply with the hours detailed in Table 1, unless otherwise agreed in writing by the Planning Secretary.

***Table 1*** *Hours of Work*

| Activity | Day | Time |
|---|---|---|
| Construction | Monday – Friday<br>Saturday | 7 am to 6 pm<br>8 am to 1 pm |
| Operation | Monday – Sunday | 24 hours |

B2. Works outside of the hours identified in Condition B1 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.

#### Operational Noise Limits

B3. The Applicant must ensure that noise generated by operation of the development does not exceed the noise limits in Table 2.

***Table 2*** *Noise Limits (dB(A))*

| Location | Day<br>$L_{Aeq(15\ minute)}$ | Evening<br>$L_{Aeq(15\ minute)}$ | Night<br>$L_{Aeq(15\ minute)}$ | Night<br>$L_{AMax}$ |
|---|---|---|---|---|
| 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 |
| N9 to N14 Kemps Creek | 47 | 42 | 42 | 52 |
| N2 Emmaus Catholic College (school) | **When in use:** 45 $L_{eq(1h)}$ | | | |

*Note* *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.*

B4. The noise limits in Table 2 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.

#### Construction Noise Limits

B5. The development must be constructed to achieve 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 management and mitigation measures in the Appendix 2.

#### Road Traffic Noise

B6. Prior to the commencement of construction of the development, the Applicant must prepare a Driver Code of Conduct and induction training for the development to minimise road traffic noise. The Applicant must update the

Driver Code of Conduct and induction training for construction and operation and must implement the Code of Conduct for the life of the development.

**TRAFFIC AND ACCESS**

**Heavy Vehicles**

B7. The Applicant must obtain relevant permits under the *Heavy Vehicle National Law (NSW)* for the use of over-dimensional vehicles on the road network.

**Parking**

B8. The Applicant must provide sufficient parking facilities on-site, including for heavy vehicles and for site personnel, to ensure that traffic associated with the development does not utilise public and residential streets or public parking facilities.

**Operating Conditions**

B9. 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) associated with the development are constructed and maintained in accordance with the latest version of *AS 2890.1:2004 Parking facilities Off-street car parking* (Standards Australia, 2004), *AS 2890.2:2018 Parking facilities Off-street commercial vehicle facilities* (Standards Australia, 2018) and *AS 2890.6.2009 Parking facilities Off-street parking for people with disabilities* (Standards Australia, 2009)

(b) 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;

(c) the development does not result in any vehicles queuing on the public road network;

(d) heavy vehicles and bins associated with the development are not parked on local roads or footpaths in the vicinity of the site;

(e) all vehicles are wholly contained on site before being required to stop;

(f) all loading and unloading of materials is carried out on-site;

(g) all trucks entering or leaving the site with loads have their loads covered and do not track dirt onto the public road network; and

(h) the proposed turning areas in the car park are kept clear of any obstacles, including parked cars, at all times.

**Sustainable Travel Plan**

B10. Prior to the commencement of operation of any part of the development, the Applicant must prepare a Sustainable Travel Plan. The Sustainable Travel Plan must:

(a) be prepared in consultation with TfNSW;

(b) outline facilities and measures to promote public transport usage, such as car share schemes and employee incentives; and

(c) describe pedestrian and bicycle linkages and end of trip facilities available on-site.

B11. The Applicant must implement the Sustainable Travel Plan throughout operation of the development.

**SOILS, WATER QUALITY AND HYDROLOGY**

**Erosion and Sediment Control**

B12. Prior to the commencement of any construction or other surface disturbance for the development, the Applicant must install and maintain suitable erosion and sediment control measures on-site, in accordance with the relevant requirements of the *Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book* (Landcom, 2004) guideline and the Erosion and Sediment Control Plan included in the CEMP required by Condition C2.

**Discharge Limits**

B13. The development must comply with section 120 of the POEO Act, which prohibits the pollution of waters, except as expressly provided for in an EPL.

**Stormwater Management System**

B14. The Applicant must install and operate a stormwater management system for the development that:

(a) is designed by a suitably qualified and experienced person(s);

(b) is generally consistent with the *Civil, Stormwater and Infrastructure Services Report and Flood Impact Assessment: Oakdale West Estate*, prepared by Cardno, dated 27 March 2017;

(c) is in accordance with applicable Australian Standards and Penrith City Council's *Design Guidelines for Engineering Works, Water Sensitive Urban Design Policy December 2013* and *Water Management Development Control Plan*;

(d) 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;

(e) incorporate rainwater harvesting measures to supplement non-potable water demand for the development.

B15. All stormwater drainage infrastructure on the site shall remain under the care, control and ownership of the registered proprietor of the lot.

**VISUAL AMENITY**

**Building Design**

B16. The Applicant must construct Building 4E in accordance with the EIS and RTS and as shown on the figures in Appendix 1.

**Landscaping**

B17. Prior to the commencement of operation of the development, the Applicant must implement the Landscape Plan included in the RTS and shown on the figures in Appendix 1.

B18. The Applicant must maintain the landscaping on the site in accordance with the approved Landscape Plan for the life of the development. If any aspect of the landscaping has not been successful, the Applicant must undertake replanting and rehabilitation works, as reasonably practicable.

**Lighting**

B19. The Applicant must ensure the lighting associated with the development:

(a) complies with the latest version of AS 4282-2019 - *Control of the obtrusive effects of outdoor lighting* (Standards Australia, 2019); 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.

**Signage and Fencing**

B20. All signage and fencing must be erected in accordance with the development plans included in the EIS.

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

**HAZARDS AND RISK**

**Dangerous Goods**

B21. The quantities of dangerous goods stored and handled at the site must be below the threshold quantities listed in the Department of Planning's *Hazardous and Offensive Development Application Guidelines – Applying SEPP 33* at all times.

**Bunding**

B22. The Applicant must store all chemicals, fuels and oils used on-site in appropriately bunded 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).

**BUSHFIRE PROTECTION**

B23. The Applicant must ensure the development complies with:

(a) the relevant provisions of *Planning for Bushfire Protection, 2019*;

(b) the recommendations of the Bushfire Report prepared by Blackash Bushfire Consulting dated 24 June 2021; and

(c) the relevant sections of Australian Standard AS3959-2018 *Construction of buildings in bush fire-prone areas* or NASH Standard (1.7.14 updated) *National Standard Steel Framed Construction in Bushfire Areas – 2014* as appropriate, and Section 7.5 of *Planning for Bushfire Protection 2019.*

B24. The Applicant must ensure the entire site, including landscaping, is managed as an inner protection area (IPA) in accordance with *Planning for Bushfire Protection 2019*.

B25. Prior to the commencement of operation, the Applicant must prepare a Fire Management Plan (FMP) for the development. The FMP must:

(a) be prepared in consultation with the NSW RFS Cumberland Fire Control Centre;

(b) include 24-hour emergency contact details including alternative telephone contact

(c) include plans of site infrastructure plan, firefighting water supply, site access and internal roads;

(d) include implementation of asset protection zones (APZ) and on-going maintenance;

(e) include location of hazards that will impact on fire fighting operations and procedures to manage identified hazards during firefighting operations; and

(f) any additional matters required by the Cumberland Fire Control Centre (e.g. FMP review and updates)

B26. The Applicant must implement the most recent version of the Fire Management Plan for the duration of the development.

B27. Prior to the commencement of operation, the Applicant must prepare a Bushfire Emergency and Evacuation Management Plan for the development, consistent with the NSW RFS' *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan* and must include planning for the early relocation of occupants.

**FIRE SAFETY**

B28. The Applicant must update the Fire Safety Study for the development in accordance with the Department's *Hazardous Industry Planning Advisory Paper (HIPAP) No. 2 – Fire Safety Study Guidelines*, *January 2011*, and detail the fire prevention and mitigation measures for all credible fire hazards, including grass and bushfires.

**WASTE MANAGEMENT**

**Waste Storage**

B29. 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**

B30. The Applicant must implement the Waste Management Plan (WMP) in the EIS for the duration of construction and operation of the development.

**Statutory Requirements**

B31. All waste materials removed from the site must only be directed to a waste management facility or premises lawfully permitted to accept the materials.

B32. 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.

B33. Waste generated outside the site must not be received at the site for storage, treatment, processing, reprocessing, or disposal.

**AIR QUALITY**

**Dust Minimisation**

B34. The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.

B35. During construction of the development, the Applicant must comply with the dust minimisation measures detailed in the Construction Environmental Management Plan required by Condition C2.

**BIODIVERSITY**

B36. The Applicant must implement measures to protect retained native vegetation adjacent to the site during construction and operation.

**HERITAGE**

**Unexpected Finds Protocol**

B37. 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) Heritage NSW must be contacted immediately.

B38. 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*.

B39. If any archaeological relics are uncovered during the course of the work, then all works must cease immediately in that area. Unexpected finds must be evaluated and recorded in accordance with the requirements of Department of Premier and Cabinet, Heritage Division.

**COMMUNITY ENGAGEMENT**

B40. The Applicant must consult with the community regularly throughout the development, including consultation with the nearby sensitive receivers identified in Appendix 2 relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. Community engagement shall be undertaken in accordance with the Community Communication Strategy for the OWE.

## PART C ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

### ENVIRONMENTAL MANAGEMENT

**Management Plan Requirements**

C1. 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, the development 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 the development; and

(ii) effectiveness of the management measures set out pursuant to paragraph (c) 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 the development 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

C2. The Applicant must prepare a Construction Environmental Management Plan (CEMP) for the development in accordance with the requirements of Condition C1 and to the satisfaction of the Planning Secretary.

C3. As part of the CEMP required under Condition C2 of this consent, the Applicant must include:

(a) measures for managing construction traffic as detailed in Appendix 2;

(b) a Driver Code of Conduct (see Condition B6);

(c) an Erosion and Sediment control Plan (see Condition B12); and

(d) measures to protect retained native vegetation adjacent to the site (see Condition B36).

C4. The Applicant must:

(a) not commence construction of the development until the CEMP is approved by the Planning Secretary; and

(b) carry out the construction of the development in accordance with the CEMP approved by the Planning Secretary and as revised and approved by the Planning Secretary from time to time.

### REVISION OF STRATEGIES, PLANS AND PROGRAMS

C5. Within three months of:

(a) the submission of a Compliance Report under Condition C11;

(b) the submission of an incident report under Condition C7;

(c) the approval of any modification of the conditions of this consent; or

(d) the issue of a direction of the Planning Secretary under Condition A2(b) which requires a review,

the strategies, plans and programs required under this consent must be reviewed, and the Planning Secretary must be notified in writing of the outcomes of any review.

C6. If necessary to either improve the environmental performance of the development, 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 required under Condition C8, or such other timing as agreed by the Planning Secretary.

***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 the development.*

**REPORTING AND AUDITING**

**Incident Notification, Reporting and Response**

C7. The Planning Secretary must be notified in writing via the Major Projects website 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 4.

**Non-Compliance Notification**

C8. The Planning Secretary must be notified in writing via the Major Projects website within seven days after the Applicant becomes aware of any non-compliance.

C9. 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.

C10. A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

**Compliance Reporting**

C11. Within six months after the first year of commencement of operation of the development, and in the same month each subsequent year (or such other timing as agreed by the Planning Secretary), the Applicant must submit a Compliance Report to the Planning Secretary reviewing the environmental performance of the development to the satisfaction of the Planning Secretary. Compliance Reports must be prepared in accordance with the Compliance Reporting Post Approval Requirements (Department 2020) and must also:

(a) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and

(b) describe what measures will be implemented over the next year to improve the environmental performance of the development.

C12. The Applicant must make each Compliance Report publicly available no later than 60 days after submitting it to the Planning Secretary and notify the Planning Secretary in writing at least seven days before this is done.

**Monitoring and Environmental Audits**

C13. 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**

C14. At least 48 hours before the commencement of construction of the development 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 A2 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) 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;

(v) 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;

(vi) a summary of the current stage and progress of the development;

(vii) contact details to enquire about the development or to make a complaint;

(viii) a complaints register, updated monthly;

(ix) the Compliance Report of the development;

(x) 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 DEVELOPMENT LAYOUT PLANS

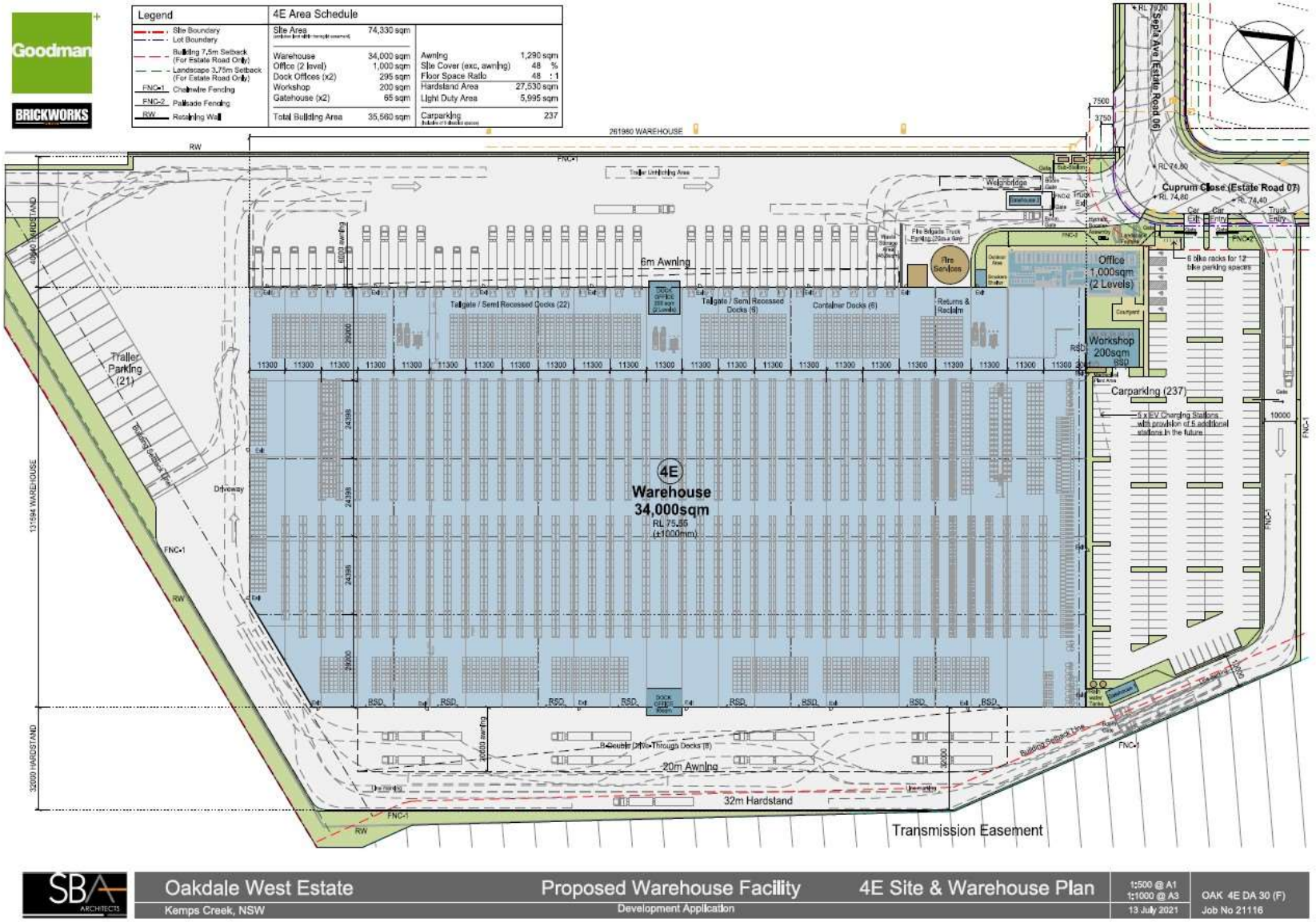


***Figure 1: Development Layout***

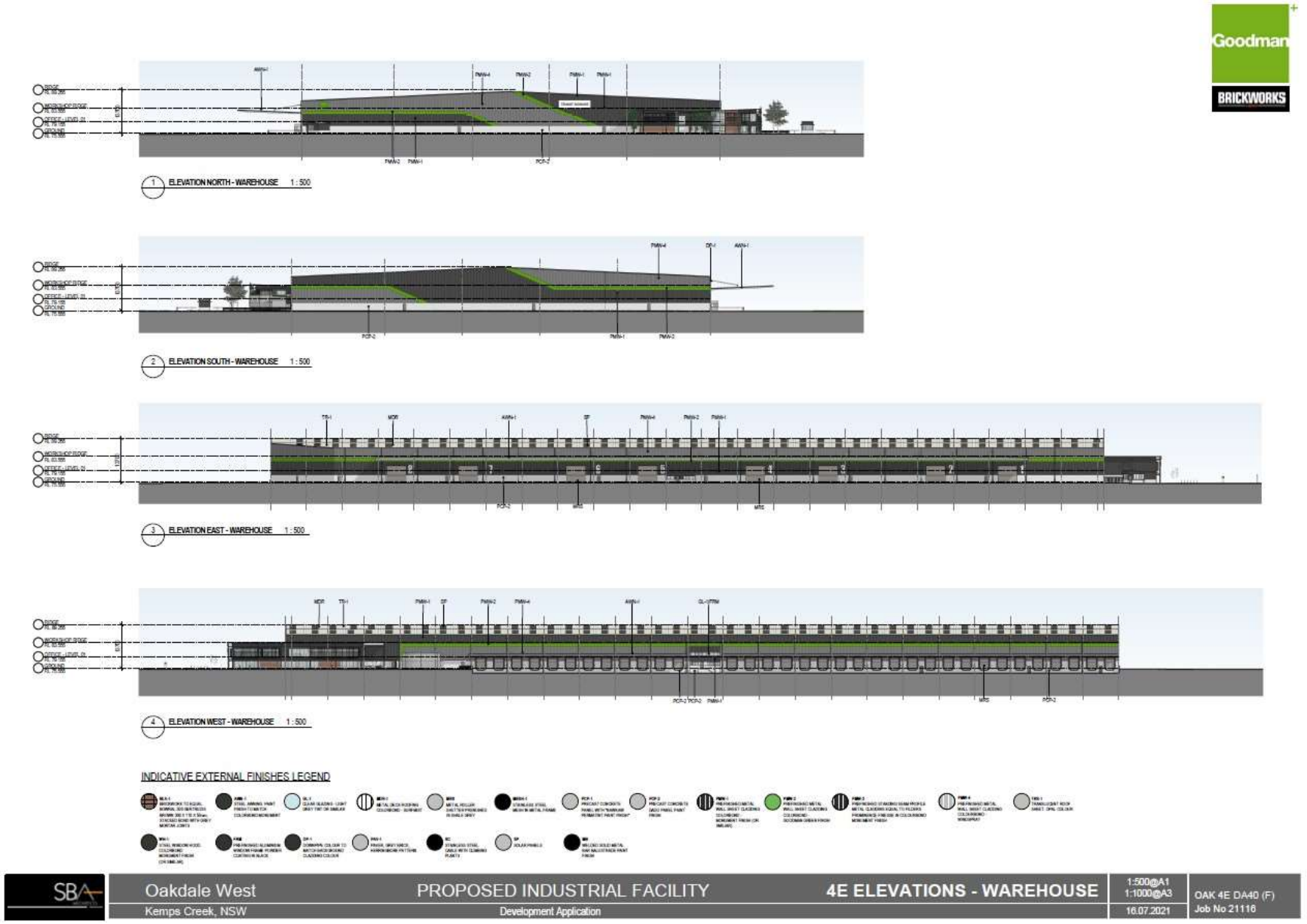


***Figure 2: Warehouse Elevations***

***Figure 3: Landscape Plan - Layout***

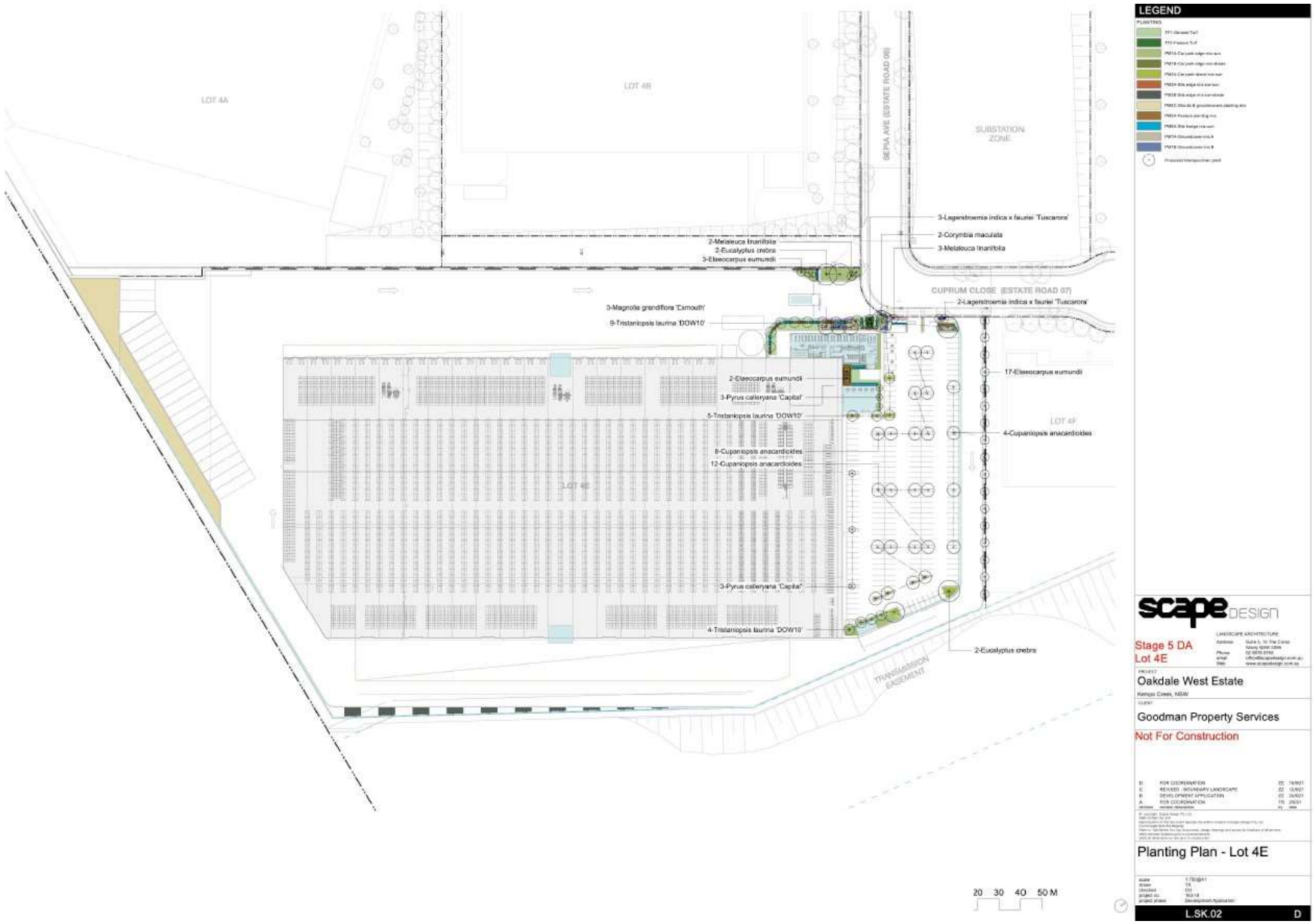


***Figure 4: Landscape Plan - Planting***

## APPENDIX 2 SENSITIVE RECEIVERS

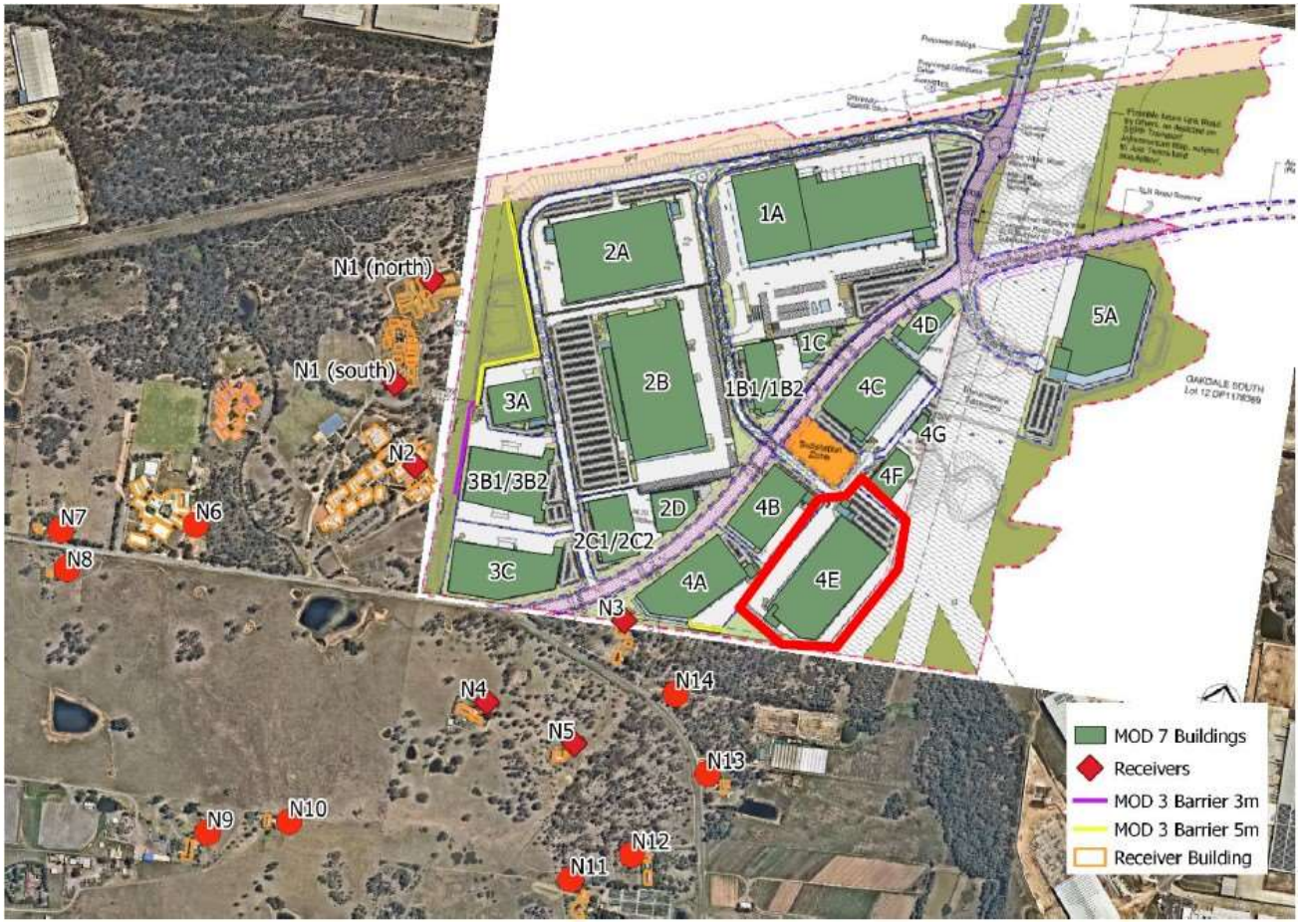


***Figure 5: Sensitive Receiver Locations***

## APPENDIX 3 APPLICANT'S MANAGEMENT AND MITIGATION MEASURES

| Issue | Mitigation measures |
|---|---|
| General | • preparation of updated CEMP for OWE Stage 5 Development<br>• preparation of updated OEMP for OWE Concept Proposal for Stage 5 |
| Visual amenity | • the existing vegetation on the southern boundary will be retained where possible to assist filtering views to the proposed buildings<br>• additional plantings to southern boundary to increase screening of expanses of built form<br>• warehouse has been orientated and articulated to reduce the overall visual impact of the development from surrounding viewpoints<br>• the proposed material palette assists in articulating the built form and providing consistent materials within the OWE<br>• the proposed landscape design is consistent with the OWE landscape masterplan and provides vegetated setbacks to estate roads and within parking areas to provide shade |
| Traffic and transport | • construction traffic management measures to be described in the CEMP<br>• use of Compass Drive for all construction and future operational traffic<br>• detailed Sustainable Travel Plan to be implemented |
| Noise and vibration | • minimising coinciding use of noisy plant items<br>• shutting down intermittently used equipment when not in use<br>• regular compliance checks on the noise emissions of all plant and machinery<br>• non-tonal reversing alarms used on all items of plant and heavy vehicles<br>• equipment oriented away from sensitive receivers<br>• pre-construction and ongoing consultation with adjoining sensitive receivers |
| Soil and water | • CEMP to include erosion and sediment controls consistent with the requirements of Landcom (2004)<br>• A Soil and Water Management Plan will be prepared for Building 4E in accordance with the NSW Department of Housing Publication "Managing Urban Stormwater – Soils and Construction (2004)" |
| Waste management | • implementation of the Stage 5 Waste Management Plan<br>• recycling of packaging and pallets where possible, including returning to suppliers |
| Air quality | • CEMP to include standard air quality control measures, contingency plans and response procedures and suitable reporting and performance monitoring procedures<br>• 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 |
| Energy efficiency | • use of a 750 kV photovoltaic solar system<br>• daylight controlled LED lighting<br>• motion sensor LED lights<br>• roof and external wall insulation as per the NCC requirements<br>• high performance glazing to all air-conditioned areas<br>• passive solar design for external outdoor areas<br>• efficient air-conditioning system<br>• power sub-metering to enable continued review of power consumption<br>• selection of endemic and low maintenance landscaping species<br>• 40 kL Rainwater tanks for rainwater harvesting and re-use for landscape irrigation and toilet flushing<br>• low flow fixtures and fittings including taps and shower heads<br>• low VOC paints, carpet and sealant |
| BCA | • preparation of the Performance Solutions and corresponding fire safety measures during detailed design to ensure compliance with BCA and International Fire Engineering Guidelines |
| Fire safety | • preparation of Performance Solutions and fire safety measures in the detailed design phase |
| Bushfire | • establish and maintain asset protection zones as indicated in the BHA<br>• provide fire hydrants in accordance with the BCA<br>• buildings to be constructed in accordance with *AS 3959 Construction of buildings in bushfire-prone areas* and measures outlined in the BHA |

## APPENDIX 4 INCIDENT NOTIFICATION AND REPORTING REQUIREMENTS

### WRITTEN INCIDENT NOTIFICATION REQUIREMENTS

1. A written incident notification addressing the requirements set out below must be submitted to the Planning Secretary via the Major Projects website 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 C7 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

## Relevant Conditions of Consent

## Table A Development Consent SSD 22191322

| Relevant Consent Conditions SSD 22191322 | Where Addressed in CEMP |
|---|---|
| **PART A – ADMINISTRATIVE CONDITIONS** | |
| **Obligation to Minimise Harm to the Environment** | |
| A1. 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 the development, and any rehabilitation required under this consent. | Section 4.1 |
| **Terms of Consent** | |
| A2. The development may only be carried out:<br>a) in compliance with the conditions of this consent;<br>b) in accordance with all written directions of the Planning Secretary;<br>c) in accordance with the EIS and RTS;<br>d) in accordance with the development layout in Appendix 1; and<br>e) in accordance with the management and mitigation measures in Appendix 2. | Noted |
| A3. Consistent with the requirements in this consent, the Planning Secretary may make written directions to the Applicant in relation to:<br>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<br>b) the implementation of any actions or measures contained in any such document referred to in condition A3(a). | Noted |
| A4. 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 A2(c) or A2(e). In the event of an inconsistency, ambiguity or conflict between any of the documents listed in Condition A2(c) or A2(e), the most recent document prevails to the extent of the inconsistency, ambiguity or conflict. | Noted |
| **Limit of Consent** | |
| **Lapsing**<br>A5. This consent lapses five (5) years after the date from which it operates, unless Building 4E has physically commenced on the land to which the consent applies before that date. | Noted |
| **Development Controls**<br>A6. The total area of warehousing and office space at the development must not exceed a maximum gross lettable area of 35,560 square metres. | Section 4.1 |

<table>
<tr><th>Relevant Consent Conditions SSD 22191322</th><th>Where Addressed in CEMP</th></tr>
<tr><td>A1. A7. The development must be consistent with the development controls in the OWE, as shown in Table 1.<br>A2. Table 1: Development Controls
<table>
<tr><td>Minimum building setbacks from:</td><td></td></tr>
<tr><td>• Southern Link Road</td><td>17.15 m</td></tr>
<tr><td>• Western North-South Link Road</td><td>20 m</td></tr>
<tr><td>• Local Estate Roads</td><td>7.5 m</td></tr>
<tr><td>• Western site boundary</td><td>40 m</td></tr>
<tr><td>• Southern site boundary</td><td>20 m (excluding parking areas)</td></tr>
<tr><td>Rear boundary setbacks within the estate</td><td>5 m</td></tr>
<tr><td>Side boundary setbacks within the estate</td><td>0 m, subject to compliance with fire rating requirements</td></tr>
<tr><td>Height</td><td>15 m</td></tr>
<tr><td>- Building 1A</td><td>39 m</td></tr>
<tr><td>- Building 2A</td><td>18 m</td></tr>
<tr><td>- Building 2B</td><td>28 m</td></tr>
<tr><td>Minimum lot size</td><td>5,000 m$^2$</td></tr>
<tr><td>Minimum frontage</td><td>40 m (excluding cul-de-sacs)<br>35 m minimum lot width at the building line</td></tr>
<tr><td>Site coverage</td><td>Maximum of 65 per cent (excluding awnings)</td></tr>
</table></td><td>Section 4.8</td></tr>
<tr><td colspan="2">Notification of Commencement</td></tr>
<tr><td>A8. The date of commencement of each of the following phases of the development must be notified to the Planning Secretary in writing, at least one month before that date, or as otherwise agreed with the Planning Secretary:<br>(a) construction;<br>(b) operation; and<br>(c) cessation of operations;</td><td>Noted</td></tr>
<tr><td>A9. If the construction or operation of the development is to be staged, the Planning Secretary must be notified in writing, at least one month before the commencement of each stage (or other timeframe agreed with the Planning Secretary), of the date of commencement and the development to be carried out in that stage.</td><td>Noted</td></tr>
<tr><td colspan="2">Evidence of Consultation</td></tr>
<tr><td>A10. Where conditions of this consent require consultation with an identified party, the Applicant must:<br>a) consult with the relevant party prior to submitting the subject document to the Planning Secretary for approval; and<br>b) provide details of the consultation undertaken including:<br>(i) the outcome of that consultation, matters resolved and unresolved; and<br>(ii) details of any disagreement remaining between the party consulted and the Applicant and how the Applicant has addressed the matters not resolved.</td><td>Section 1.2.3</td></tr>
<tr><td colspan="2">Protection of Public Infrastructure</td></tr>
</table>

| Relevant Consent Conditions SSD 22191322 | Where Addressed in CEMP |
|---|---|
| A14.Before the commencement of construction of the development, the Applicant must consult with the relevant owner and provider of services that are likely to be affected by the development to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure. | Noted. This will be completed by Goodman. |
| A15.Unless the Applicant and the applicable authority agree otherwise, the Applicant must:<br>(a) repair, or pay the full costs associated with repairing, any public infrastructure that is damaged by carrying out the development; and<br>(b) relocate, or pay the full costs associated with relocating, any public infrastructure that needs to be relocated as a result of the development. | Noted |
| **Structural Adequacy** | |
| 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 BCA.<br>*Note:*<br>• Under Part 6 of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.<br>• Part 8 of the EP&A Regulation sets out the requirements for the certification of the development. | Noted<br>Engineering design and construction certification will ensure this |
| **Compliance** | |
| A20. 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 the development. | Section 3.4 |
| **Contributions to Council** | |
| A21. Before the issuing of an occupation certificate for any part of the development, a payment of a levy of 1% of the proposed cost of carrying out the development must be paid to Council under section 7.12 of the EP&A Act.<br>*Note: There are approval requirements for imposing a condition under section 7.12 in respect of land within a special contributions area.* | Noted |
| **Operation Of Plant And Equipment** | |
| A22. All plant and equipment used on site, or to monitor the performance of Building 4E must be:<br>a) maintained in a proper and efficient condition; and<br>b) operated in a proper and efficient manner. | Section 4.1 |
| **External Walls and Cladding** | |
| A23. The external walls of all buildings including additions to existing buildings must comply with the relevant requirements of the BCA. | Noted |
| A24. Prior to the issuing of:<br>(a) any Construction Certificate relating to the construction of external walls (including the installation of finishes and claddings such as synthetic or aluminium composite panels); and<br>(b) an Occupation Certificate,<br>the Applicant must provide the Certifier 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 BCA. | Noted |

<table>
<tr><th>Relevant Consent Conditions SSD 22191322</th><th>Where Addressed in CEMP</th></tr>
<tr><td>A25. The Applicant must provide a copy of the documentation given to the Certifier to the Planning Secretary within seven days after the Certifier accepts it.</td><td>Noted</td></tr>
<tr><td colspan="2">Utilities And Services</td></tr>
<tr><td>A26. Before the construction of any utility works associated with the development, the Applicant must obtain relevant approvals from service providers.</td><td>Section 4.1</td></tr>
<tr><td>A27. Before the commencement of operation of the development, the Applicant must obtain a Compliance Certificate for water and sewerage infrastructure servicing of the site under section 73 of the Sydney Water Act 1994 (NSW).</td><td>Section 4.1</td></tr>
<tr><td>A28. Before the issue of a Subdivision or Construction Certificate for the development, 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 the development.</td><td>Section 4.1</td></tr>
<tr><td>A29. The Applicant must demonstrate that the carrier has confirmed in writing they are satisfied that the fibre ready facilities are fit for purpose.</td><td>Section 4.1</td></tr>
<tr><td>A30. The Applicant must obtain any other relevant approvals from Endeavour Energy, prior to the commencement of construction.</td><td>Section 4.1</td></tr>
<tr><td colspan="2">Transgrid Easement</td></tr>
<tr><td>A31.The Applicant must:<br>(a) provide safe and unobstructed access for TransGrid plant and personnel to access the transmission towers, lines and easement on and adjacent to the site, 24 hours a day, 7 days a week;<br>(b) comply with the requirements of TransGrid for any works in the TransGrid easement; and<br>(c) advise TransGrid of any proposed amended or modified encroachment into the easement.</td><td>Section 4.12</td></tr>
<tr><td colspan="2">Work as Executed Plans</td></tr>
<tr><td>A32.Before the issuing of the Occupation Certificate for the development, work-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 Principal Certifier.</td><td>Noted</td></tr>
<tr><td colspan="2">Advisory Notes</td></tr>
<tr><td>AN1. All licences, permits, approvals and consents as required by law must be obtained and maintained as required for the development. No condition of this consent removes any obligation to obtain, renew or comply with such licences, permits, approvals and consents.</td><td>Noted</td></tr>
<tr><td colspan="2">SCHEDULE B: ENVIRONMENTAL PERFORMANCE CONDITIONS</td></tr>
<tr><td colspan="2">NOISE</td></tr>
<tr><td colspan="2">Hours of Work</td></tr>
<tr><td>B1. The Applicant must comply with the hours detailed in Table 1, unless otherwise agreed in writing by the Planning Secretary.<br>Table 1 Hours of Work
<table>
<tr><th>Activity</th><th>Day</th><th>Time</th></tr>
<tr><td>Construction</td><td>Monday – Friday<br>Saturday</td><td>7 am to 6 pm<br>8 am to 1 pm</td></tr>
<tr><td>Operation</td><td>Monday – Sunday</td><td>24 hours</td></tr>
</table>
</td><td>Section 4.2</td></tr>
</table>

| Relevant Consent Conditions SSD 22191322 | Where Addressed in CEMP |
|---|---|
| B2. Works outside of the hours identified in condition B20 may be undertaken in the following circumstances:<br>a) works that are inaudible at the nearest sensitive receivers;<br>b) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or<br>c) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm. | Section 4.2 |
| **Construction Noise Limits** | |
| B5. The development must be constructed to achieve 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 management and mitigation measures in the Appendix 2. | Section 4.2 |
| **Road Traffic Noise** | |
| B6. Prior to the commencement of construction of the development, the Applicant must prepare a Driver Code of Conduct and induction training for the development to minimise road traffic noise. The Applicant must update the Driver Code of Conduct and induction training for construction and operation and must implement the Code of Conduct for the life of the development. | Section 4.2 |
| **TRAFFIC AND ACCESS** | |
| **Heavy Vehicles** | |
| B7. The Applicant must obtain relevant permits under the Heavy Vehicle National Law (NSW) for the use of over-dimensional vehicles on the road network. | Noted |
| **Parking** | |
| B8. The Applicant must provide sufficient parking facilities on site for heavy vehicles and for site personnel, to ensure that traffic associated with the development does not utilise public and residential streets or public parking facilities. | Noted |
| **SOILS, WATER QUALITY AND HYDROLOGY** | |
| **Erosion and Sediment Control** | |
| B12. Prior to the commencement of any construction or other surface disturbance for the development, the Applicant must install and maintain suitable erosion and sediment control measures on-site, in accordance with the relevant requirements of the Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book (Landcom, 2004) guideline and the Erosion and Sediment Control Plan included in the CEMP required by condition C2. | Section 4.6 |
| **Discharge Limits** | |
| B13. The development must comply with section 120 of the POEO Act, which prohibits the pollution of waters. | Section 4.6 |

| Relevant Consent Conditions SSD 22191322 | Where Addressed in CEMP |
|---|---|
| **Stormwater Management System** | |
| B14. The Applicant must install and operate a stormwater management system for the development that:<br>a) is designed by a suitably qualified and experienced person(s);<br>b) is generally consistent with the Civil, Stormwater and Infrastructure Services Report and Flood Impact Assessment: Oakdale West Estate, prepared by Cardno, dated 27 March 2017;<br>c) is in accordance with applicable Australian Standards and Penrith City Council's Design Guidelines for Engineering Works, Water Sensitive Urban Design Policy December 2013 and Water Management Development Control Plan;<br>d) 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;<br>incorporate rainwater harvesting measures to supplement non-potable water demand for the development. | Section 4.6 |
| B15. All stormwater drainage infrastructure on the site shall remain under the care, control and ownership of the registered proprietor of the lot. | Noted |
| **VISUAL AMENITY** | |
| **Building Design** | |
| B16. The Applicant must construct Building 4E in accordance with the EIS and RTS and as shown on the figures in Appendix 1. Section 4.8 | |
| **Landscaping** | |
| B17. Prior to the commencement of operation of the development, the Applicant must implement the Landscape Plan included in the RTS and shown on the figures in Appendix 1. | Noted |
| **Lighting** | |
| B19. The Applicant must ensure the lighting associated with the development:<br>a) complies with the latest version of AS 4282-1997 – Control of the obtrusive effects of outdoor lighting (Standards Australia, 1997); and<br>is mounted, screened and directed in such a manner that it does not create a nuisance to surrounding properties or the public road network. | Section 4.8 |
| **Signage and Fencing** | |
| B20. All signage and fencing must be erected in accordance with the development plans included in the EIS.<br>*Note: This condition does not apply to temporary construction and safety related signage and fencing.* | Section 4.8 |
| **HAZARD AND RISK** | |
| **Dangerous Goods** | |
| B21. The quantities of dangerous goods stored and handled at the site must be below the threshold quantities listed in the Department of Planning's Hazardous and Offensive Development Application Guidelines – Applying SEPP 33 at all times. | Section 4.10 |
| **Bunding** | |
| B22. The Applicant must store all chemicals, fuels and oils used on-site in appropriately bunded 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). | Section 4.10 |

| Relevant Consent Conditions SSD 22191322 | Where Addressed in CEMP |
|---|---|
| **BUSHFIRE PROTECTION** | |
| B23. The Applicant must ensure the development complies with:<br>(a) the relevant provisions of Planning for Bushfire Protection, 2019;<br>(b) the recommendations of the Bushfire Report prepared by Blackash Bushfire Consulting dated 24 June 2021; and<br>(c) the relevant sections of Australian Standard AS3959-2018 Construction of buildings in bush fire-prone areas or NASH Standard (1.7.14 updated) National Standard Steel Framed Construction in Bushfire Areas – 2014 as appropriate, and Section 7.5 of Planning for Bushfire Protection 2019. | Noted |
| B24. The Applicant must ensure the entire site, including landscaping, is managed as an inner protection area (IPA) in accordance with Planning for Bushfire Protection 2019. | Noted |
| B26. The Applicant must implement the most recent version of the Fire Management Plan for the duration of the development. | Noted |
| **FIRE SAFETY** | |
| B28. The Applicant must update the Fire Safety Study for the development in accordance with the Department's Hazardous Industry Planning Advisory Paper (HIPAP) No. 2 – Fire Safety Study Guidelines, January 2011, and detail the fire prevention and mitigation measures for all credible fire hazards, including grass and bushfires. | |
| **WASTE MANAGEMENT** | |
| **Waste Storage** | |
| B29. 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. | Section 4.7 |
| **Waste Management Plan** | |
| B30. The Applicant must implement the Waste Management Plan (WMP) in the EIS for the duration of construction and operation of the development. | Section 4.7 |
| **Statutory Requirements** | |
| B31. All waste materials removed from the site must only be directed to a waste management facility or premises lawfully permitted to accept the materials. | Section 4.7 |
| B32. 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. | Section 4.7 |
| B33. Waste generated outside the site must not be received at the site for storage, treatment, processing, reprocessing, or disposal. | Section 4.7 |
| **AIR QUALITY** | |
| **Dust Minimisation** | |
| B34. The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent. | Section 4.4 |
| B35. During construction of the development, the Applicant must comply with the dust minimisation measures detailed in the Construction Environmental Management Plan required by Condition C2. | Section 4.4 |

| Relevant Consent Conditions SSD 22191322 | Where Addressed in CEMP |
|---|---|
| **BIODIVERSITY** | |
| B36. The Applicant must implement measures to protect retained native vegetation adjacent to the site during construction and operation. | Section 4.9 |
| **HERITAGE** | |
| **Unexpected Finds Protocol** | |
| B37. If any item or object of Aboriginal heritage significance is identified on site:<br>d) all work in the immediate vicinity of the suspected Aboriginal item or object must cease immediately;<br>e) a 10 m wide buffer area around the suspected item or object must be cordoned off; and<br>f) Heritage NSW must be contacted immediately. | Section 4.13 |
| B38. 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*. | Section 4.13 |
| B39. If any archaeological relics are uncovered during the course of the work, then all works must cease immediately in that area. Unexpected finds must be evaluated and recorded in accordance with the requirements of Department of Premier and Cabinet, Heritage Division. | Section 4.13 |
| **COMMUNITY ENGAGEMENT** | |
| B52. The Applicant must consult with the community regularly throughout the development, including consultation with the nearby sensitive receivers identified in Appendix 2, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders. Community engagement shall be undertaken in accordance with the Community Communication Strategy for the OWE. | Section 1.2.3 and Section 4.12 |
| Continued on next page | |

| Relevant Consent Conditions SSD 22191322 | Where Addressed in CEMP |
|---|---|
| **PART C – ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING** | |
| **ENVIRONMENTAL MANAGEMENT** | |
| **Management Plan Requirements** | |
| C1. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:<br>a) details of:<br>(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);<br>(ii) any relevant limits or performance measures and criteria; and<br>(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, Building 4E or any management measures;<br>b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;<br>c) a program to monitor and report on the:<br>(i) impacts and environmental performance of the development; and<br>(ii) effectiveness of the management measures set out pursuant to paragraph (c) above;<br>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;<br>e) a program to investigate and implement ways to improve the environmental performance of the development over time;<br>f) a protocol for managing and reporting any:<br>(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);<br>(ii) complaint;<br>(iii) failure to comply with statutory requirements; and<br>g) a protocol for periodic review of the plan.<br>***Note:*** *The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans* | Section 1.2.1 |
| **CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN** | |
| C2. The Applicant must prepare a Construction Environmental Management Plan (CEMP) in accordance with the requirements of Condition C1 and to the satisfaction of the Planning Secretary. | This document |
| C3. As part of the CEMP required under Condition C2 of this consent, the Applicant must include:<br>(a) measures for managing construction traffic as detailed in Appendix 2;<br>(b) a Driver Code of Conduct (see Condition B6);<br>(c) an Erosion and Sediment control Plan (see Condition B12); and<br>(d) measures to protect retained native vegetation adjacent to the site (see Condition B36). | Section 1.2.1 |
| C4. The Applicant must:<br>(a) not commence construction of the development until the CEMP is approved by the Planning Secretary; and<br>(b) carry out the construction of the development in accordance with the CEMP approved by the Planning Secretary and as revised and approved by the Planning Secretary from time to time. | Noted |

| Relevant Consent Conditions SSD 22191322 | Where Addressed in CEMP |
|---|---|
| **REVISION OF STRATEGIES, PLANS AND PROGRAMS** | |
| C5. Within three months of:<br>(a) the submission of a Compliance Report under condition **Error! Reference source not found.**;<br>(b) the submission of an incident report under condition **Error! Reference source not found.**;<br>(c) the approval of any modification of the conditions of this consent; or<br>(d) the issue of a direction of the Planning Secretary under condition **Error! Reference source not found.** which requires a review,<br>the strategies, plans and programs required under this consent must be reviewed, and the Planning Secretary must be notified in writing of the outcomes of any review. | Section 6 |
| C6. If necessary, to either improve the environmental performance of the development, 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.<br>***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 the development.* | Noted |
| **REPORTING AND AUDITING** | |
| **Incident Notification, Reporting and Response** | |
| C7. The Planning Secretary must be notified in writing via the Major Projects website 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 4. | Sections 3.5 and 5.2 |
| **Non-Compliance Notification** | |
| C8. The Planning Secretary must be notified in writing via the Major Projects website within seven days after the Applicant becomes aware of any non-compliance. | Sections 3.5 and 5.2 |
| C9. 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. | Noted |
| C10. A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance. | Noted |
| **Compliance Reporting** | |
| C11. Within six months after the first year of commencement of operation of the development, and in the same month each subsequent year (or such other timing as agreed by the Planning Secretary), the Applicant must submit a Compliance Report to the Planning Secretary reviewing the environmental performance of the development to the satisfaction of the Planning Secretary. Compliance Reports must be prepared in accordance with the Compliance Reporting Post Approval Requirements (Department 2020) and must also:<br>(a) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and<br>(b) describe what measures will be implemented over the next year to improve the environmental performance of the development. | Noted |

| Relevant Consent Conditions SSD 22191322 | Where Addressed in CEMP |
|---|---|
| C12. The Applicant must make each Compliance Report publicly available no later than 60 days after submitting it to the Planning Secretary and notify the Planning Secretary in writing at least seven days before this is done. | Noted |
| **Monitoring and Environmental Audits** | |
| C13. 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.<br>***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.* | Section 5 |
| **ACCESS TO INFORMATION** | |
| C14. At least 48 hours before the commencement of construction until the completion of all works under this consent, the Applicant must:<br>a) make the following information and documents (as they are obtained or approved) publicly available on its website:<br>(i) the documents referred to in Condition A2 of this consent;<br>(ii) all current statutory approvals for the Development;<br>(iii) all approved strategies, plans and programs required under the conditions of this consent;<br>(iv) the proposed staging plans for the development if the construction, operation or decommissioning of the development is to be staged;<br>(v) minutes of CCC meetings;<br>(vi) 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;<br>(vii) 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;<br>(viii) a summary of the current stage and progress of the Development;<br>(ix) contact details to enquire about the development or to make a complaint;<br>(x) a complaints register, updated monthly;<br>(xi) the Compliance Report of the Development;<br>(xii) 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;<br>(xiii) any other matter required by the Planning Secretary; and<br>b) keep such information up to date, to the satisfaction of the Planning Secretary. | Section 5.2 |

# APPENDIX C

## Qanstruct's Environmental Policy

# 1.4 Environmental Policy

## To achieve this, Qanstruct will:

a) Ensure as far as possible that all materials and plant are used and applied in an environmentally friendly manner according to manufacturers' specification.

b) Provide all employees with appropriate training in sound environmental practices in handling of materials and the application of materials in all areas.

c) Reduce waste as much as possible, and dispose of all waste according to regulatory laws and regulations, and in a responsible manner.

d) Induct all new employees to Environmental legislation, applicable standards and Company procedures regarding the use and disposal of waste.

e) Investigate all environmental accidents and take remedial measures and preventive actions to minimise the risk of occurrence.

f) Comply with all relevant Environmental legislation and applicable standards; and other requirements.

g) Conduct an environmental monitoring program to ensure adherence to Company and regulatory requirements.

h) Involve and consult employees and contractors on all Environmental matters with the view to continuously improving Qanstruct's performance.

i) Maintain an effective Environmental Management System certified to ISO 14001:2015.

## Qanstruct's Commitment

Qanstruct is committed to conducting business in an environmentally responsible way, aimed at prevention of pollution to air, ground and water.

**Mark Ruff** / DIRECTOR

Date July 2019

# APPENDIX D

## Qanstruct's Incident Report Form

Qanstruct

# INCIDENT REPORT FORM 25

| Incident Details | |
|---|---|
| Date of Incident | |
| Site & Address where Incident occurred | |
| Person/s Involved in the Incident (name & company) | |

| **Incident Investigation** – Site Manager & OHS Rep will be involved in all site incident investigations. The Construction Manager will also be involved in the incident investigation of HIGH & MODERATE potential risk incidents. | |
|---|---|
| Investigation Team (names) | |
| In which part of the workplace did the incident occur | |
| Job or task being done by the person at the time of the incident | |
| What happened unexpectedly (e.g. brake failed on a forklift, or slipped on wet floor etc) | |
| How exactly was the injury or damage sustained (e.g. bruised leg when fell to the floor etc) | |
| What preventive controls were in place that failed (e.g. guarding, harness etc) | |
| How did these controls fail (e.g. guard failed, rope became loose etc) | |

| **Immediate Contributory Factors** (assess the risks associated with the hazards identified). **Be factual.** |
|---|
| |
| **Additional Contributory Factors** (assess the risks associated with the hazards identified). **Be factual.** |
| |

| **Details of Risk (refer to tables at end of sheet)** | |
|---|---|
| Actual/ Potential Risk Class & Deadlines (choose whichever is highest) | ☐ High (1) - primary cause/s must be resolved IMMEDIATELY.<br>☐ Medium (2) - primary cause/s must be resolved WITHIN 24 HOURS<br>☐ Low (3) - primary cause/s must be resolved WITHIN 7 DAYS |

Was the incident a result of:
- ☐ Inadequate process/es, follow up required is to AMEND PROCESS/ES (inc. SWMS); or
- ☐ Inadequate compliance with process/es, follow up requires is to TOOLBOX WORKERS

**HIERARCHY OF CONTROLS**

Most Preferred ← → Least Preferred

**Elimination** | **Substitution** | **Engineering** | **Administration** | **PPE**

| List the Actions that will be Taken to prevent a Reoccurrence (considering the Hierarchy of Controls) | Who | Date Completed |
|---|---|---|
| | | |
| | | |
| | | |
| Does the SWMS require changing? | ☐ No ☐ Yes, If yes ..... [date] SWMS has been updated to control this hazard. | |
| Does the PRA require changing? | ☐ No ☐ Yes, If yes ..... [date] PRA has been updated to control this hazard | |

| Subcontractor's Supervisor's/ Manager's Close Out | | Name: | |
|---|---|---|---|
| Signature | | Date | |

| Qanstruct OHS Representative's Close Out | | Name: | |
|---|---|---|---|
| Signature | | Date | |

| Qanstruct Manager's Close Out | | Name: | |
|---|---|---|---|
| Signature | | Date | |

| Level | Description of Consequence |
|---|---|
| High (1) (High level of harm) | Potential death, permanent disability or major structural failure/damage. Off-site environmental discharge/release not contained and significant long-term environmental harm. |
| Medium (2) (Medium level of harm) | Potential temporary disability or minor structural failure/damage. On-site environmental discharge/release contained, minor remediation required, short-term environmental harm. |
| Low (3) (Low level of harm) | Incident that has the potential to cause persons to require first aid. On-site environmental discharge/release immediately contained, minor level clean up with no short-term environmental harm. |

| Consequence | Likelihood / Probability | | |
|---|---|---|---|
| | Likely | Moderate | Unlikely |
| High (1) | 1 | 1 | 2 |
| Medium (2) | 1 | 2 | 3 |
| Low (3) | 2 | 3 | 3 |

# APPENDIX E

## Qanstruct's Complaint Form

Qanstruct

# Complaint Form

FORM 55

## COMPLAINT REPORT FORM

**Workplace:** _____ **Date:** _____ / _____ / _____ **Time:** _____ am/pm

**Supervisor:** _____

**Nature of complaint:** _____

**How was complaint lodged?** _____

| Complaint Details | | Summary of Complaint |
|---|---|---|
| Print Name | Contact Details | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**Comments, Points Raised and any Follow Up Required:**

| Corrective Action To Be Taken | Action by | Action Complete | |
|---|---|---|---|
| | | Sign off | Date |
| | | | |
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| | | | |

# APPENDIX F

## Construction Noise and Vibration Management Plan

# OAKDALE WEST INDUSTRIAL ESTATE - LOT 4E

## 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: 630.30203-R03**
**Version No: -v1.2**
**November 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 |
|---|---|---|---|---|
| 630.30203-R03-v1.2 | 2 November 2021 | Joshua Ridgway | Antony Williams | Antony Williams |
| 630.30203-R03-v1.1 | 22 October 2021 | Joshua Ridgway | Antony Williams | Antony Williams |
| 630.30203-R03-v1.0 | 20 October 2021 | Joshua Ridgway | Antony Williams | Antony Williams |
| | | | | |

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## APPENDICES

Appendix A Acoustic Terminology
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# 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 4E 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 4E as part of the *Oakdale West Estate (OWE) – Building 4E 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 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 4E 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 4E was approved on 29 October 2021 under SSD 22191322.

## Figure 1 Oakdale West Masterplan

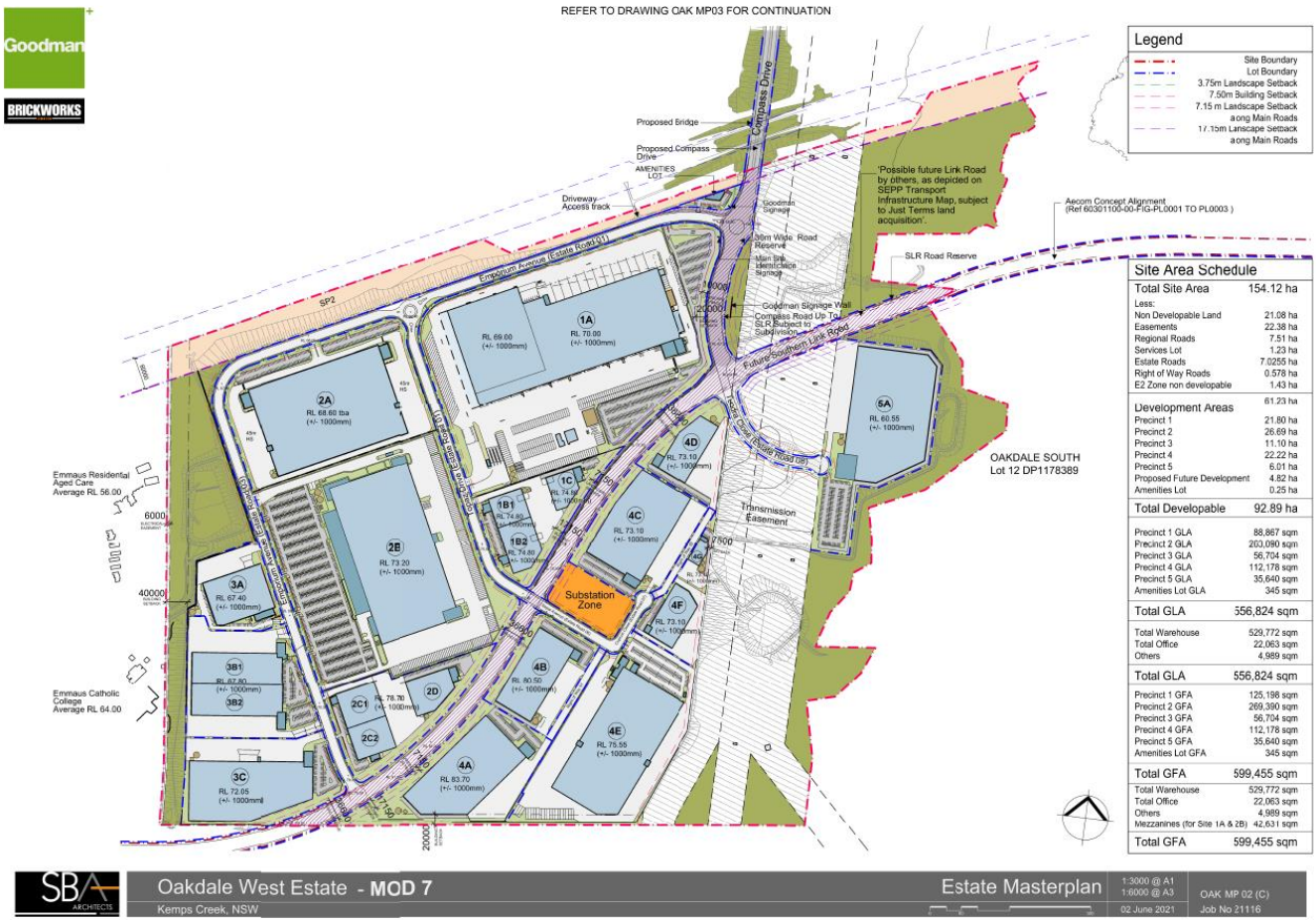
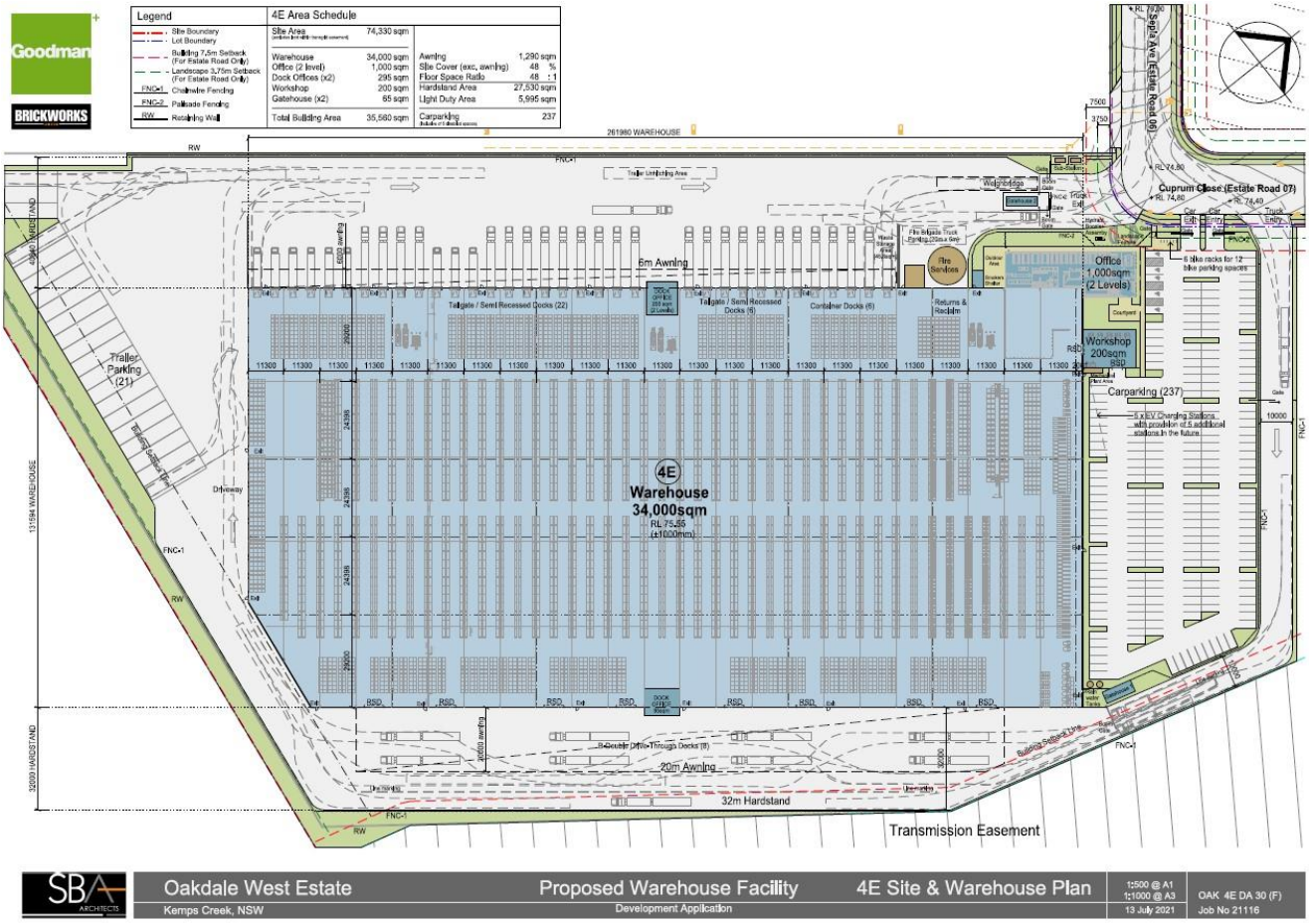


**Figure 2 Lot 4E Plan**




## 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 4E 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 4E at Oakdale West. The conditions relevant to this CNVMP are outlined in the following sections.

## 2.1 Development Consent

Conditions for Lot 4E of Oakdale West are specified Development Consent SSD 22191322, dated 29 October 2021. The conditions relevant to this CNVMP are reproduced in **Table 1**.

**Table 1 Development Consent Conditions**

<table>
<tr><th>Development Consent Conditions</th><th>Section / Comment</th></tr>
<tr><td colspan="2">Operation of Plant and Equipment</td></tr>
<tr><td>A22. All plant and equipment used on site, or to monitor the performance of the development must be:<br>a) maintained in a proper and efficient condition; and<br>b) operated in a proper and efficient manner.</td><td>Section 6 / Table 11</td></tr>
<tr><td colspan="2">Hours of Work</td></tr>
<tr><td>B1. The Applicant must comply with the hours detailed in Table 1, unless otherwise agreed in writing by the Planning Secretary.<br>Table 1: Hours of Works
<table>
<tr><th>Activity</th><th>Day</th><th>Time</th></tr>
<tr><td>Construction</td><td>Monday – Friday<br>Saturday</td><td>7 am to 6 pm<br>8 am to 1 pm</td></tr>
<tr><td>Operation</td><td>Monday – Sunday (including public holidays)</td><td>24 hours</td></tr>
</table></td><td>Section 3.5</td></tr>
<tr><td>B2. Works outside the hours identified in Condition B1 may be undertaken in the following circumstances:<br>a) works that are inaudible at the nearest sensitive receivers;<br>b) works agreed to in writing by the Planning Secretary;<br>c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or<br>d) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.</td><td>Section 3.5</td></tr>
<tr><td colspan="2">Construction Noise Limits</td></tr>
<tr><td>B5. The development must be constructed to achieve 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 management and mitigation measures in the Appendix 3.</td><td>Section 4.1, Section 5.1 and Section 6 / Table 11</td></tr>
<tr><td colspan="2">Management Plan Requirements</td></tr>
<tr><td>C1. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:</td><td>Noted</td></tr>
</table>

| Development Consent Conditions | Section / Comment |
|---|---|
| a) details of:<br>i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);<br>ii) any relevant limits or performance measures and criteria; and<br>iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures; | i) **Section 2**<br>ii) **Section 4**<br>iii) **Section 4**, **Section 6 / Table 11** 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 11** |
| c) a program to monitor and report on the:<br>i) impacts and environmental performance of the development; and<br>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 the development over time; | **Section 11**, and Section 6 of the CEMP |
| f) a protocol for managing and reporting any:<br>i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);<br>ii) complaint;<br>iii) failure to comply with statutory requirements; and | i) **Section 9**<br>ii) **Section 7**<br>iii) **Section 9** |
| g) a protocol for periodic review of the plan. | **Section 11**, and Section 6 of the CEMP |

## 2.2 Relevant Guidelines

The guidelines used to assess the construction impacts from the development are listed in **Table 2**. The guidelines aim to protect the community and environment from excessive noise and vibration impacts that may result from construction of the development.

**Table 2 Construction Noise and Vibration Guidelines**

| Guideline/Policy Name | Where Used |
|---|---|
| Environment Protection Authority (EPA) (2009) *Interim Construction Noise Guideline* (ICNG) | Assessment of noise impacts on sensitive receivers. |
| Roads and Maritime Services (2016) *Construction Noise and Vibration Guideline* (CNVG) | Assessment and management protocols for noise and vibration impacts. |
| Environment Protection Authority (EPA) (2006) *Assessing Vibration: a technical guideline* | Assessment of vibration impacts on sensitive receivers. |
| British Standard Institution (BSI) (1993) *BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2* (BS 7385) | Assessment of vibration impacts (structural damage) to sensitive structures. |
| German Institute for Standardisation (Deutsches Institut für Normung) (1999) *DIN 4150 – Structural vibration - Effects of vibration on structures* (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 4E is located in Precinct 4 of Oakdale West (see **Figure 1**).

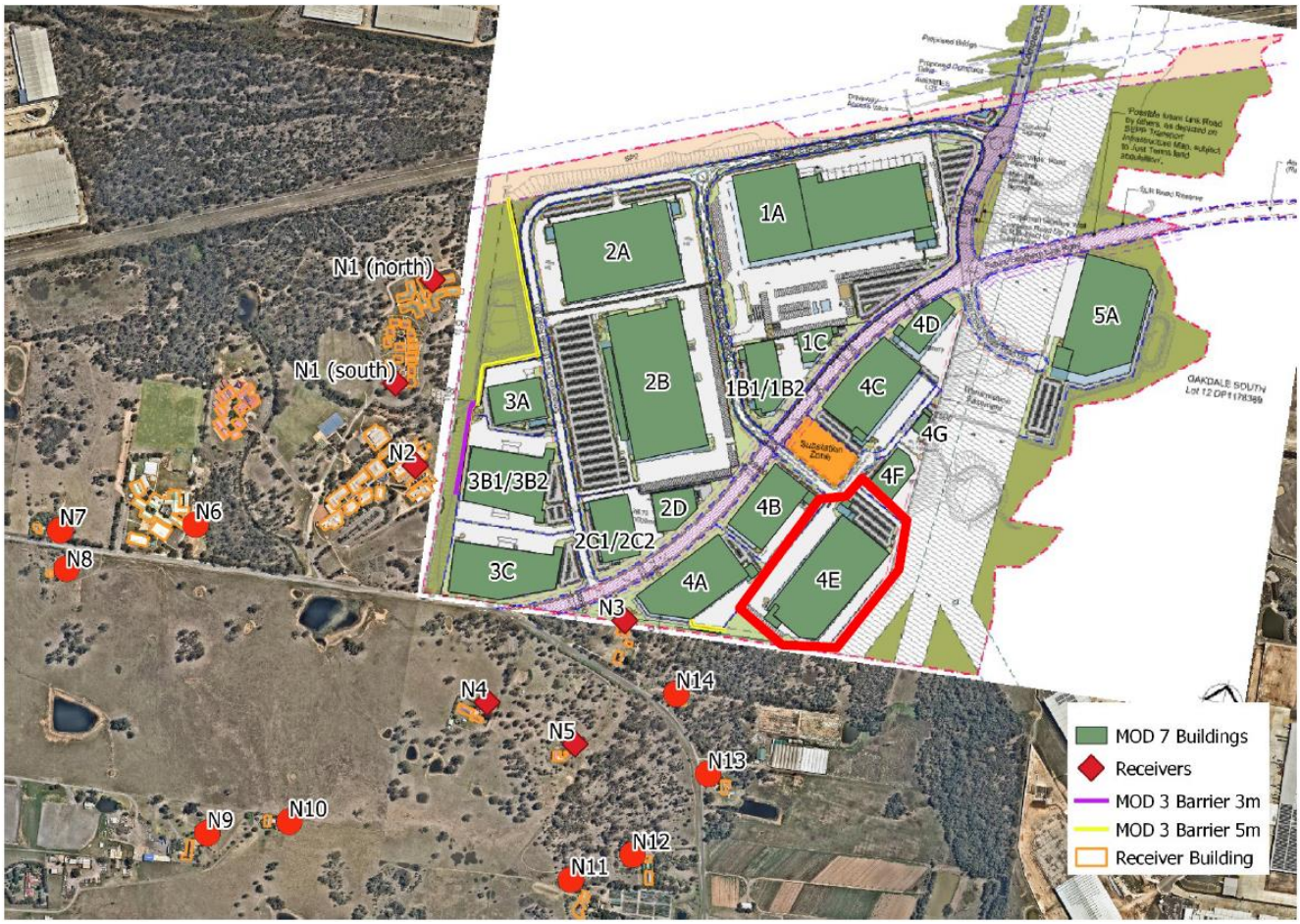
## 3.2 Location

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 111 DP 1262310, 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 4E 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 4E is proposed to commence in 2021 and be completed in 2022.

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 B1 and B2 of Development Consent SSD 22191322, which are reproduced below:

> *B1. The Applicant must comply with the hours detailed in Table 1, unless otherwise agreed in writing by the Planning Secretary.*
>
> ***Table 1**: Hours of Work*

| Activity | Day | Time |
|---|---|---|
| Construction | Monday – Friday<br>Saturday | 7 am to 6 pm<br>8 am to 1 pm |

> *B2. Works outside of the hours identified in Condition B1 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 B2(a) of Development Consent SSD 22191322 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 B2(b) of Development Consent SSD22191322, 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 B2(c) or B2(d).

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.

## 3.6 Construction Site Access

Access to Lot 4E will be via Compass Drive (the WNSLR) and Estate Roads 01 and 06 (refer to **Figure 1**).

# 4 Construction Noise and Vibration Criteria and Guidelines

## 4.1 Construction Noise Criteria

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 3**.

**Table 3 Determination of NMLs for Residential Receivers**

| Time of Day | NML LAeq(15minute) | How to Apply |
|---|---|---|
| ICNG Standard construction hours<br>Monday to Friday<br>7:00 am to 6:00 pm<br>Saturday<br>8:00 am to 1:00 pm<br>No work on Sundays or public holidays | RBL + 10 dBA | • The noise affected level represents the point above which there may be some community reaction to noise.<br>• 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.<br>• 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<br>75 dBA | • The Highly Noise Affected (HNA) level represents the point above which there may be strong community reaction to noise.<br>• 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:<br>  • 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.<br>  • 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 | • A strong justification would typically be required for works outside the recommended standard hours.<br>• The proponent should apply all feasible and reasonable work practices to meet the noise affected level.<br>• 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 4**.

### Table 4 Construction Noise Management Levels at Other Sensitive Land Uses

| Land use | NML $L_{Aeq(15minute)}$ |
|---|---|
| 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 $L_{Aeq(15minute)}$
- Offices, retail outlets: external 70 dBA $L_{Aeq(15minute)}$
- 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 5**.

**Table 5 Project Specific Noise Management Levels**

| Receiver | Period | $L_{Aeq,15min}$ 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 3**, where the predicted or measured $L_{Aeq(15minute)}$ construction noise levels exceed the NMLs in **Table 5**, 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

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 6**. 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 6 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 or 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 7**. These are maximum levels measured in any direction at the foundation or in the horizontal axes in the plane of the uppermost floor.

**Table 7 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 800 m from the closest point of the Lot 4E works. This separation distance is sufficient to mitigate vibration from the Lot 4E 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 VDVs 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 8**.

**Table 8 Acceptable Vibration Dose Values for Intermittent Vibration (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). Theses minimum working distances are summarised in **Table 9**.

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 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.

# 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
- Construction of warehouse and office structures

The predicted worst-case noise levels from the various construction works at Oakdale West Lot 4E are presented in **Table 10**.

**Table 10 Predicted $L_{Aeq,15min}$ Construction Noise Levels**

| Receiver | Period (weather) | $L_{Aeq,15min}$ Noise Level (dBA) | | | | |
|---|---|---|---|---|---|---|
| | | CNML | Highly Affected NML | Predicted | | |
| | | | | Earthworks | Hardstand | Construction |
| N1 – Emmaus Village Residential | Day (Standard) | 49 | 75 | 31 | 28 | 22 |
| N2 – Emmaus Catholic College (School) | Day (Standard) | 55 | n/a | 44 | 41 | 35 |
| N6 – Mamre Anglican College | Day (Standard) | 55 | n/a | 33 | 30 | 24 |
| N7 – 21-42 Bakers Ln, Kemps Creek | Day (Standard) | 49 | 75 | 30 | 27 | 21 |
| N8 – 706-752 Mamre Rd, Kemps Creek | Day (Standard) | 49 | 75 | 31 | 28 | 22 |
| N9 – 754-770 Mamre Rd, Kemps Creek | Day (Standard) | 44 | 75 | 14 | 11 | 5 |
| N10 – 784-786 Mamre Rd, Kemps Creek | Day (Standard) | 44 | 75 | 31 | 28 | 22 |
| N11 – 99-111 Aldington Rd, Kemps Creek | Day (Standard) | 44 | 75 | 36 | 33 | 27 |
| N12 – 53 Aldington Rd, Kemps Creek | Day (Standard) | 44 | 75 | 36 | 33 | 27 |
| N13 – 54-72 Aldington Rd, Kemps Creek | Day (Standard) | 44 | 75 | **45** | 42 | 36 |
| N14 – 74-88 Aldington Rd, Kemps Creek | Day (Standard) | 44 | 75 | **49** | **46** | 40 |

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

As detailed in the NVA and shown in **Table 10** above, the construction noise impacts are predicted to be within the daytime NMLs with the exception of noise impacts from earthworks at N13 and N14, and hardstand works at N14. The exceedance of the NMLs is minor (up to 5 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 school, commercial or other residential 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.

The nearest receiver buildings (n13 and N14) are over 100 m from the boundary of construction works of Lot 4E. As such, vibration intensive equipment is not anticipated to have the potential to be operated within the recommended minimum working distances of the nearest receivers.

Vibration at the nearest receivers is unlikely to 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 11**.

Note: **Table 11** is replicated in the CEMP.

**Table 11 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 | Best practice |
| 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. | | | |
| 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. | | | |

| Measure | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| **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:<br>a) regularly inspected and maintained in an efficient condition;<br>b) operated in a proper and efficient manner. | Construction Contractor | Ongoing | SSD 22191322 Condition A22<br><br>Best practice |
| 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). | | | |
| 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. | | | |

| Measure | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| **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 |
| 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 | |
| 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. | | | |

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 11** 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 4E 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.

# 9 Contingency Management Plan

The following contingency management plan, shown in **Table 12**, 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 12 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.<br>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.<br>Undertake all feasible and reasonable mitigation and management measures to ensure vibration levels are below applicable limits.<br>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.

# 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 $2 \times 10^{-5}$ 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 | |
| 80 | Kerbside of busy street | Loud |
| 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

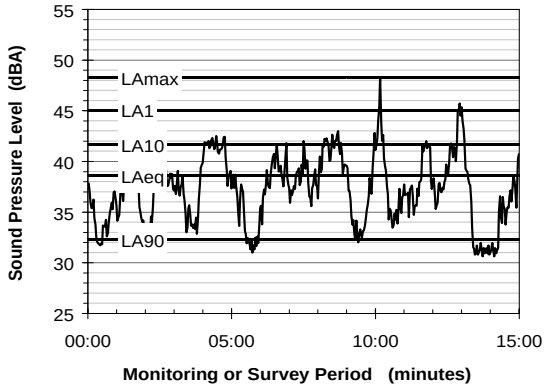
The Sound Power of a source is the rate at which it emits acoustic energy. As with Sound Pressure Levels, Sound Power Levels are expressed in decibel units (dB or dBA), but may be identified by the symbols SWL or LW, or by the reference unit $10^{-12}$ W.

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 $L_{AN}$, where $L_{AN}$ is the A-weighted sound pressure level exceeded for N% of a given measurement period. For example, the $L_{A1}$ is the noise level exceeded for 1% of the time, $L_{A10}$ 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:

$L_{A1}$ The noise level exceeded for 1% of the 15 minute interval.

$L_{A10}$ The noise level exceeded for 10% of the 15 minute interval. This is commonly referred to as the average maximum noise level.

$L_{A90}$ 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.

$L_{Aeq}$ 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

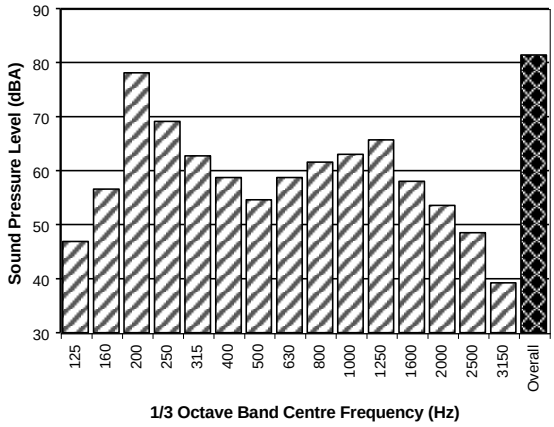
Frequency analysis is the process used to examine the tones (or frequency components) which make up the overall noise or vibration signal.

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/Vo), where Vo 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

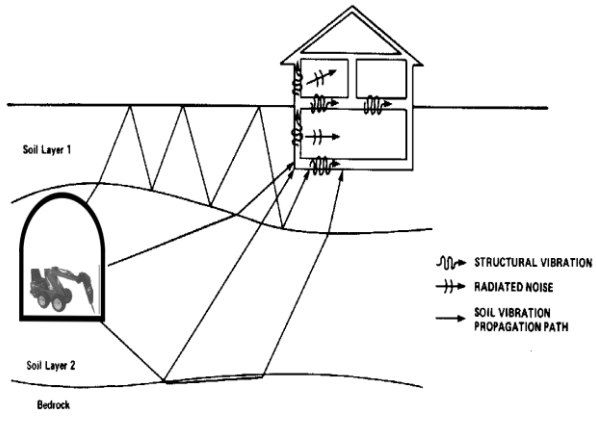
People are able to 'feel' vibration at levels lower than those required to cause even superficial damage to the most susceptible classes of building (even though they may not be disturbed by the motion). An individual's perception of motion or response to vibration depends very strongly on previous experience 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 Ridgway completed his Master of Design Science (Audio and Acoustics) at University of Sydney in 2008, specialising in acoustic measurement, signal analysis and digital signal processing.

Joshua started his career in acoustics and vibration at SLR as a project consultant in the Acoustics and Vibration team in 2011, working on a broad range of projects involving field measurements, analysis, modelling, assessment and reporting.

Joshua's consulting experience has included measurement, analysis, modelling and control of noise and vibration from railways, roads, construction works, mining operations, infrastructure and industrial projects.

Joshua is experienced in the use of SoundPLAN predictive modelling software for a range of modelling applications including industrial noise, construction noise, road operational noise and rail operational noise.

## PROJECTS

| | |
|---|---|
| | **Transport Noise and Vibration Projects** |
| **M12 Motorway EIS, NSW** | Ambient noise monitoring, construction noise and vibration assessment, lead modeller for operational noise impacts and assessment. |
| **WestConnex M4-M5 Link EIS, 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, NSW** | Noise and vibration environmental impact assessment. |
| **North West Rail Link 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. |
| **Parramatta Rail Turnback Project, NSW** | Ambient noise monitoring, operational and construction noise 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. |
| **M2 Upgrade Project, NSW** | OOHWs construction noise and vibration modelling and assessment. |
| | **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 G

## Construction Air Quality Management Plan

# OAKDALE WEST INDUSTRIAL ESTATE - LOT 4E

## Construction Air Quality Management Plan
## SSD 22191322

**Prepared for:**

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

SLR Ref: 630.30203-R04
Version No: -v1.1
November 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 |
|---|---|---|---|---|
| 630.30203-R04-v1.1 | 2 November 2021 | Varun Marwaha | Kirsten Lawrence | Varun Marwaha |
| 630.30203-R04-v1.0 | 21 October 2021 | Varun Marwaha | Kirsten Lawrence | 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 4E (Development Site) within Precinct 4 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 4E and generally adheres to the requirements stipulated in the overarching OWE CAQMP. The development of Lot 4E was approved on 29 October 2021 under SSD 22191322.

## 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 4E by Construction Contractor. Lot 4E is located in Precinct 4 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.

## Figure 1 Regional Locality

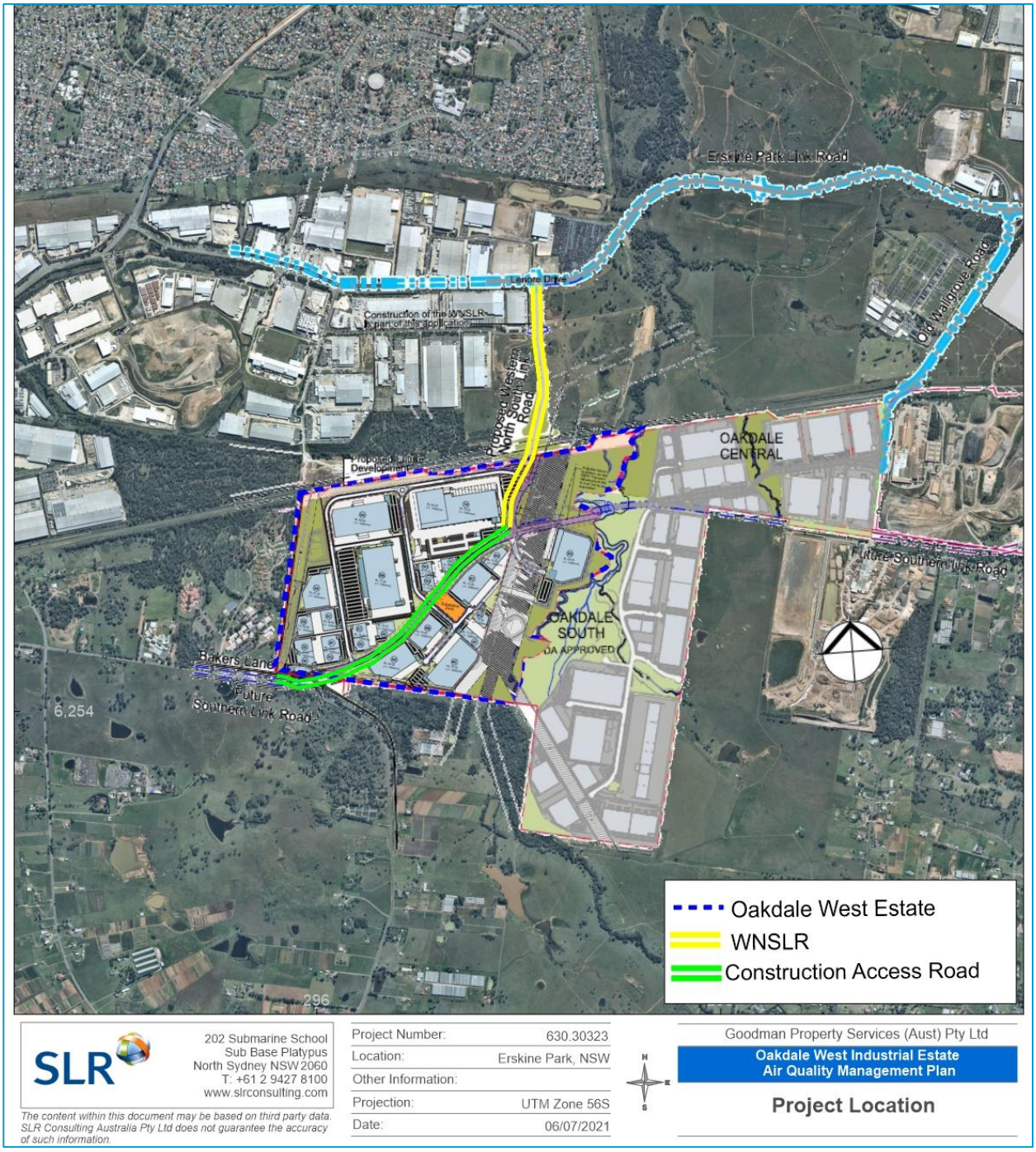
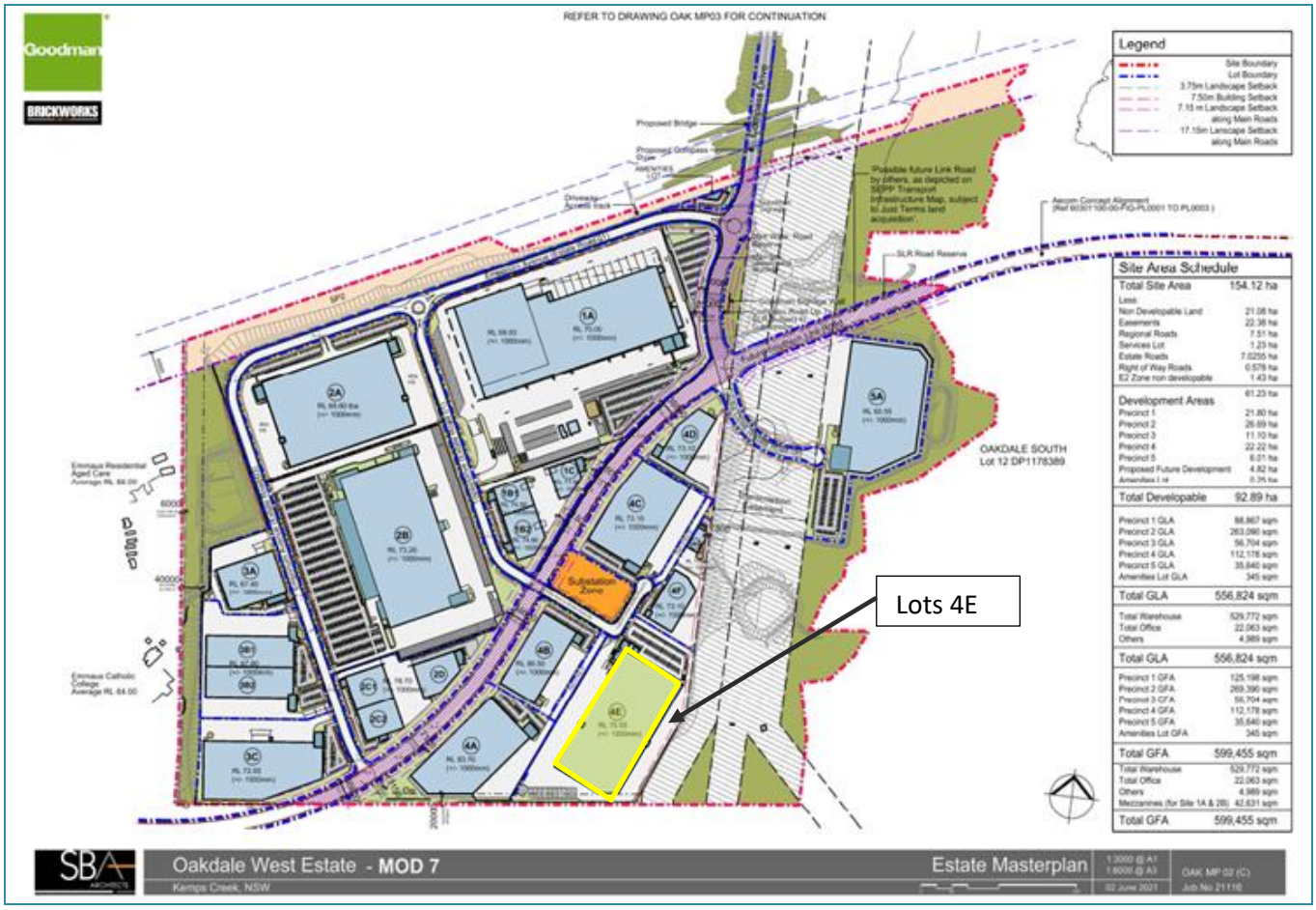


**Figure 2 Oakdale West Masterplan**




## 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 4E;
- 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 requirements and stipulated for the construction of Lot 4E under SSD 7348 and SSD 22131922, and where they have been addressed in this CAQMP, are shown in **Table 1** and **Table 2** respectively.

**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:<br>(a) exposed surfaces and stockpiles are suppressed by regular watering and or other dust suppression methods;<br>(b) all trucks entering or leaving the Site with loads have their loads covered;<br>(c) trucks associated with Stage 1 do not track dirt onto the public road network;<br>(d) public roads used by these trucks are kept clean; and<br>(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:<br>- key performance indicator<br>- monitoring method<br>- location, frequency and duration of monitoring<br>- record keeping<br>- complaints register<br>- response procedures<br>- compliance monitoring | **Section 8** and **Section 10** |
| **Condition D118 (Management Plan Requirements)** | |
| (a) details of:<br>i. the relevant statutory requirements (including any relevant approval, licence or lease conditions);<br>ii. any relevant limits or performance measures and criteria; and<br>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:<br>i. impacts and environmental performance of Stage 1; and<br>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:<br>i. incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);<br>ii. complaint;<br>iii. failure to comply with statutory requirements; and | **Section 9** and **Appendix C**<br>See overarching CEMP |
| (g) a protocol for periodic review of the plan. | **Section 13** |

## Table 2 Assessment against SSD 22131922 Conditions

| Conditions | Response / Section Reference |
|---|---|
| **Condition B34 (Dust Minimisation)** | |
| The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent. | **Section 8** |
| **Condition B35 (Dust Minimisation)** | |
| During construction of the development, the Applicant must comply with the dust minimisation measures detailed in the Construction Environmental Management Plan required by Condition C2. | **Section 8** |

# 3 Project Overview

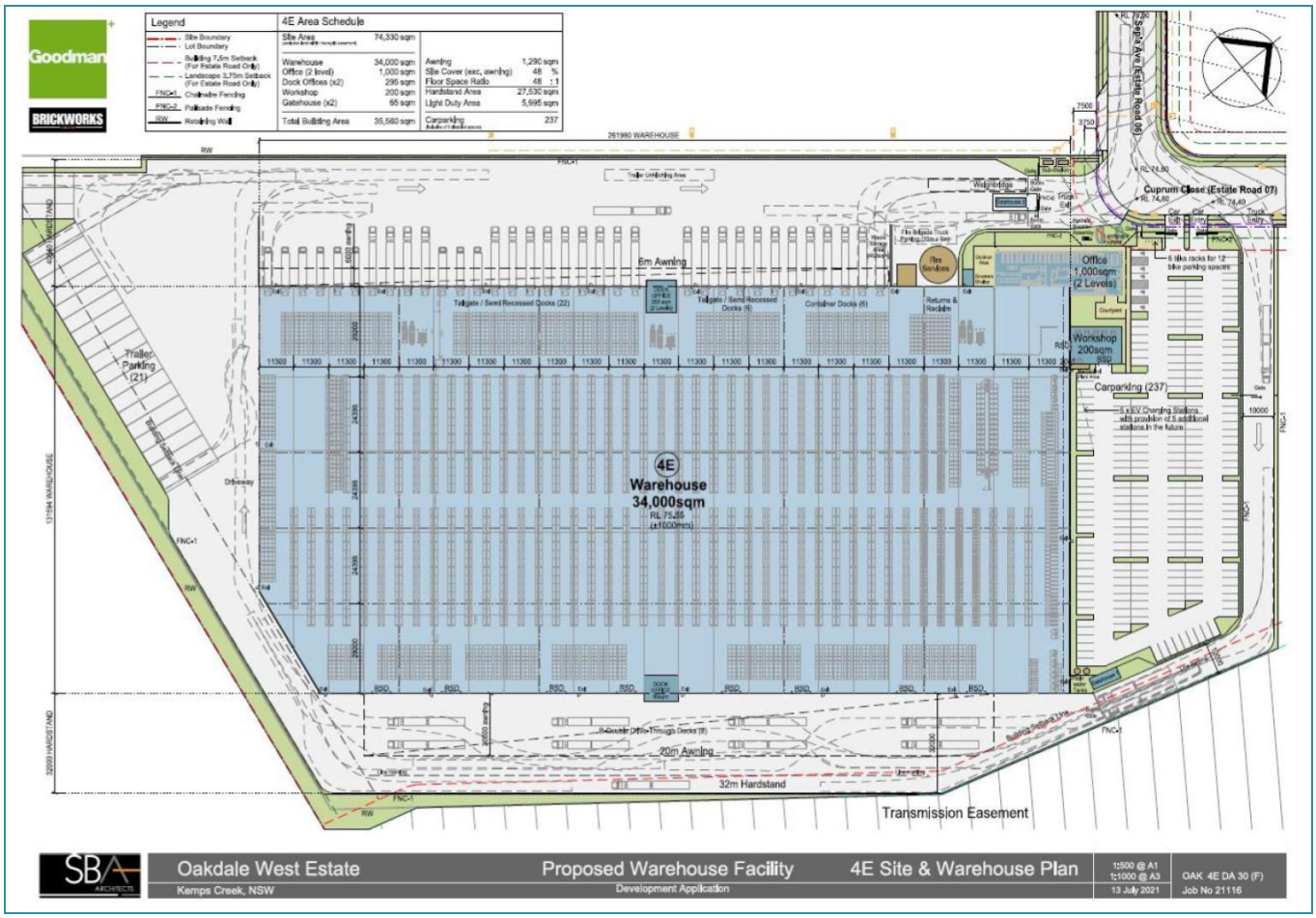
## 3.1 Surrounding Land Uses

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 4 is located on the east side of the OWE and is bordered by Oakdale South Estate (ie commercial buildings).

## 3.2 Lot 4E Layout

Lot 4E layout is shown in **Figure 3**.

**Figure 3 Lot 4E Layout**



## 3.3 Construction Activities

Construction will include the works to be undertaken on Lot 4E at Precinct 4.

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

All works will be undertaken in accordance with the Approved Development Consent SSD 22191322.

## 3.4 Construction Hours

Construction hours will be in accordance with Conditions B1 and B2 of Development Consent SSD 22131922, which are reproduced below:

> *B1. The Applicant must comply with the hours detailed in Table 1, unless otherwise agreed in writing by the Planning Secretary.*

*Table 1: Hours of Work*

| Activity | Day | Time |
|---|---|---|
| Construction | Monday – Friday<br>Saturday | 7 am to 6 pm<br>8 am to 1 pm |

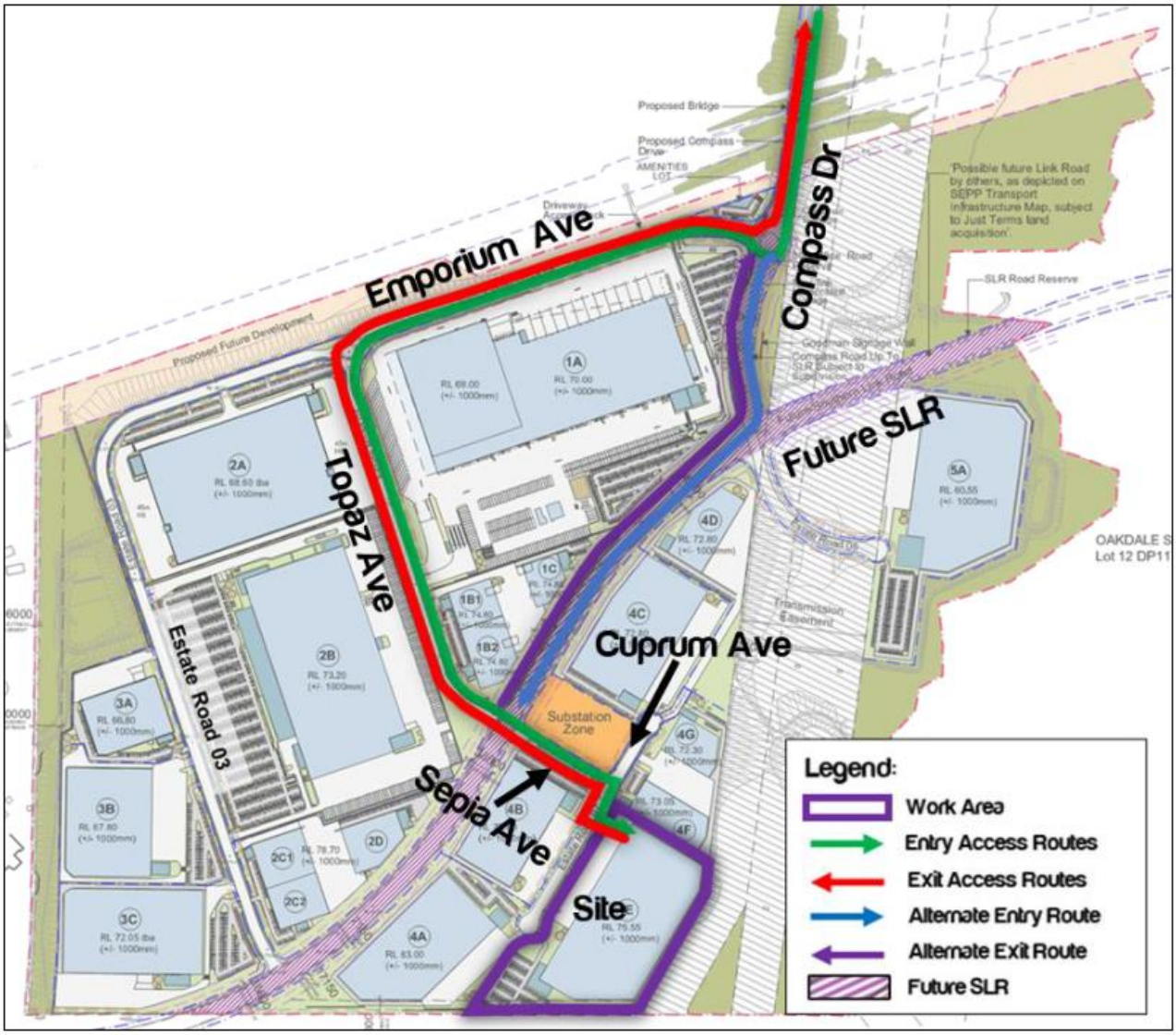
> *B2. Works outside of the hours identified in Condition B1 may be undertaken in the following circumstances:*
>
> *a) works that are inaudible at the nearest sensitive receivers;*
>
> *b) works agreed to in writing by the Planning Secretary;*
>
> *c) for the delivery of materials required outside these 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.

## 3.5 Construction Site Access

Once within Oakdale West Estate, the Site has three proposed vehicular access points. It has separate car and truck entry / exit points on Cuprum Close (previously referred to as Estate Road 07). Furthermore, the truck entry and exit points are also separated, as show in **Figure 4**.

## Figure 4 Construction Site Access



## 3.6 Construction Contact Details

**Table 3** lists the key contacts during the construction of Lot 4E.

### Table 3 Construction Contact List

| Role | Name | Company | Contact Details |
|---|---|---|---|
| Project Principal | Ben Milner | Goodman | 0410 557 543<br>Ben.milner@goodman.com |
| Contractor's Project Manager | Daniel Lipari | Qanstruct | 0411 414 096<br>dlipari@qanstruct.com.au |
| Environmental Representative | Carl Vincent | ERSED | 0424 203 046<br>carl.vincent@ersed.com.au |
| Communications and Community Liaison Representative | Dan Thompson | SLR | 0428 060 995<br>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 4E 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 4E.

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 4E 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 4E 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 $PM_{2.5}$ (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 $PM_{2.5}$ 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 $PM_{2.5}$ 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)<br>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 4E towards the nearest sensitive receptors located to the 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.

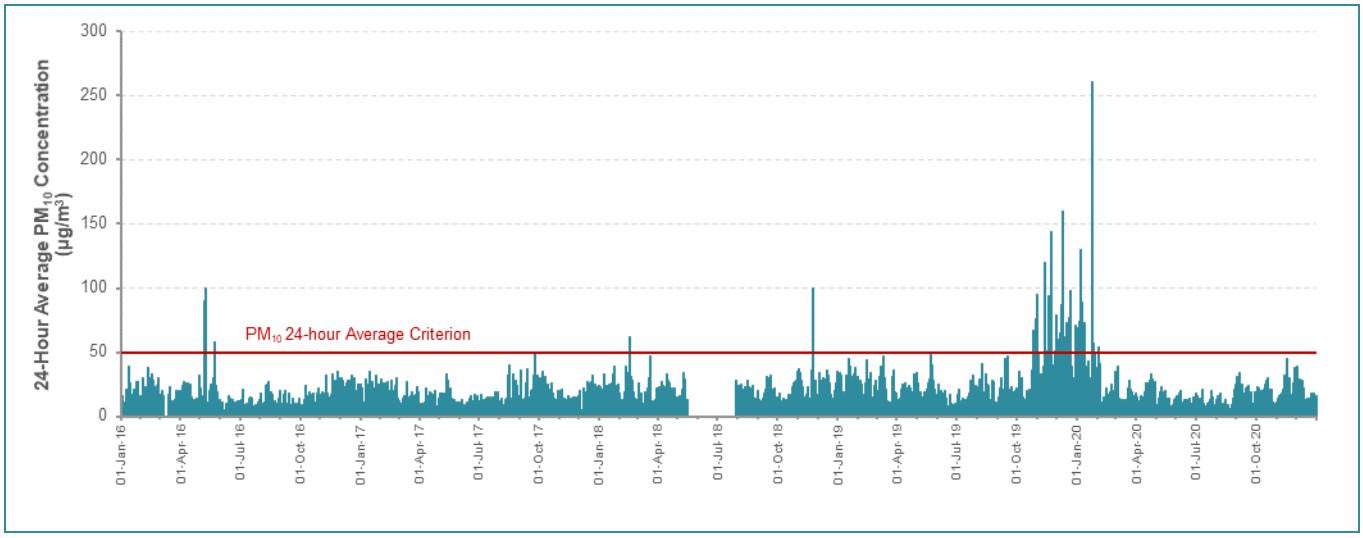
A summary of the $PM_{10}$ concentrations for the last five years (2016-2020) is tabulated in **Table 6** and presented graphically in **Figure 5**.

**Table 6 Summary of $PM_{10}$ Monitoring Data at St Marys AQMS (2016 – 2020)**

| Year | Maximum 24-hour Average | Annual Average |
|---|---|---|
| | µg/m³ | µg/m³ |
| 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 $PM_{10}$ 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 $PM_{10}$ 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 $PM_{10}$ 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 4E are:

- Elevated suspended particulate concentrations ($PM_{10}$); 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 4E 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 4E 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 4E 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 SSD 22131922 Condition 34 |
| Exposed surfaces and stockpile will be suppressed by regular watering or use of approved dust suppressants. | | | SSD 7348 Condition D99a |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| Land stabilisation works will be carried out in such a way on site to minimise exposed surfaces. | | | SSD 7348 Condition D99e |
| Construction of Lot 4E 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.<br>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:<br>• General - 20km/h<br>• High risk area - 10km/h<br>• Haul 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 |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| 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. | 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.<br>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. | | | |

| Environmental Management Control | Person Responsible | Timing / Frequency | Reference / Notes |
|---|---|---|---|
| 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'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 $\mu g/m^3$ 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 4E 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 4E.

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.

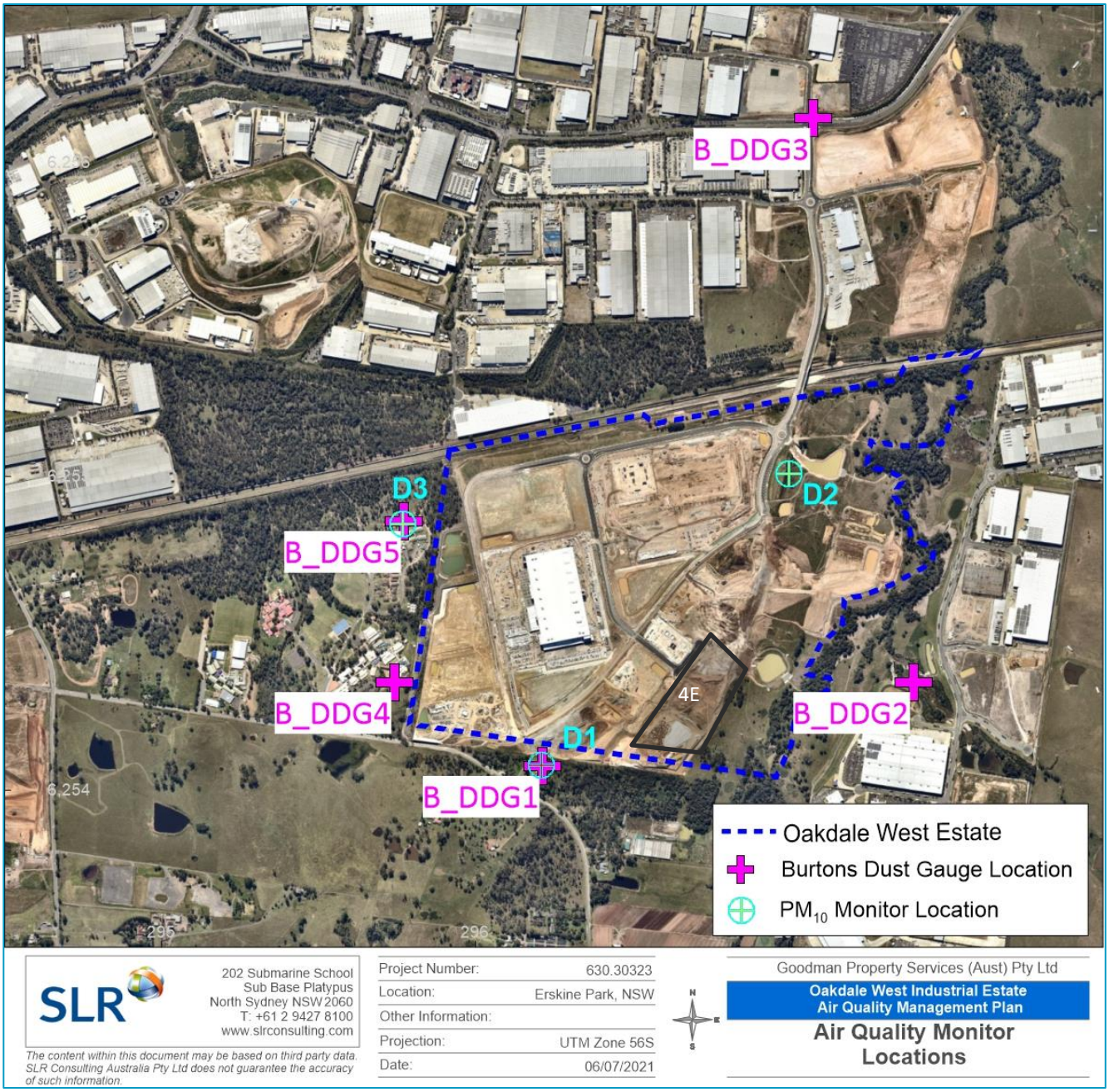
### Table 10 Summary of On-Site Monitoring Programme

| 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 4E.

# 11 Contingency Management Plan

The air quality contingency management plan for the construction of Lot 4E 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 4E.

**Table 11 Air Quality Contingency Management Plan for the Construction of Lot 4E**

| 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:<br>• *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 >4g/m$^2$/month | Trigger | Dust deposition rates are less than 4 g/m$^2$/month at all the dust gauges. | Dust deposition rate greater than 4 g/m$^2$/month is recorded by any of the dust gauges | Dust deposition rates greater than 4 g/m$^2$/month are recorded by two or more dust gauges for two months in a row. |
| | Response | Continue monitoring program as normal. | • OWE Project Manager to analyse data to try to identify the source(s) of dust.<br>• 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. | • OWE Project Manager to review and investigate construction activities and respective control measures for the monitoring period.<br>• If it is concluded that construction activities at Lot 4E 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. | • Report the complaint to the regulator, in line with complaints handling procedure (See **Section 9**).<br>• 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 (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. | OWE Project Manager to review and investigate construction activities and respective control measures.<br>Where appropriate, implement additional remedial measures, such as:<br>• Deployment of additional water sprays, water trucks etc<br>• Relocation or modification of dust-generating sources<br>• Record findings of investigations and actions taken to reduce dust levels<br>• Continue to closely monitor dust levels to ensure they are decreasing<br>If elevated dust levels are due to regional dust event (fire, dust storm etc) – still take action to minimise dust from the Lot 4E site to minimise cumulative impacts, but also record details of the cause of the elevated background levels. | • 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**).<br>• If it is concluded that construction activities at Lot 4E 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 $PM_{10}$ 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.
- DPIE 2021, NSW Air Quality Statement 2020, available online at https://www.environment.nsw.gov.au/topics/air/nsw-air-quality-statements/annual-air-quality-statement-2020, accessed 15 February 2021.
- EPA 2017, Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, Environment Protection Authority NSW, January 2017.
- EPA 2018, Local Government Air Quality Toolkit, Module 3 – Guidelines for Managing Air Pollution, Part 3 – Guidance Notes for Construction Sites, available online at https://www.epa.nsw.gov.au/your-environment/air/air-nsw-overview/local-government-air-quality-toolkit, accessed on 17 July 2018.
- OEH 2017a, NSW Annual Compliance Report 2015, National Environment Protection (Ambient Air Quality) Measure, published by Office of Environment and Heritage, OEH 2017/0211, May 2017.
- OEH 2017b, NSW Air Quality Statement 2016 – Towards Cleaner Air, published by Office of Environment and Heritage, OEH 2017/0013, January 2017.
- OEH 2018, NSW Air Quality Statement 2017 – Clearing the Air, published by Office of Environment and Heritage, OEH 2018/0044, January 2018.
- OEH 2019, NSW Annual Air Quality Statement 2018, published by Office of Environment and Heritage, OEH 2019/0031, January 2019.
- SLR Consulting 2021, Community Communications Strategy
- SLR 2020, Oakdale West Estate, Construction Air Quality Management Plan SSD 7348, v1.6 10 January 2020.
- URBIS 2017, Environmental Impact Statement Oakdale West Estate, State Significant Development Application, prepare for: Goodman Limited, SA6642, 1 November 2017.
- USEPA 2006, AP42 Fifth Edition, Volume I, Chapter 13: Miscellaneous Sources, 13.2.5 – Industrial Wind Erosion, November 2006.

# 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)

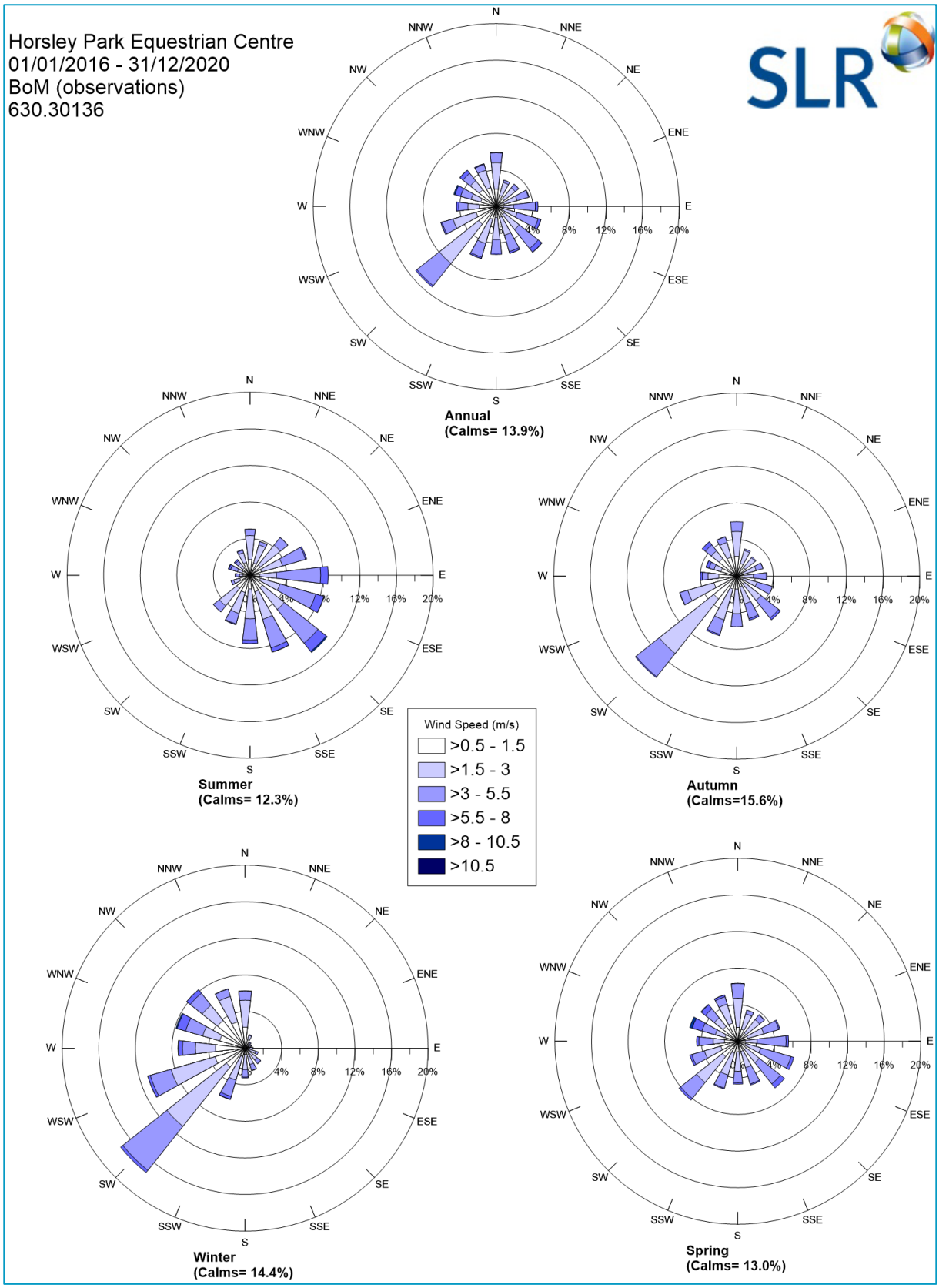
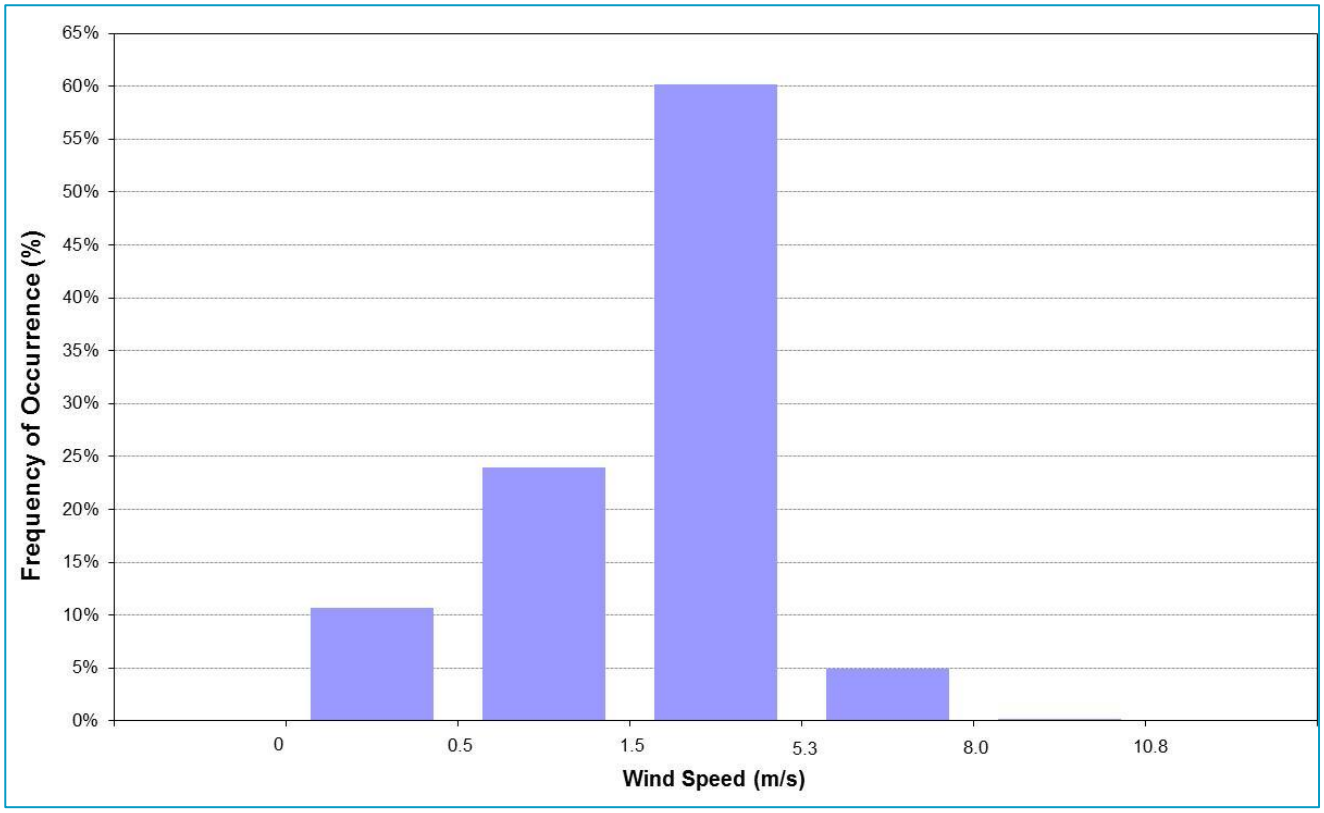


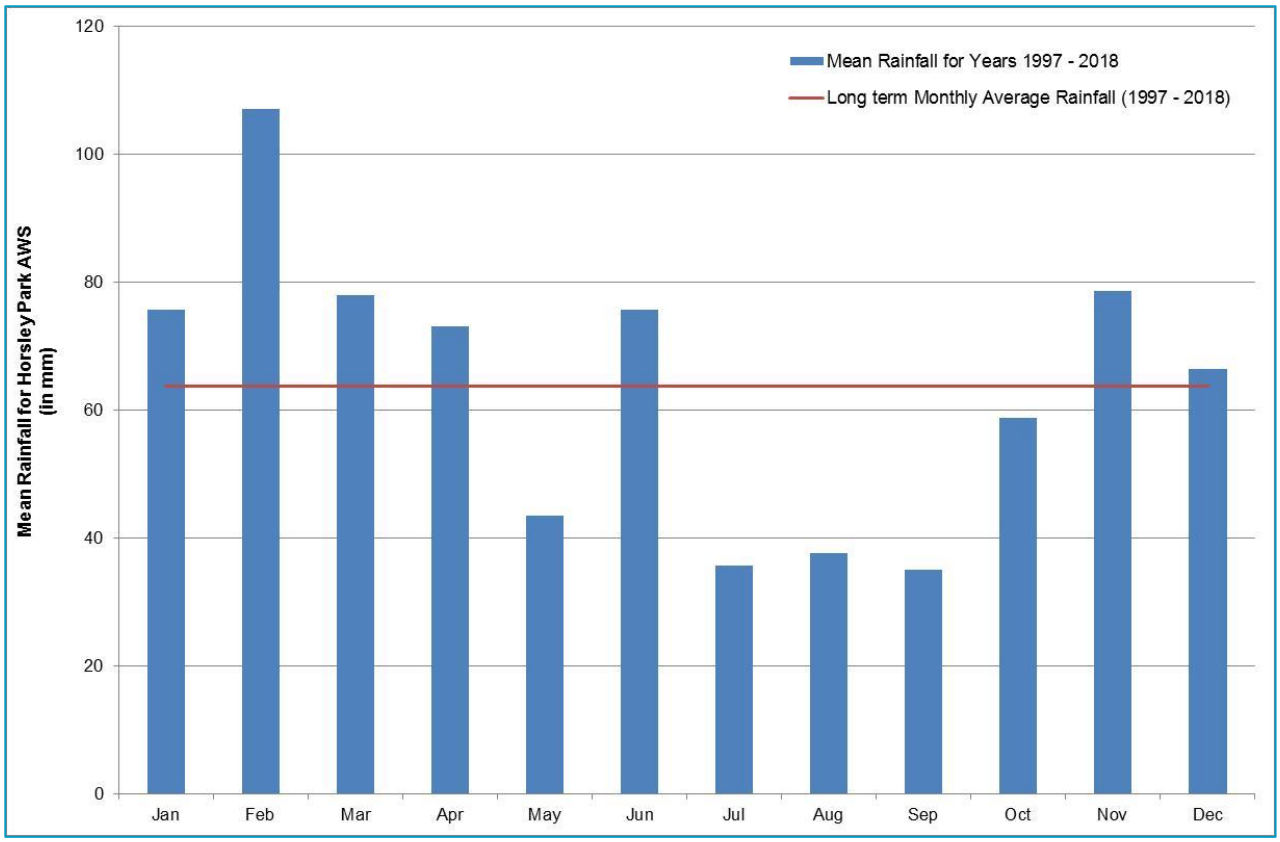
**Figure A2 Wind Speed Frequency Chart for Horsley Park AWS – 2016-2020**




## 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 $m^3$, 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 $m^3$ – 50,000 $m^3$, potentially dusty construction material, demolition activities 10-20 m above ground level; and
- ***Small***: Total building volume <20,000 $m^3$, 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 $m^2$, 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 $m^2$ to 10,000 $m^2$, 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 $m^2$, 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 $m^3$, piling, on site concrete batching; sandblasting.
- ***Medium***: Total building volume 25,000 $m^3$ to 100,000 $m^3$, potentially dusty construction material (e.g. concrete), piling, on site concrete batching.
- ***Small***: Total building volume less than 25,000 $m^3$, 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 C1**.

### Table C1 Categorisation of Dust Emission Magnitude

| Activity | Dust Emission Magnitude | Basis |
|---|---|---|
| Demolition | Small | **IAQM Definition:**<br>Total building volume <20,000 $m^3$, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.<br>**Relevance to this Project:**<br>Demolition activities will predominantly be limited to removal of any old structures (if any) within Lot 4E site boundary. |
| Earthworks | Large | **IAQM Definition:**<br>Total site area greater than 10,000 $m^2$, 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.<br>**Relevance to this Project:**<br>The footprint of Lot 4E is approximately 74,000 $m^2$ and involves construction of one new building. |
| Construction | Large | **IAQM Definition:**<br>Total building volume greater than 100,000 $m^3$, piling, on site concrete batching; sandblasting.<br>**Relevance to this Project:**<br>The footprint of Lot 4E is approximately 35,500 $m^2$ and involves construction of one new building (total volume of approximately 355,000 $m^3$). |
| Trackout | Medium | **IAQM Definition:**<br>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.<br>**Relevance to this Project:**<br>*The peak traffic volume during construction is estimated to be 20 vehicle movements per hour.* |

## 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 $PM_{10}$, 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 C1**. It is noted that user expectations of amenity levels (dust soiling) is dependent on existing deposition levels.

### Table C2 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<br>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<br>The appearance, aesthetics or value of their property could be diminished by soiling; or<br>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<br>Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or<br>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. |
| | *Examples: Dwellings, museums, medium and long term car parks and car showrooms.* | *Examples: Parks and places of work.* | *Examples: Playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.* |
| 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. |
| | *Examples: Residential properties, hospitals, schools and residential care homes.* | *Examples: Office and shop workers, but will generally not include workers occupationally exposed to PM10.* | *Examples: Public footpaths, playing fields, parks and shopping street.* |

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 $PM_{10}$ 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 C2**, 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 C3**. The sensitivity of the area should be derived for each of activity relevant to the project (ie construction and earthworks).

### Table C3 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 C4**. For high sensitivity receptors, the IAQM methods takes the existing background concentrations of $PM_{10}$ (as an annual average) experienced in the area of interest into account and is based on the air quality objectives for $PM_{10}$ 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/m$^3$ for $PM_{10}$) 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 C4 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/m³ | >100 | High | High | High | Medium | Low |
| | | 10-100 | High | High | Medium | Low | Low |
| | | 1-10 | High | Medium | Low | Low | Low |
| | 21-25 µg/m³ | >100 | High | High | Medium | Low | Low |
| | | 10-100 | High | Medium | Low | Low | Low |
| | | 1-10 | High | Medium | Low | Low | Low |
| | 17-21 µg/m³ | >100 | High | Medium | Low | Low | Low |
| | | 10-100 | High | Medium | Low | Low | Low |
| | | 1-10 | Medium | Low | Low | Low | Low |
| | <17 µg/m³ | >100 | Medium | Low | Low | Low | Low |
| | | 10-100 | Low | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low | Low |
| Medium | >25 µg/m³ | >10 | High | Medium | Low | Low | Low |
| | | 1-10 | Medium | Low | Low | Low | Low |
| | 21-25 µg/m³ | >10 | Medium | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low | Low |
| | 17-21 µg/m³ | >10 | Low | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low | Low |
| | <17 µg/m³ | >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 C3** and **Table C4**, 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 $PM_{10}$ concentration of 19.4 µg/m$^3$ 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 C5** (earthworks and construction), **Table C6** (track-out) and **Table C7** (demolition) to determine the risk category with no mitigation applied.

### Table C5 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 C6 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 C7 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 |

## 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. |
| | |
| **MEMBERSHIPS** | Clean Air Society of Australia and New Zealand (CASANZ) |
| | Member of Engineers Australia (EA) |
| | Institute of Chemical Engineers (IChemE) |
| **ACCREDITATION** | Certified Air Quality Professional (CAQP), CASANZ |
| | Certified Practicing Project Manager (CPPM), UNE |
| **TRAINING** | Advanced CALPUFF Course – Clean Air Society of Australia and New Zealand (CASANZ), 2008 |
| | The Role of Meteorology in Dispersion Modelling – CASANZ, 2011 |
| | Diploma of Project Management – University of New England, 2012 |

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# APPENDIX H

## Construction Traffic Management Plan

# Construction Traffic Management Plan

## Lot 4E, Oakdale West Estate

Oakdale West Estate, Kemps Creek
22/10/2021
P1640r02

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# Document Control

| | |
|---|---|
| **Project No** | P1640r02 |
| **Project** | Lot 4E – Construction Traffic Management Plan |
| **Client** | Goodman Property Services (Aust) Pty. Limited |
| **File Reference** | P1640r02v5 CC CTMP_Lot 4E, Oakdale West Industrial EstateP |

### Revision History

| Revision No. | Date | Details | Author | Approved by |
|---|---|---|---|---|
| - | 09/07/2021 | Draft | J. Laidler | D. Choi |
| Issue I | 24/08/2021 | Issue I | J. Laidler | J. Laidler |
| Issue II | 26/08/2021 | Issue II | J. Laidler | J. Laidler |
| Issue III | 12/10/2021 | Issue III | J. Laidler | J. Laidler |
| Issue IV | 12/10/2021 | Issue IV | J. Laidler | J. Laidler |
| Issue V | 22/10/2021 | Issue V | J. Laidler | J. Laidler |

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## APPENDICES

**Appendix A. Traffic Guidance Scheme**

**Appendix B. TGS Verification Checklist**

# Glossary

| Acronym | Description |
|---|---|
| AGRD | Austroads Guide to Road Design |
| AGTM | Austroads 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 4E 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 7 approval was granted on 08 October 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.

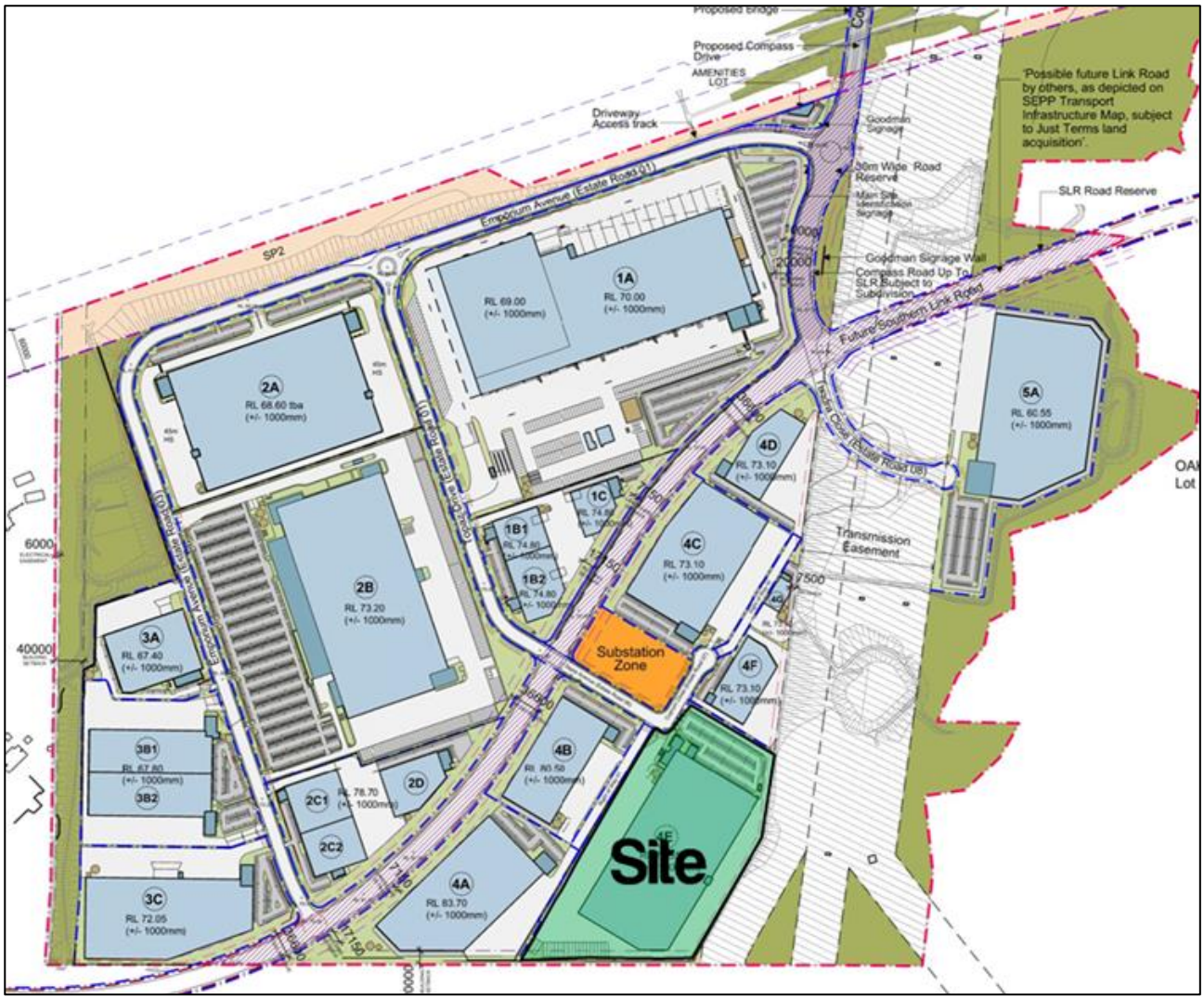



*Figure 1: OWE Context Showing Lot 4E*

## 1.3 Site Context

There are 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 has been constructed 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, Stage 4 Development Application at Oakdale West industrial Estate, Lot 4E – Oakdale West Industrial Estate*, P1640r01v1 DA TA_Lot 4E, Oakdale West Industrial Estate, 24/06/2021

The original SSD approval for the OWE (SSD 7348) was granted on 13 September 2019 and envisaged a total GFA of some 475,269 m2 GFA (original approved GFA) across the entire Estate spanning 5 precincts. Since that approval, the Estate has gone through several modifications with the latest approval being granted for MOD 7.

For context, the Approved Oakdale West Estate (MOD 7) will generate the following peak hourly traffic volumes associated with future operation of the Estate.

- AM peak 1,326 veh/hr.
- PM peak 1,029 veh/hr
- Daily 11,249 veh/day

## 1.4 Approved Intersection Layouts

### 1.4.1 2026 Modelling Scenario

The intersections of Lenore Drive & Compass Drive & Grady Crescent, Compass Drive & Lockwood Road and Compass Drive & Emporium Avenue have been recently constructed in accordance with the approved 2026 interim scenario as part of OWE original concept approval and MOD 3 approval, as indicated from Figure 2 to Figure 4. The approved intersection design of the Compass Drive & SLR intersection under 2026 interim scenario is provided in Figure 5.

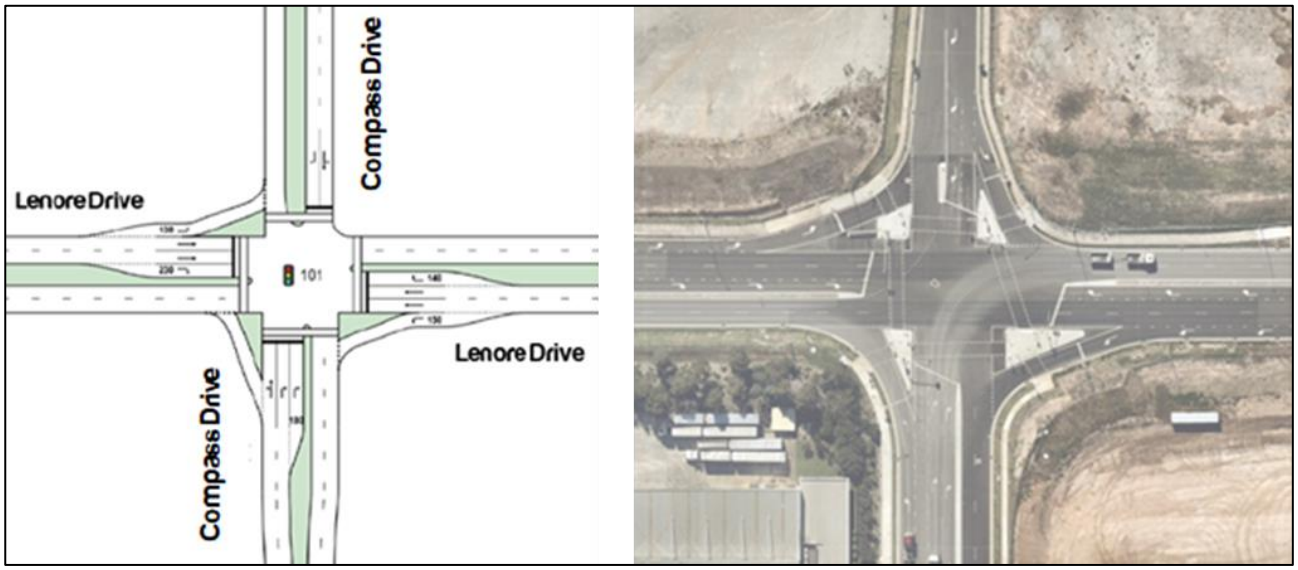



*Figure 2: Intersection Layout of Lenore Drive & Compass Drive*

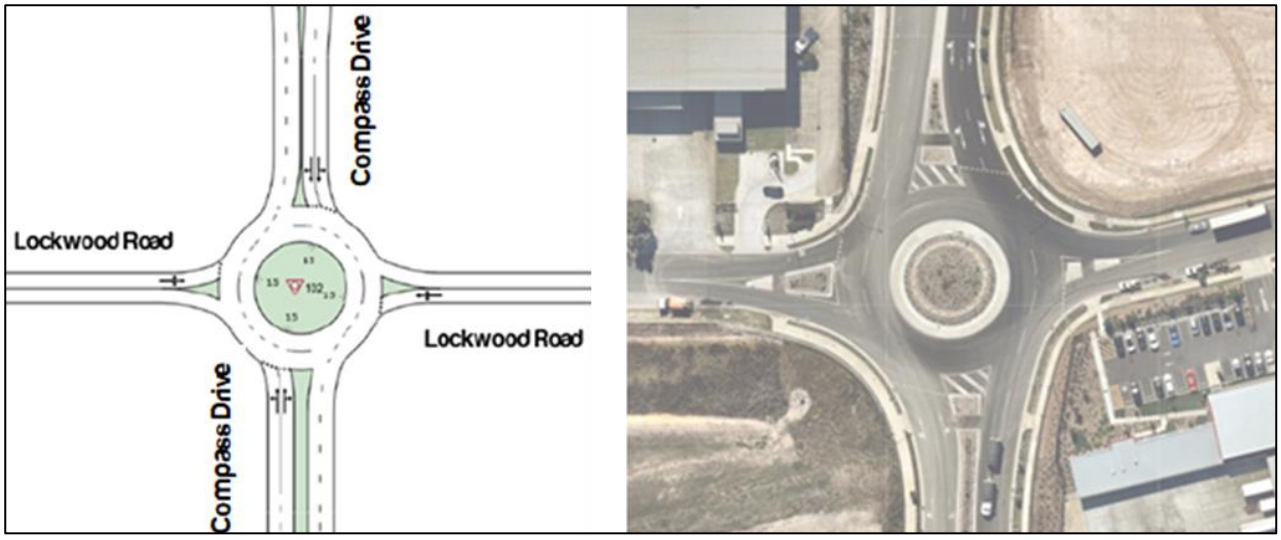



*Figure 3: Intersection Layout of Compass Drive & Lockwood Road*

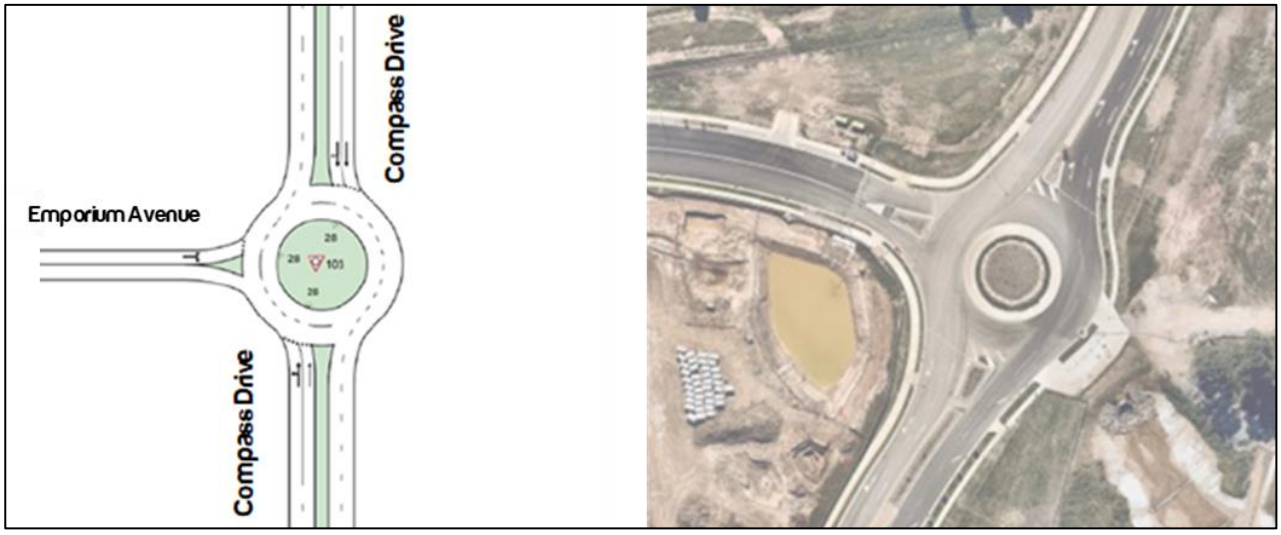



*Figure 4: Intersection Layout of Compass Drive & Emporium Avenue*

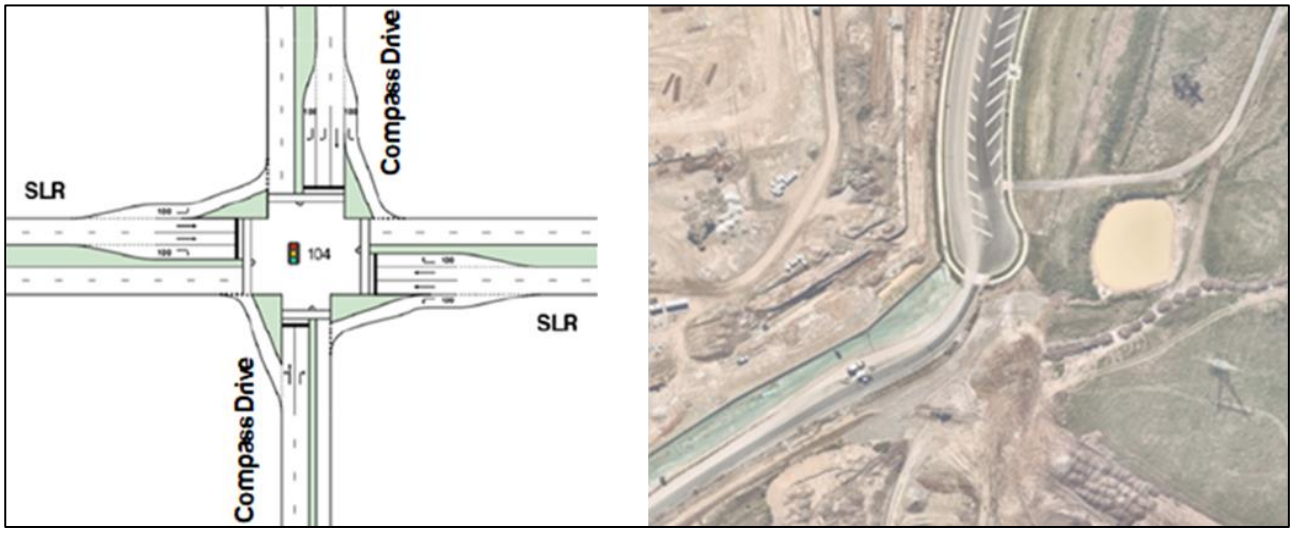



*Figure 5: Potential Intersection Layout of Compass Drive & SLR (2021 configuration)*

## 1.5 Authority Requirements

The following SSD conditions have been imposed with respect to construction traffic management.

**TABLE 1: SSD 7348 – MOD 7 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.<br>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.<br>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 2.2 |
| 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:<br>(i) minimise the impacts of construction on the local and regional road network;<br>(ii) minimise conflicts with other road users including the students, staff, visitors and | A driver Code of Conduct is a requirement of and included within this CTMP.<br>The Drivers Code of Conduct (included in Section 5) addresses ways to minimise the impacts on the road network, with other road |

| | | |
|---|---|---|
| | residents of the neighbouring schools and aged care village;<br>(iii) minimise road traffic noise, both on Bakers Lane and from construction vehicles on Site; and<br>(iv) ensure truck drivers use specified routes and adhere to the speed restrictions on Bakers Lane; | users, ensure truck routes are utilised and to manage pedestrian movements.<br>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. |
| g) | include a program to monitor the effectiveness of these measures | 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.<br>These programs will be completed in accordance with Section 7. |
| 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 with 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 an 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:<br>the relevant statutory requirements (including any relevant approval, licence or lease conditions).<br>any relevant limits or performance measures and criteria; and<br>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; | Relevant requirements are outlined in this table.<br>Other specific requirements are detailed in Section 4 |
| 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:<br>impacts and environmental performance of the development; and<br>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.<br>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 7.1of this Plan which outlines requirement for this Plan to be updated regularly. |
| f) | a protocol for managing and reporting any:<br>(i) incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria).<br>(ii) complaint.<br>(iii) failure to comply with statutory requirements; and | Management and reporting protocols are outlined in the Construction Environmental Management Plan.<br>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.

## 1.6 Additional Authority Requirements

Following the review of the draft CTMP (P1640r01v1, dated 26 Jun 2021), the following SSD conditions have been imposed with respect to construction traffic management

**TABLE 2: SSD 22131922 – STAGE 5 – COMPLIANCE TABLE**

| Reference | Authority Comment | Response |
|---|---|---|
| A14 | Before the commencement of construction of the development, the Applicant must consult with the relevant owner and provider of services that are likely to be affected by the development to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure. | Consultation will be undertaken with Council, however any consultation with relevant stakeholders will be done so in accordance with Section 7.3. |

<table>
<tr><td>B1</td><td>The Applicant must comply with the hours detailed in Table 1, unless otherwise agreed in writing by the Planning Secretary.<br>Hours of Work<table><tr><th>Activity</th><th>Day</th><th>Time</th></tr><tr><td>Construction</td><td>Monday – Friday<br>Saturday</td><td>7 am to 6 pm<br>8 am to 1 pm</td></tr><tr><td>Operation</td><td>Monday – Sunday</td><td>24 hours</td></tr></table></td><td>Construction hours has been outlined within Section 2.2</td></tr>
<tr><td>B2</td><td>Works outside of the hours identified in condition B1 may be undertaken in the following circumstances:<br>(a) works that are inaudible at the nearest sensitive receivers;<br>(b) works agreed to in writing by the Planning Secretary;<br>(c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or<br>(d) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.</td><td>Any works to be undertaken outside of the approved construction hours will do so only under the circumstances outlined within Section 2.2</td></tr>
<tr><td>B6</td><td>Prior to the commencement of construction of the development, the Applicant must prepare a Driver Code of Conduct and induction training for the development to minimise road traffic noise. The Applicant must update the Driver Code of Conduct and induction training for construction and operation and must implement the Code of Conduct for the life of the development.</td><td>A driver Code of Conduct is a requirement of and included within this CTMP.<br>The Drivers Code of Conduct (included in Section 5) addresses induction training and ways to minimise the impacts on the road network, with other road users, ensure truck routes are utilised and to manage pedestrian movements.</td></tr>
</table>

## 1.7 Additional Authority Comments

Following the review of the draft CTMP (P1640r02v2, dated 26 Aug 2021), TfNSW provided additional comments that are outlined below;

**TABLE 3: ADDITIONAL COMMENTS**

| Reference | Authority Comment | Response |
|---|---|---|
| 1 | ASON are to include the approved traffic movements model to the estate as referenced in the SSD consent (7348);<br>In doing the above, the maximum approved traffic volumes to the estate will be identified noting the base position | The approved traffic generation for the MOD 7, has been outlined within Section 1.3. Additionally, the model layouts have been outlined within Section 1.1 |
| 2 | Further to the above, ASON are to prepare a table that highlights the Approved SSD Movements vs Forecast Traffic movement (Based on current completed/drafted estate CTMP) | Refer to Table 8 for the approved volumes compared to the forecast construction traffic volumes. |
| 3 | Modelling results/report previously undertaken for the intersection of Lenore Drive & Compass Drive to be provided in report as it is referenced to, but not shown. | Modelling has not been referenced within the CTMP, as all volumes are within the limits outlined within the approved MOD 7. |
| 4 | Setting out of Building 4E's designated routes, ensuring no use of Bakers Lane or Aldington Road for construction access, in a clear manner as required by Condition B17.(e).(i). | An illustrated map of the approved route to and from the Site has been included within the Drivers Code of Conduct. This Code is located within Section 4.2.1 of this report. |

## 1.8 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 4E is located on the southern boundaries of Sepia Avenue and Cuprum Close, with a total site area of 34,000 $m^2$.

## 1.9 Road Hierarchy

The road hierarchy in the locality is presented in **Figure 2** and summarised below for key roads.

### 1.9.1 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.

### 1.9.2 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 has a signalised intersection at both ends of Lockwood Drive. And has a four-lane dual carriageway arterial road with a speed limit of 80km/hr.

### 1.9.3 Emporium Avenue

Emporium Ave 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.

### 1.9.4 Sepia Avenue

Sepia Avenue is currently a private road providing access to Precinct 4 and links the Future Southern Link Road (SLR) and 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.

### 1.9.5 Cuprum Close

Cuprum Close is currently a private road providing access to Sepia Avenue and then links the Future Southern Link Road (SLR) and 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.

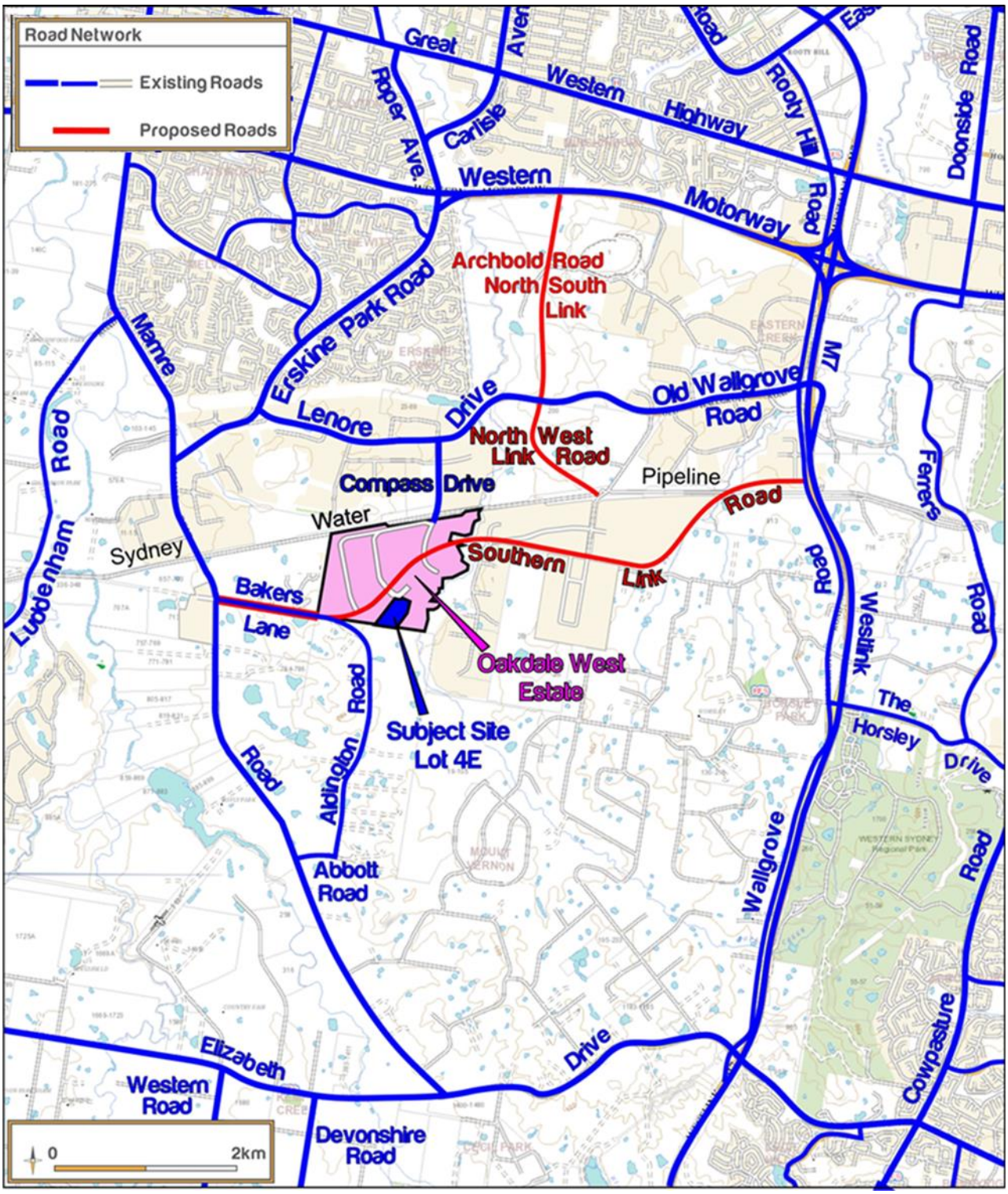



*Figure 6: Road Hierarchy*

## 1.10 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)
  - Guy Smith (Planning Manager)
  - Kym Dracopoulos (Manager, Technical Services)
  - Lachlan O'Reilly (Project Administrator)
- Ason Group
  - Ali Rasouli (Principal Traffic Engineer)
  - Dora Choi (Principal Lead: Traffic Management & Operations)
  - 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 utilise 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 4: STAGE SUMMARY – STAGE 1**

| Criteria | Response |
|---|---|
| Description of Key Activities | General earthworks,<br>Construction of the temporary accesses, and<br>Enabling works |
| Stage Length | 5 weeks |
| Max. Vehicle Size | 20.0m Articulated Vehicles<br>(Special Permits may be required for floating in plant) |
| Vehicle Movement Frequency | Approximately 430 light vehicle movements / day<br>+<br>Approximately 120 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<br>(if yes, provide further details) | N |
| Lane or Footpath Closures<br>(if yes, provide further details) | N |
| Traffic Guidance Scheme | Refer below. |

### 2.1.2 Stage 2 – Structures

**TABLE 5: 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<br>(Special Permits may be required for floating in plant) |
| Vehicle Movement Frequency | Approximately 570 light vehicle movements / day<br>+<br>Approximately 50 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<br>(if yes, provide further details) | N |
| Lane or Footpath Closures<br>(if yes, provide further details) | N |
| Traffic Guidance Scheme | Refer below. |

### 2.1.3 Stage 3 – Internal Slab Concrete Pouring Works

**TABLE 6: 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 430 light vehicle movements / day<br>+<br>Approximately 100 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<br>(if yes, provide further details) | N |
| Lane or Footpath Closures<br>(if yes, provide further details) | N |
| Traffic Guidance Scheme | Refer below. |

### 2.1.4 Stage 4 – External Finishes

**TABLE 7: 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 430 light vehicle movements / day<br>+<br>Approximately 100 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<br>(if yes, provide further details) | N |
| Lane or Footpath Closures<br>(if yes, provide further details) | N |
| Traffic Guidance Scheme | Refer below. |

## 2.2 Hours of Work

Having regard for the Conditions of Consent, Condition B1 (SSD 22131922) 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 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.

## 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 Topaz 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 and Topaz Ave , as shown below.

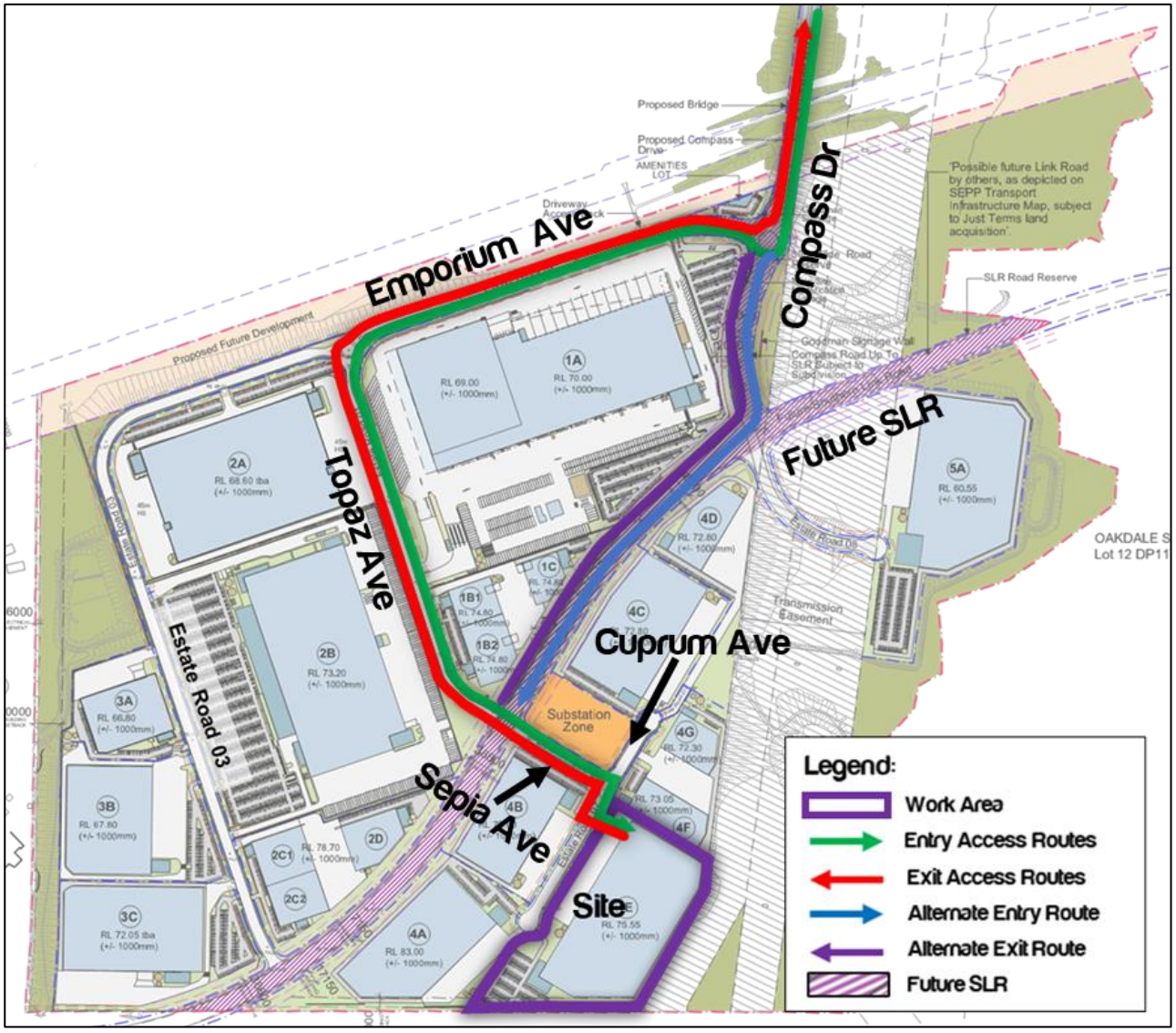



Figure 7: Access Arrangements

## 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 internal 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

The introduction of a new bus route is confirmed to provide additional access for workers/ visitors within OWE. This new bus service is commencing from 24 October 2021 and will provide direct access to and from St Marys Train Station. This introduction to a direct connection with St Marys Train Station increases the availability

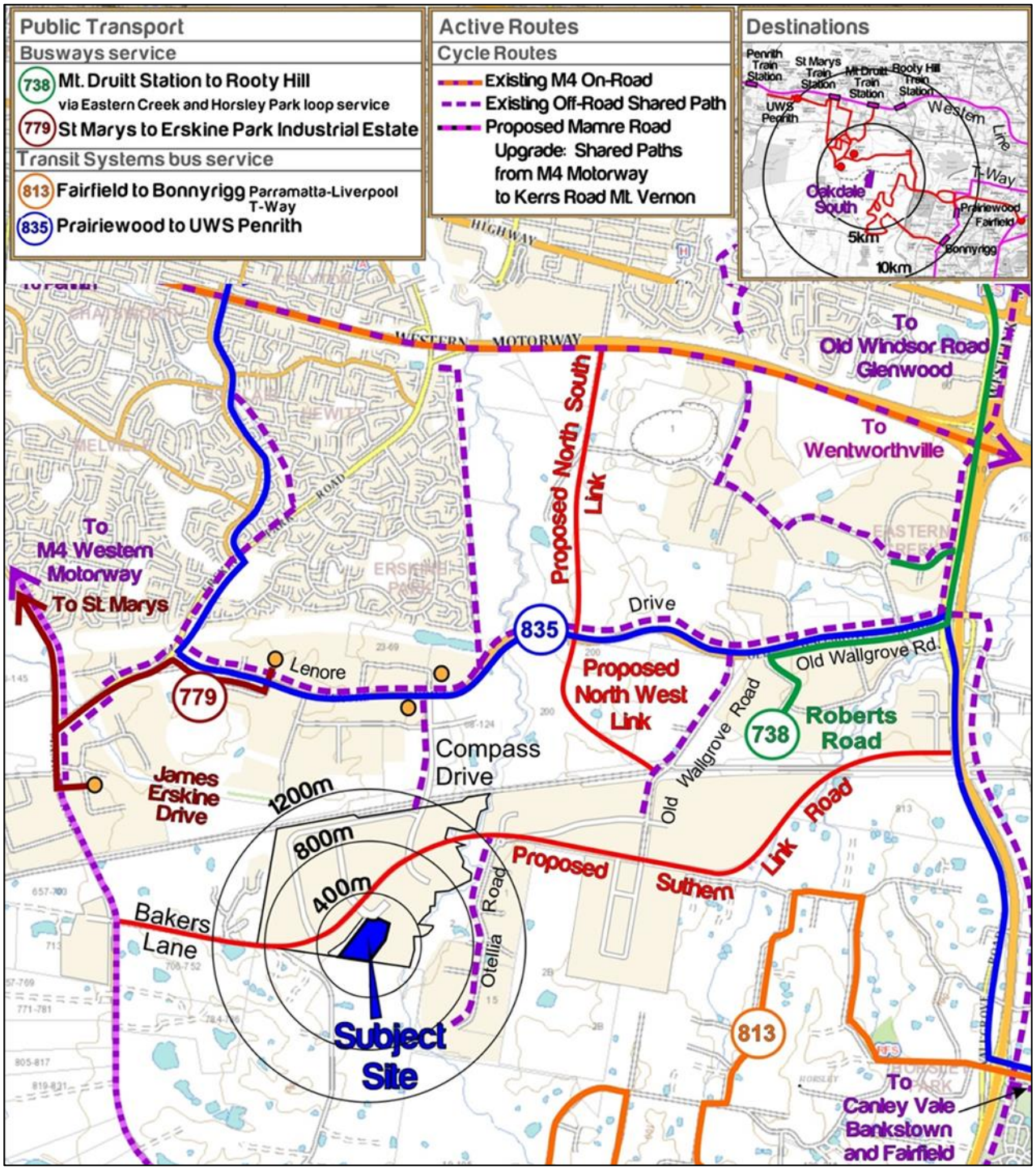



*Figure 8: Existing Public Transport and Cycle Links*

# 4 Management Plan

## 4.1 Traffic Movements

### 4.1.1 Background

The traffic report (Ason Group Ref: 1640r01v1) supporting the Lot 4E 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 4E Construction Works – up to 1000 light vehicle movements per day and 350 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 1,174 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 is  from Compass Drive via the Link Road, and an ancillary connection via Emporium Ave, Topaz Ave and Sepia 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 queuing.

It is expected that future contractors shall prepare Vehicle Movement Plans (VMP) for on-site circulation for key stages generating more than 200 truck movements (100 in, 100 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.

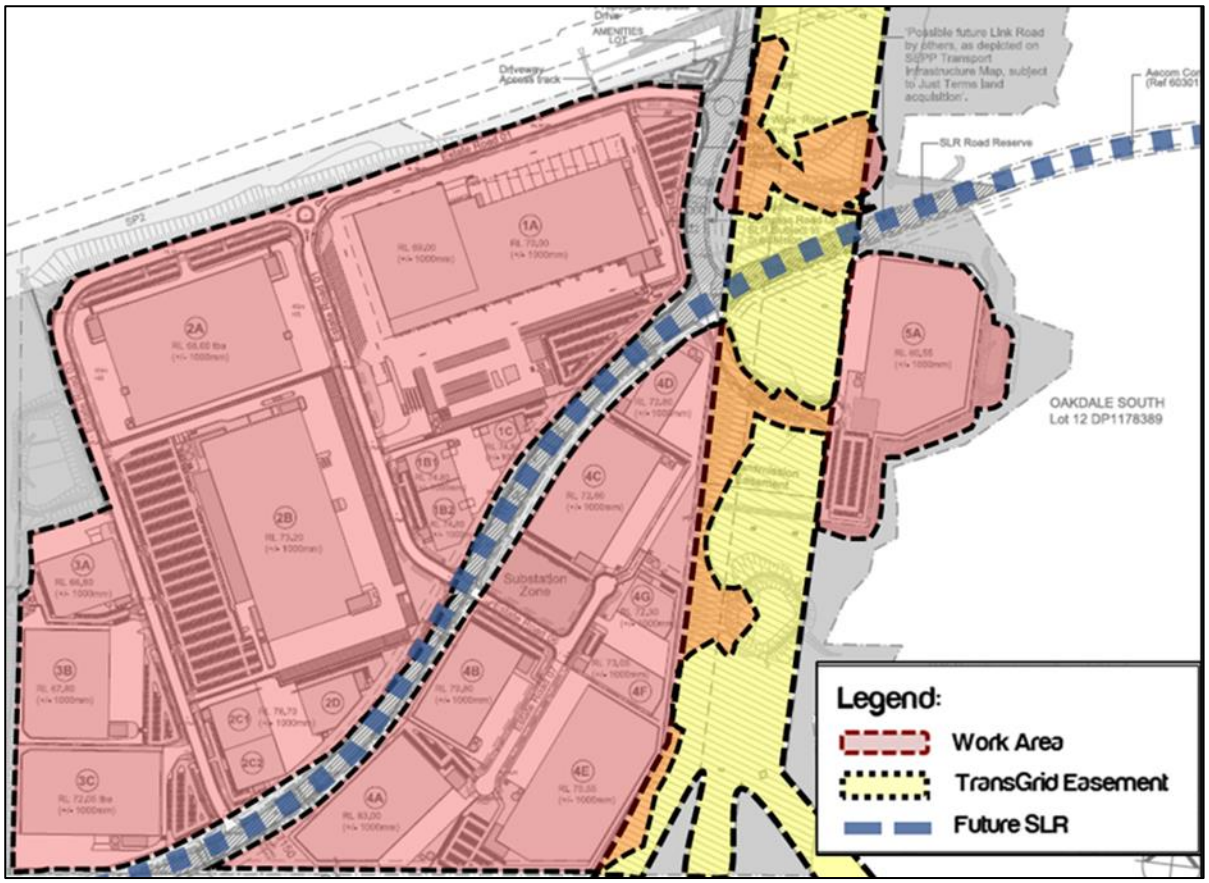



*Figure 9: TransGrid Easement Within the Estate*

## 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 Sepia Ave and Cuprum 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 issues with a copy of the Drivers Code of Conduct, and must comply with all of the following:

- Demonstrate safe driving and road safety activities.
- Abide by traffic, road and environmental legislations.
- Follow site signage and instructions.
- Drivers must only enter and exit the site via the approved entry and exit points and travel routes.
- Divers must not utilise Bakers Lane for any reason while travelling to or from the Site.

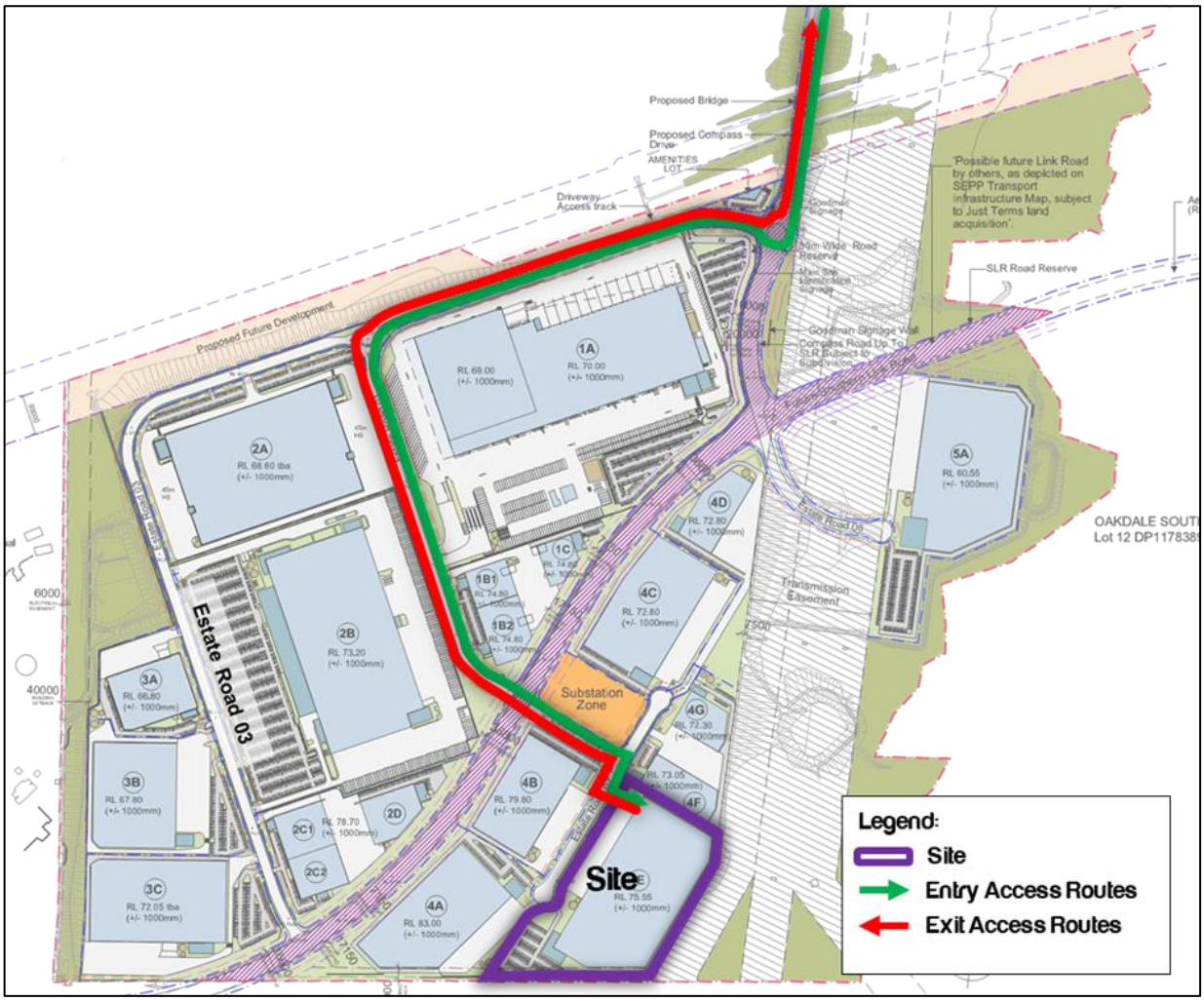
The below activities in any vehicles will be considered as a breach of conduct and will result in removal from site:

- 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:

- abide with the following route to and from the Site. As such at no time shall a vehicle access the Site via Bakers Lane or Aldington Road for operational use




- 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:

- Ensure that all drivers adhere to the designated heavy vehicle routes as required by the route designated above. If a driver access the Site contrary to the approved routes, then approval to drive to and from the Site will be revoked by Management.
- 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 1,174 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.

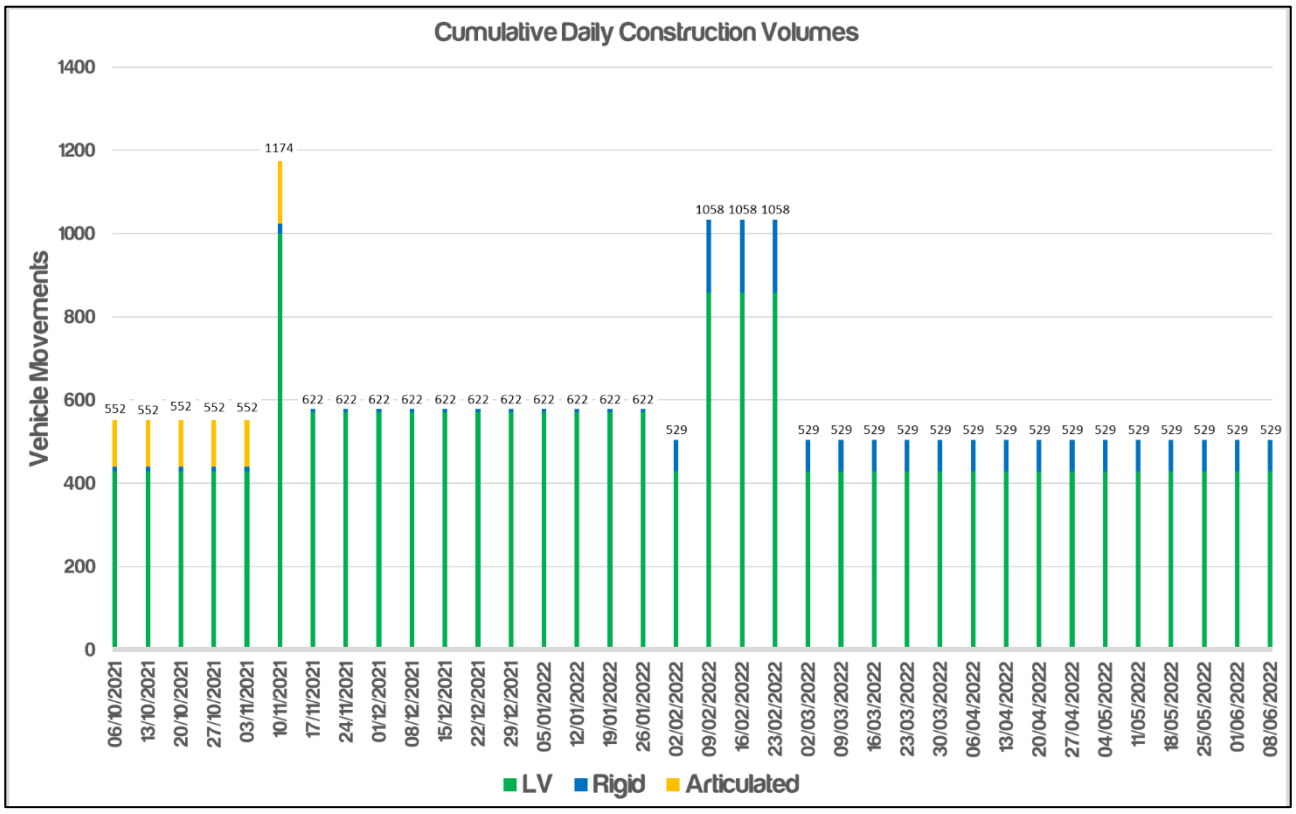



*Figure 10: Construction Vehicle Volumes*

## 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 4E 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 (being 11,249 veh/day (MOD 7)). Notwithstanding, the following table outlines the expected construction volumes for the infrastructure and buildings within OWE.

**TABLE 8: FORECAST CONSTRUCTION VOLUMES**

| Development | Approved OWE Volumes (MOD 7) | Forecast Construction Volumes[1] | Difference |
|---|---|---|---|
| Building 1A | 11,249 | 1,310 | 4,479 |
| Building 1B/1C | | 180 | |
| Building 2B | | 2,076[2] | |
| Building 3A | | 180 | |
| Building 3B | | 180 | |
| Building 4E | | 1,174 | |
| Infrastructure Works | | 1,400[3] | |
| All Other Buildings within OWE | | - | |
| Total | 11,249 | 6,500[4] | -4,749 |

*Note: 1) Forecast construction volumes only relate to approved CTMP's within the OWE.*

*2) Building 2B works will cease by December 2021*

*3) The Infrastructure works will cease within Q1 of 2022*

*4) Following Q1 of 2022, the forecast construction volumes will be lower than those forecast above, resulting in the above being a worst case scenario.*

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. As such, the existing infrastructure designed and constructed (and shown in section 1.4.1) is sufficient to cater for the proposed traffic volumes

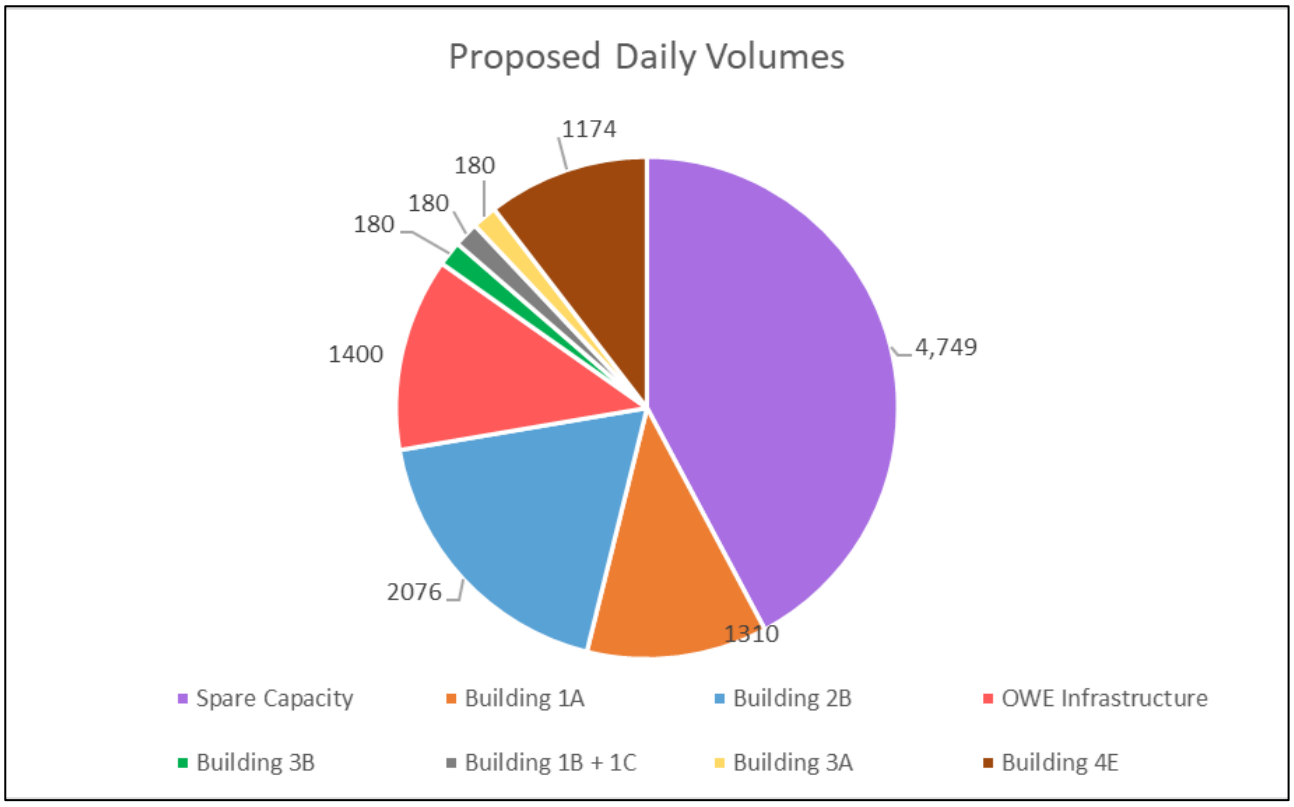



*Figure 11: Cumulative Daily Construction Volumes*

# 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.
- Reporting and Monitoring of movements to ensure drivers are adhering to the approved construction hours, and to ensure that the approved traffic generation, and subsequent impacts on the road network, are in line with those approved. This should be undertaken fortnightly during construction.
- 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 (once a month) 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 9: 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: | As with Condition Amber, plus;<br>• If it is concluded that construction activities were directly responsible for the exceedance, |

| | | | | |
|---|---|---|---|---|
| | | | • Review CTMP and update where necessary<br>• Provide additional training. | submit an incident report to government agencies.<br>• Stop all transportation into and out of the site. |
| Queuing | Trigger | No queuing identified | Queuing identified within site | Queuing identified on the public road |
| | Response | No response required<br>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<br>• Review and investigate construction activities.<br>• If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies.<br>• Temporary halting of activities and resuming when conditions have improved.<br>• Stop all transportation into and out of the site.<br>• 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<br>If noise levels cannot be kept below applicable limits, then a different construction method or equipment must be utilised. |
| **Traffic Guidance Scheme** | 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 undertake 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:<br>• Deployment of additional water sprays<br>• Relocation or modification of dust-generating sources<br>• Check condition of vibrating grids to ensure they are functioning correctly.<br>• Temporary halting of activities and resuming when conditions have improved | As with Condition Amber.<br>• If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies.<br>• 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 10: COMMUNICATION STRATEGY

| Risk | Stakeholder | Action |
|---|---|---|
| Warehouse Specific Disruption | • TfNSW<br>• Penrith Council<br>• Transport Management Centre (TMC)<br>• NSW Police<br>• Emergency Services<br>• Goodman<br>• Construction Crews | Stakeholder meetings<br>Stakeholder emails |
| Wider Traffic Specific Disruption | • TfNSW<br>• Penrith Council<br>• Transport Management Centre (TMC)<br>• NSW Police<br>• Emergency Services<br>• Goodman<br>• Construction Crews<br>• Surrounding Residents / Tenants<br>• Schools and Aged Care Facilities in Bakers Lane | |

# Appendix A. Traffic Guidance Scheme

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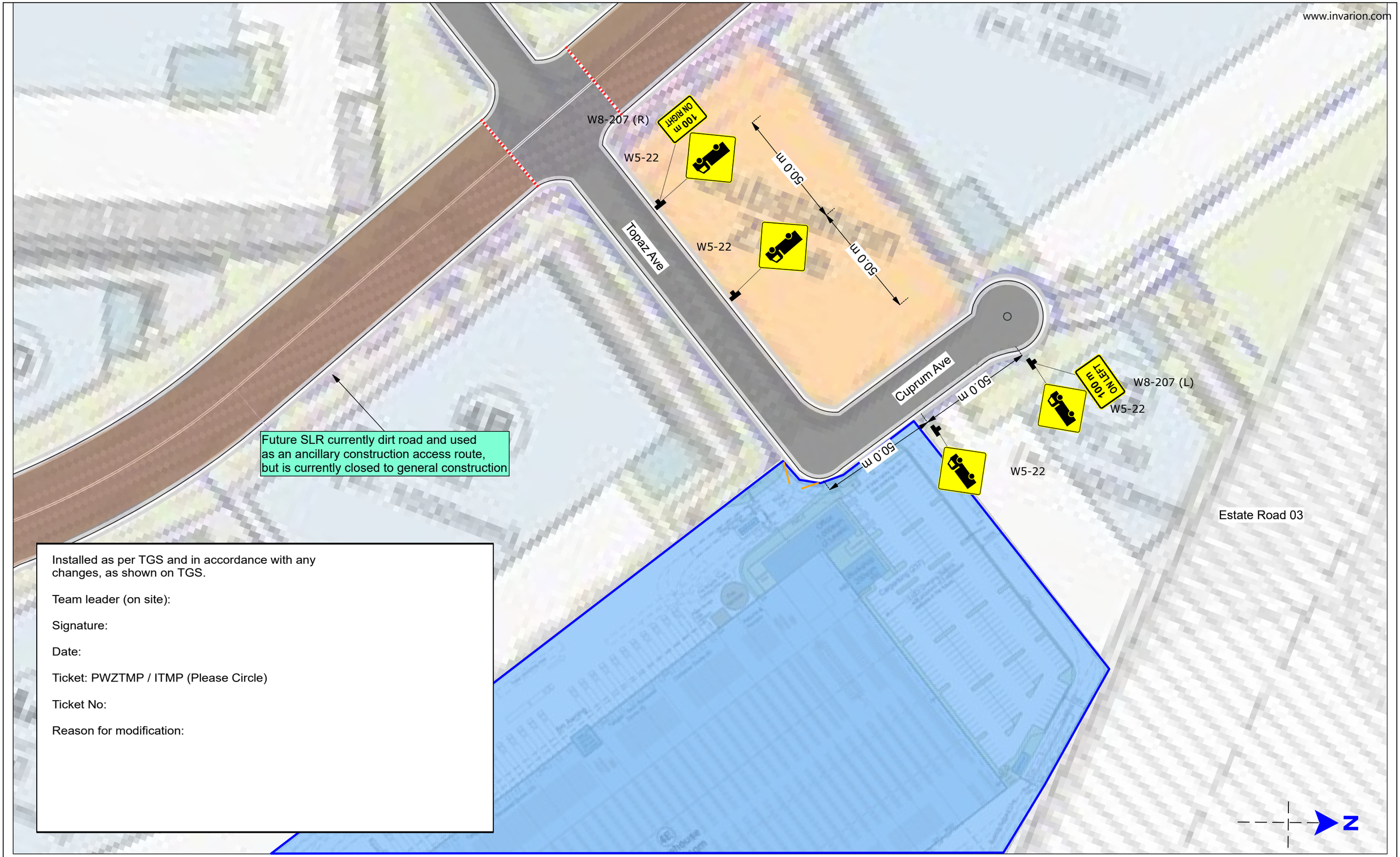


Installed as per TGS and in accordance with any changes, as shown on TGS.

Team leader (on site):

Signature:

Date:

Ticket: PWZTMP / ITMP (Please Circle)

Ticket No:

Reason for modification:

**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 TfNSW'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 TfNSW'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 the it will warn, instruct and guide road users as designed. Any variations to the plan must be marked on the plan and initialed by the accredited personnel
- It is the responsibility of the an accredited personnel with a 'Prepare a Work Zone Traffic Management Plan' to ensure the following:
  * The integrity of all traffic control measure 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: 1640
Address: Lot 4E, OWE Kemps Creek

**Drawing Title:**
1640-TCP-01-Lot 4E_Kemps Creek

**Date:**
07/07/2021

**Scale @ A3:**

**Drawing Number:**
AG.01

asongroup

**DESIGNER:** JAMES LAIDLER
CERT: 0034322012

# 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 TGS qualified person must undertake this verification.

| **Completed by:** | | | | |
|---|---|---|---|---|
| **Name:** | James Laidler | **Signature:** | | |
| **Qualification** | Senior Traffic Engineer<br>PWZTMP #0052158569 | | | |
| **TGS details:** | | | | |
| **TMP Reference:** | P1640r02 CC CTMP_Lot 4E, Oakdale West Industrial Estate | **TGS Reference:** | | |
| **Date:** | 06 July 2020 | **Review type** | ☐ Site Inspection | ☑ 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:** | Topaz Ave | **Confirmed posted speed limits:** | 50km/h | |

**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** | ☐ Yes | ☐ No | ☑ N/A | **Details** | Still closed to public |
| **Predicted queue length** | ☐ Yes | ☐ No | ☑ N/A | **Details** | Still closed to public |
| **Shoulder widths** | ☑ Yes | ☐ No | ☐ N/A | **Details** | Roads Designed for B-doubles, therefore sufficient shoulder widths |
| **Sight distances** | ☑ Yes | ☐ No | ☐ N/A | **Details** | Straight road with no obstructions and good sight distance |
| **Existing infrastructure** | ☑ Yes | ☐ No | ☐ N/A | **Details** | No trees, poles or other infrastructure |
| **Transport services** | ☐ Yes | ☐ No | ☑ N/A | **Details** | None within the vicinity of the Site |
| **Pedestrian generators** | ☐ Yes | ☐ No | ☑ N/A | **Details** | Still closed to public |
| **Appropriate site access** | ☑ Yes | ☐ No | ☐ N/A | **Details** | Roads Designed for B-doubles, therefore appropriate site access |
| **Appropriate escape route for traffic controllers** | ☐ Yes | ☐ No | ☑ N/A | **Details** | No Traffic Controllers required for this TGS |

| Confirmation | |
|---|---|
| **Does TGS require adjustments within tolerances?**<br><br>**If yes provide details TGS must include these adjustments with justification.** | ☐ Yes<br>☒ No |
| **Comments or details of action taken:** | |
| **Does TGS require any additional changes or modifications?**<br><br>**If yes provide details and return TGS to designer for additional changes or modifications** | ☐ Yes<br>☒ No |
| **Comments or details of action taken:** | |
| **Is TGS appropriate for use for works required at this location?**<br><br>**If no provide details and, return TGS into file and select alternative, if design returned to designer for correction** | ☑ Yes<br>☐ No |
| **Comments or details of action taken:** | |
| **Have key TTM risks been addressed on site?**<br><br>**If no, provide details and return TGS to designer for correction, review and approval** | ☑ Yes<br>☐ No |
| **Comments or details of action taken:** | |

**Additional comments:**

Reset forms - pages 269 to 272

# APPENDIX I

## Soil and Water Management Plan

ABN: 75 616 518 211

# PROPOSED INDUSTRIAL DEVELOPMENT – OAKDALE WEST ESTATE – BUILDING 4E

## SOIL & WATER MANAGEMENT

## PLAN

October 2021 - Revision 0

Prepared for:

Goodman


Prepared by:

ANDREW LITTLEWOOD

CPESC & Senior Soil Conservationist

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## Document Status

| Rev No. | Date | Revision Description | Prepared by | Reviewed | | Approved | |
|---|---|---|---|---|---|---|---|
| | | | | Name | Date | Name | Date |
| 0 | 19/10/2021 | Revision 0 | A Littlewood | | | | |
| | | | | | | | |

## Document Authorship Information

| | |
|---|---|
| Project | Proposed Industrial Development – Oakdale West Estate – Building 4E, Lot 111 DP 1262310 |
| Document | Soil & Water Management Plan – Construction of Building 4E |
| Document Author | Andrew Littlewood – Senior Soil Conservationist |
| Qualification | Certified Professional in Erosion and Sediment Control (CPESC No. 5988). |
| Relevant Training | • SEEC and IECA (Australasia) – 'Water Management on Construction sites' & 'Preparing and Reviewing Plans for Soil and Water Management' – 2009<br>• 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 4E on Lot 111 DP 1262310 (the Project) on the Stage 4 Development of Oakdale West Estate (OWE). Building 4E is being constructed for the purposes of warehousing and distribution uses.

Goodman Group as developer of the OWE has gained the relevant 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 (SSD) 7348, including subsequent Modifications of Development Consent No's 1 to 7.
- Department of Planning, Industry and Environment Development Application - State Significant Development SSD 22131922 Development Consent.

## 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 has gained consent for development (SSD 7348 Development Consent - Mod 7 and separately, SSD 22131922 Development Consent) for the Stage 5 Development which involves the development of land now known as Lot 111 DP 1262310. The lot has road frontage to the newly proclaimed public road known as Cuprum Close. The relevant portion of the industrial development will entail the construction of Building 4E, a single level warehouse and two-level office building. The buildings comprise of 34 000m$^2$ of warehousing space, 1000m$^2$ 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 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.'*

Geology

- *'Underlying geology of the site is the Wiananmatta 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 walls on the north-western and southern boundaries.

The overall disturbance footprint of approximately 7.4 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 guidelines 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 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.

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.

### 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

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.

**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 | • 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 | • Erosion and sediment controls included in SSDA package (Appendix E). |
| Soils & Water | Stage 1 Development | • Erosion and sediment controls, as detailed in Appendix E and Appendix J of the EIS, to be implemented through CEMP.<br>• Stormwater to be treated to compliant levels prior to discharge.<br>• Gross Pollutant Trap (GPT) to be installed within each development site on the final downstream stormwater pit prior to discharge. |
| Groundwater | Stage 1 Development | • 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 | • CEMP to include standard air quality control measures, contingency plans and response procedures and suitable reporting and performance monitoring procedures.<br>• 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 4E 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.*
- *"Underlying geology of the site is the Wiananmatta Group formation (Bringelly Shale) and alluvium associated with Ropes Creek.*
- *Underlying geology of the site is the Wiananmatta 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. '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-western and southern boundaries. Preparatory earthworks by others have established cut off drains commencing on the southern boundary, draining to a temporary sediment basin in the north-eastern sector, near to the site boundary. 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;

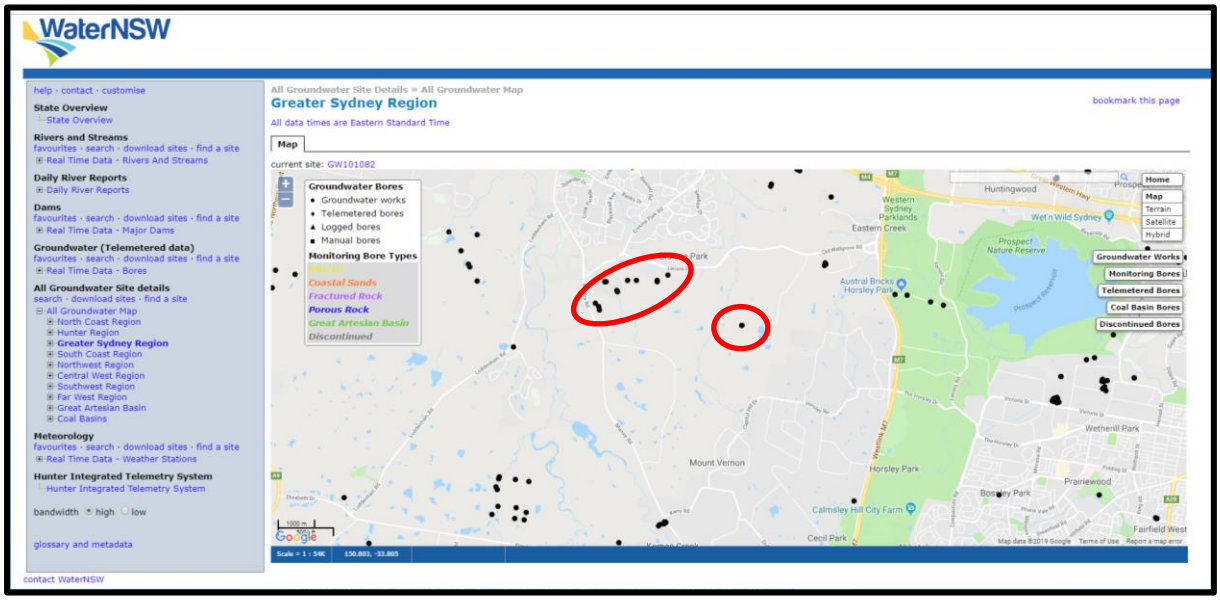
> *"Groundwater is expected to be relatively deep below the OWE site – no groundwater was encountered during geotechnical investigations which included boreholes drilled up to 15m below ground level."*

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.

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 a mean rainfall total of 103.6 millimetres. Both the mean and median average annual rainfall totals are 771.7 mm and 715.8 mm, respectively. Table 4-6 below provides a summary of climate data at the weather station.

**Table 4-6 - Summary of rainfall records**

| Summary of rainfall records from 1997 - 2021 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Summer | | | Autumn | | | Winter | | | Spring | | | Summer | |
| | Jan | Feb | Mar | Apr | May | Jun | July | Aug | Sep | Oct | Nov | Dec | Year |
| Mean rainfall | 73.4 | 118.3 | 94.5 | 67.0 | 42.9 | 72.6 | 39.5 | 38.2 | 37.1 | 61.1 | 74.8 | 65.7 | 771.7 |
| Mean rain days >1mm | 7.7 | 7.3 | 8.3 | 6.5 | 5.0 | 6.5 | 5.1 | 4.0 | 4.8 | 5.8 | 6.9 | 7.2 | 75.1 |

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 9.2mm/hour. The R Factor value of 1920 is calculated from the 0.5 'Exceedances per year', 6 Hour storm of 9.2mm/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

6/24/2021 Rainfall IFD Data System: Water Information: Bureau of Meteorology

Australian Government
Bureau of Meteorology

### Location

**Label:** Not provided
**Latitude:** -33.8269 [Nearest grid cell: 33.8375 (S)]
**Longitude:** 150.8027 [Nearest grid cell: 150.8125 (E)]

### Very Frequent Design Rainfall Depth (mm)

Issued: 24 June 2021

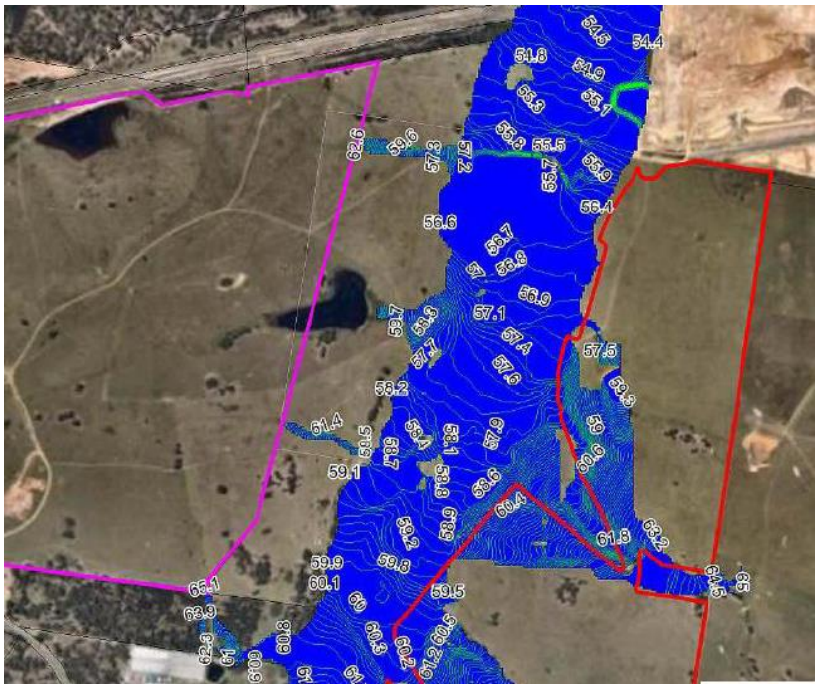
Rainfall depth for Durations, Exceedance per Year (EY), and Annual Exceedance Probabilities (AEP).
FAQ for New ARR probability terminology

| | Exceedance per Year (EY) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Duration | 12EY | 6EY | 4EY | 3EY | 2EY | 1EY | 0.5EY# | 0.2EY* |
| 1 min | 0.826 | 0.952 | 1.18 | 1.35 | 1.59 | 2.04 | 2.58 | 3.30 |
| 2 min | 1.41 | 1.64 | 2.02 | 2.29 | 2.67 | 3.33 | 4.15 | 5.19 |
| 3 min | 1.92 | 2.24 | 2.78 | 3.16 | 3.70 | 4.64 | 5.80 | 7.27 |
| 4 min | 2.35 | 2.75 | 3.44 | 3.93 | 4.62 | 5.83 | 7.32 | 9.24 |
| 5 min | 2.74 | 3.21 | 4.02 | 4.61 | 5.45 | 6.92 | 8.71 | 11.0 |
| 10 min | 4.17 | 4.89 | 6.19 | 7.14 | 8.51 | 11.0 | 13.9 | 17.9 |
| 15 min | 5.15 | 6.04 | 7.65 | 8.83 | 10.6 | 13.7 | 17.4 | 22.4 |
| 20 min | 5.90 | 6.92 | 8.75 | 10.1 | 12.1 | 15.7 | 19.9 | 25.6 |
| 25 min | 6.52 | 7.63 | 9.64 | 11.1 | 13.3 | 17.3 | 21.9 | 28.0 |
| 30 min | 7.04 | 8.24 | 10.4 | 12.0 | 14.3 | 18.5 | 23.5 | 30.0 |
| 45 min | 8.27 | 9.66 | 12.1 | 14.0 | 16.6 | 21.5 | 27.1 | 34.4 |
| 1 hour | 9.21 | 10.7 | 13.5 | 15.5 | 18.4 | 23.7 | 29.7 | 37.5 |
| 1.5 hour | 10.6 | 12.4 | 15.5 | 17.8 | 21.1 | 27.1 | 33.8 | 42.3 |
| 2 hour | 11.8 | 13.7 | 17.1 | 19.6 | 23.2 | 29.8 | 37.1 | 46.2 |
| 3 hour | 13.5 | 15.8 | 19.7 | 22.6 | 26.7 | 34.3 | 42.5 | 52.7 |
| 4.5 hour | 15.6 | 18.1 | 22.7 | 26.1 | 31.0 | 39.8 | 49.3 | 61.0 |
| 6 hour | 17.2 | 20.1 | 25.2 | 29.0 | 34.5 | 44.5 | 55.2 | 68.4 |
| 9 hour | 19.7 | 23.1 | 29.2 | 33.8 | 40.4 | 52.5 | 65.3 | 81.5 |
| 12 hour | 21.8 | 25.6 | 32.5 | 37.6 | 45.2 | 59.1 | 73.9 | 93.0 |

### 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
- 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, toolbox talks and pre-start briefings. | Pre-construction<br>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<br>Construction | Project Manager / Environmental Site Representative | SSD 7348 Development Consent Condition D80 (a)<br>Best Practice |
| SW3 | EWMSs may be prepared and implemented to manage soil and water impacts that include but are not limited to:<br>• Activities assessed as having high environmental risk;<br>• Activities that impact on environmentally sensitive areas;<br>• Activities that pose a risk to receiving water quality;<br>• Earthworks including temporary stockpiling and disposal of excavated material and protocols for the management of contaminated material;<br>• Work around drainage lines and where construction water may be discharged into natural waterways;<br>• 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) -See Appendix A of this SWMP. 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 7348 Development Consent Condition D80 (a)<br>EIS Section 5.2 - Table 27: SEARs reference table & Section 7.1 – Table 43 |
| 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 | SSD 7348 Development Consent Condition D81 |

| ID | Measure / Requirement | When to implement | Responsibility | Reference |
|---|---|---|---|---|
| | | | Soil Conservationist | EIS Section 5.2 - Table 27: SEARs reference table & Section 7.1 – Table 43 |
| SW7 | Prior to the commencement of any construction or other surface disturbance for the development, suitable erosion and sediment control measures to be installed and maintained on-site, in accordance with the relevant requirements of the Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book (Landcom, 2004) guideline and the approved Erosion and Sediment Control Plan included in the CEMP. | Pre-construction / Construction | Project Engineer / Supervisor | SSD 22131922 Development Consent Condition B12<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW8 | 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 7348 Development Consent Condition D80 (c)<br>EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2 |
| SW9 | 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 7348 Development Consent Condition D80 (c)<br>EIS Section 5.2 - Table 27: SEARs reference table & Section 7.1 – Table 43 |
| SW10 | Works will be programmed to minimise the extent and duration of unstabilised soil surfaces. | Pre-construction / Construction | Project Manager / Supervisor / Environmental Site Representative | SSD 7348 Development Consent Condition D80 (c)<br>EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2 |
| SW11 | 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 7348 Development Consent Condition D80 (c)<br>EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2 |
| SW12 | 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 7348 Development Consent Condition D80 (c)<br>EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2 |

| ID | Measure / Requirement | When to implement | Responsibility | Reference |
|---|---|---|---|---|
| SW13 | 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.<br>Lip berms and batter chutes with velocity dams will be progressively formed and maintained on fill formations. | Construction | Project Engineer / Supervisor | SSD 7348 Development Consent Condition D80 (c)<br>EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2 |
| SW14 | 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 7348 Development Consent Condition D80 (c)<br>EIS Section 5.2 - Table 27: SEARs reference table, Section 7.1 – Table 43 & Section 7.2 |
| **Stockpiles** | | | | |
| SW15 | Stockpiles will be:<br>• located in designated stockpile sites, above 10-year flood levels,<br>• located at least 5 m from likely areas of concentrated water flows and drainage lines,<br>• 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,<br>• established so that any slump of the stockpile will not affect erosion and sediment control measures or infringe on specified minimum clearance requirement,<br>• 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.<br>• 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 7348 Development Consent Condition D80 (c)<br>EIS Section 7.2<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| **Sediment basins** | | | | |
| SW16 | 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 7348 Development Consent Condition D81<br>Managing Urban Stormwater: Soils and Construction Volume 1 & 2D |
| SW17 | 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 |

| ID | Measure / Requirement | When to implement | Responsibility | Reference |
|---|---|---|---|---|
| SW18 | 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 7348 Development Consent Condition D81<br>EIS Section 7.2<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW19 | 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<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW20 | 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 7348 Development Consent Condition D81 & D82<br>EIS Section 7.2<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW21 | 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<br>SSD 7348 Development Consent Condition D81 & D82<br>EIS Section 6.7.4.<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW22 | 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 storage capacity to any individual construction water quality basin prior to the next rainfall event shall not exceed 5 days. | Construction | Environmental Site Representative / Supervisor | NSW POEO Act 1997<br>SSD 7348 Development Consent Condition D81 & D82<br>EIS Section 6.7.4. & Section 7.1 – Table 43<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW23 | 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 |

| ID | Measure / Requirement | When to implement | Responsibility | Reference |
|---|---|---|---|---|
| SW24 | A sediment basin management register will be maintained for each sediment basin that records;<br>• personnel approving the dewatering activities;<br>• time & date;<br>• water quality test results and estimated volumes for each discharge. | Construction | Environmental Site Representative / Project Engineer | SSD 7348 Development Consent Condition D81 & D82<br>Best Practice<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| **Dewatering** | | | | |
| SW25 | 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<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW26 | Water to be discharged from site will be discharged in accordance with a Site Dewatering Procedure.<br>In accordance with NSW EPA water quality criteria, the water quality parameters for discharge from site discharge points will be:<br>• Total Suspended Solids <50mg/L<br>• pH 6.5 - 8.5<br>• Oil & grease – not visible. | Construction | Environmental Site Representative / Supervisor | NSW POEO Act 1997<br>SSD 7348 Development Consent Condition D81 & D82<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW27 | 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;<br>• dewatering procedure;<br>• date and time for each discharge at each location;<br>• water quality test results for each discharge;<br>• personnel approving the dewatering activities<br>• evidence of discharge monitoring, or risk assessment and mitigation measures used to eliminate the risks of pollution or erosion. | Pre-construction / Construction | Environmental Site Representative / Project Engineer | NSW POEO Act 1997<br>SSD 7348 Development Consent Condition D81 & D82<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW28 | 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<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW29 | All dewatering activities will be subject to prior approval from relevant project personnel. The dewatering activities will be monitored to ensure:<br>• intake suction devices are positioned to prevent extraction or disturbance of settled sediments,<br>• no erosion is occurring at discharge locations and/or downstream areas, | Construction | Environmental Site Representative / Supervisor | NSW POEO Act 1997<br>SSD 7348 Development Consent Condition D81 & D82<br>Managing Urban Stormwater: Soils and |

| ID | Measure / Requirement | When to implement | Responsibility | Reference |
|---|---|---|---|---|
| | • no inadvertent or intentional controlled discharge of untreated waters occurs. | | | Construction Volume 1 |
| **Site stabilisation and restoration** | | | | |
| SW30 | 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<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW31 | 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 7348 Development Consent Condition D80 (c)<br>EIS Section 7.2<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW32 | Restoration of these areas includes;<br>• topsoiling of the areas;<br>• seeding, planting, watering and maintenance;<br>• removal of temporary erosion control devices and of accumulated sediments<br>• removal of unused construction materials and waste materials. | Construction / Post construction | Environmental Site Representative / Supervisor | EIS Section 7.2<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| **Spill prevention and response** | | | | |
| SW33 | 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<br>SSD 7348 Development Consent Condition D82 & D109 |
| SW34 | 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<br>SSD 7348 Development Consent Condition D82 |
| SW35 | 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 |
| SW36 | The ancillary facilities will be managed within the ESCP. The following measures will be included to limit sediment and other contaminations entering receiving waterways:<br>• 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<br>• Vehicle movements will be restricted to designated pathways where feasible and appropriate controls will be in place where plant is stored<br>• 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<br>SSD 7348 Development Consent Condition D82 & D110 |
| SW37 | All spills and associated environmental incidents are to be reported in accordance | Construction | Environmental Site | NSW POEO Act 1997 |

| ID | Measure / Requirement | When to implement | Responsibility | Reference |
|---|---|---|---|---|
| | with the CEMP, and where applicable, in accordance with Section 148 of the NSW POEO Act 1997. | | Representative / Supervisor | |
| **Monitoring and inspections** | | | | |
| SW38 | Nominated project personnel will conduct site inspections of erosion and sedimentation controls at least weekly. | Construction | Environmental Site Representative / Supervisor | EIS Section 7.2<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW39 | All disturbed areas, revegetated/stabilised areas and all permanent and temporary erosion and sediment control works will be inspected:<br>• At least weekly<br>• Immediately before extended site shut down<br>• 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<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW40 | 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;<br>• High: within 24 hours of inspection<br>• Medium: within 3 working days of inspection; and<br>• Low: within 3 working days of inspection. | Construction | Environmental Site Representative / Supervisor | EIS Section 7.2<br>Managing Urban Stormwater: Soils and Construction Volume 1 |
| SW41 | Monitoring of rainfall events (with observations of rainfall in millilitres) will be undertaken daily during normal work days. | Construction | Environmental Site Representative | Best Practice<br>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:

- ERSED 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.

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

# APPENDIX IA

## Erosion and Sediment Control Plan

RUBICON ENVIRO PTY LTD
ABN: 75 616 518 211

# PROPOSED INDUSTRIAL DEVELOPMENT – OAKDALE WEST ESTATE – BUILDING 4E

## EROSION AND SEDIMENT CONTROL PLAN

October 2021 – Revision 0

Prepared for:

Goodman


Prepared by:

ANDREW LITTLEWOOD

CPESC & Senior Soil Conservationist

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## Document Status

| Rev No. | Date | Revision Description | Prepared by | Reviewed | | Approved | |
|---|---|---|---|---|---|---|---|
| | | | | Name | Date | Name | Date |
| 0 | 19/10/2021 | Revision 0 | A Littlewood | | | | |
| | | | | | | | |

## Document Authorship Information

| | |
|---|---|
| Project | Proposed Industrial Development – Oakdale West Estate – Building 4E, Lot 111 DP 1262310 |
| Document | Erosion and Sediment Control Plan – Construction of Building 4E |
| Document Author | Andrew Littlewood – Senior Soil Conservationist |
| Qualification | Certified Professional in Erosion and Sediment Control (CPESC No. 5988). |
| Relevant Training | • SEEC and IECA (Australasia) – 'Water Management on Construction sites' & 'Preparing and Reviewing Plans for Soil and Water Management' – 2009<br>• 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

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# Oakdale West Estate: Building 4E – 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 2D: Main Road Construction – (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.

## 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

The following table details this ESCP's compliance with the State Significant Development (SSD) Consent Condition requirements for SSD 7348 Development Consent – Modification 1-7 (last modified 08/10/2021). The SSD 7348 Development Consent was granted for the overall Stage 1 Development including bulk earthworks, services, infrastructure, and several warehouse buildings.

**Table 5.2.1.**

| SSD 7348 Development Consent Condition | ESCP Section & Page |
|---|---|
| D80(a) – '*Erosion and Sediment Control Plan must.... be prepared by a suitably qualified and experienced person(s);'* | See '*Document Authorship Information'* – Page 2 |
| D80(b) – '*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.'* | See Section 3 - '*Scope of ESCP'* – 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) – '*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;'* | • See Section 8 – *'Erosion Control Measures and Sediment Control Methods'* – Table 8 – Page 10, and;<br>• See Section 9 – '*Soil & Water Management Activities & Controls'* Table 9 – Page 13 |
| D80(d) – '*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.* | • See Section 7.6 '*Erosion and Sediment Control Training for Site Personnel'* – Page 8, and;<br>• See Section 7.7 *'Inspection and Maintenance'* – Page 8 |

The following table details this ESCP's compliance with the State Significant Development (SSD) Consent Condition requirements for SSD 22131922 Development Consent. The SSD 22131922 Development Consent was granted for the Stage 5 Development of Warehouse Building 5E.

**Table 5.2.1.**

| SSD 22131922 Development Consent Condition | ESCP Section & Page |
|---|---|
| B12 – '*Prior to the commencement of any construction or other surface disturbance for the development, the Applicant must install and maintain suitable erosion and sediment control measures on-site, in accordance with the relevant requirements of the Managing Urban Stormwater: Soils and Construction - Volume 1: Blue Book (Landcom, 2004) guideline and the Erosion and Sediment Control Plan included in the CEMP required by condition C2'*. | • See Section 7.5 *'Preparation of Progressive Erosion and Sediment Control Plans (PESCP's)'*<br>• See Section 9 – '*Soil & Water Management Activities & Controls'* Table 9 – Page 13 |

## 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, 4th 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 |
| Table Drains - Erosion Control Guideline | Brisbane City Council | 2001 |

## 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 local sensitive receivers, drainage patterns and soils that may have the potential to be 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 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

- 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 run-off 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

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 '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.

### 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
- 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 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
- At the conclusion of all rainfall events exceeding 10mm 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 of the 'Blue Book' Volume 2D: Main Road Construction 2007. Commonly employed methods and techniques that may be likely to be utilised on the Project are detailed in the following table;

**Table 8**

| **Erosion Control – Raindrop Impact** | |
|---|---|
| Situation | Control measure or method |
| Soil surface protection - Vegetation | • Temporary vegetation (cover crop only)<br>• Permanent vegetation – introduced (exotic) pasture species or native (endemic) species |
| Soil surface protection - Batter protection | • Organic rolled erosion control products (RECP's) such as jute mesh, jute mat, coir fibre blankets<br>• Non-organic RECP's such as non-woven geotextile membrane or heavy grade plastic sheeting. |
| Soil surface protection - Mulching | • Hydromulch or hydraulic bonded-fibre matrix<br>• Straw mulching with bitumen tack<br>• Rock or gravel mulch |
| Soil surface protection - geobinders | • Organic tackifiers<br>• Co-polymer emulsions<br>• Bitumen emulsion |
| **Erosion control - Concentrated Water Flow** | |
| Up-slope diversions | • Excavated channel-type bank<br>• Back push-type bank or windrow<br>• Catch drains |
| Soft armour channels | • Trapezoidal or parabolic shape design drain cross sections<br>• Organic rolled erosion control products (RECP's) such as jute mesh, jute mat, coir fibre blankets<br>• Non-organic RECP's such as non-woven geotextile membrane or heavy grade plastic sheeting<br>• Organic tackifiers & co-polymer emulsions<br>• Bitumen emulsion<br>• Hydro mulch<br>• Standard or reinforced turf |

| Situation | Control measure or method |
|---|---|
| Hard armour channels | • Loose rock – hard quarry rock<br>• Rock-filled wire mattresses<br>• Grouted rock<br>• Cast in-situ concrete<br>• Underlays utilising heavy grade plastic lining or geotextile lining |
| Check dams | • Stacked rock<br>• Sandbags and aggregate filter bags<br>• Geotextile covered straw bales<br>• Coir logs |
| Batter drainage | • Geotextile lined or heavy grade plastic chutes<br>• Pipes and Half pipes<br>• Loose-rock rip rap<br>• Concrete (pre-cast or on-site)<br>• Rock-filled wire mattresses |
| Grade control structures and flumes | • Geotextile lined or heavy grade plastic chutes<br>• Pipes and Half pipes<br>• Concrete chutes<br>• Loose-rock rip rap<br>• Gully pits and field inlets<br>• Sandbag drop structures<br>• Rock-filled wire gabions and mattress structures |
| Outlet dissipation structures | • Loose-rock rip-rap apron diffusers<br>• Rock-filled wire mattresses<br>• Pinned geotextile aprons<br>• Level spreaders |
| Revetments and retaining walls | • Rip rap<br>• Rock-filled wire gabions and mattresses |
| Sediment control - Sheet Flows | |
| Vegetative filters | • Turf strips |
| Sediment barriers/filters | • Sediment fencing<br>• Topsoil berms stabilised with vegetation or geotextile with filter outlets at intervals<br>• Excavated and geotextile lined sediment traps<br>• Geotextile/ shade cloth covered rock or gravel windrows<br>• Coir logs |
| Site exit points | • Shaker grids with paved or rock aprons and sediment sumps<br>• Wheel wash equipment and designated/controlled areas |
| Sediment control - Concentrated Flows | |
| Sediment traps | • Sediment basins<br>• Stacked rock with geotextile<br>• Excavated and geotextile lined sediment traps<br>• Straw bale or sand bag structures<br>• Gully pit, field inlet and kerb inlet traps |

## 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** |
| All necessary licences, permits and approvals required by legislation will be obtained prior to works commencing. | Project Manager / Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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 |
| 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 |
| 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 '*Soils and Construction: Managing Urban Stormwater' 4th Edition.* - Landcom 2006. | Project Manager / Supervisor / Environmental Site Representative | Site establishment & duration |
| The CEMP & CSWMP & 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 |
| 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 |
| 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 |

| Environmental Management Controls | Person Responsible | Timing / Frequency |
|---|---|---|
| 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** | | |
| 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 |
| 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 |
| 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 |
| 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 |
| The extent of earthworks will be demarcated to the footprint necessary for the proposed works. | Supervisor / Environmental Site Representative | Site establishment & duration |
| 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 |
| 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 |
| 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 |
| The stockpile locations are to avoid concentrated surface flows or areas subject to inundation during wet weather. | Supervisor / Environmental Site Representative | Site establishment & duration |
| 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 |

| Environmental Management Controls | Person Responsible | Timing / Frequency |
|---|---|---|
| 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 |
| Maintain minor benches or contour berms on fill batter formations until profiling for topsoiling is imminent | Supervisor / Environmental Site Representative | Duration |
| Temporary scour protection lining for major 'dirty' drains for steep or long drains to sediment basins or other controls. | Supervisor / Environmental Site Representative | Duration |
| 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 |
| Earthworks and hauling, and vehicular movements to be limited in wet conditions. | Supervisor / Environmental Site Representative | Duration |
| Appropriate sediment tracking controls such as an aggregate/geotextile apron, shaker grid, etc will be installed at exit points from the site. | Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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 |
| 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 |
| Water carts are to regularly spray access tracks, works areas, & temporary stockpiles, during dry weather conditions. | Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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 |
| Personnel to ensure visual dust monitoring is maintained during works, and dust suppression is undertaken regularly. | Supervisor / Environmental Site Representative | Duration |

| Environmental Management Controls | Person Responsible | Timing / Frequency |
|---|---|---|
| Minimise earthworks, soil handling and general disturbance during periods of strong and/or gusty winds. | Supervisor / Environmental Site Representative | Duration |
| 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** | | |
| 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 |
| 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 |
| 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 |
| Temporary 'dirty' water drainage will be adjusted progressively to maximise flows to sediment filters and traps. | Supervisor / Environmental Site Representative | Duration |
| Permanent storm water drains and outlet structures will be stabilised as soon as possible following completion. | Supervisor / Environmental Site Representative | Duration |
| 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 | Supervisor / Environmental Site Representative | Duration |
| Trenching works on grade will be controlled with methods detailed in the 'Blue Book' – Volume 2A' - Section 6 | Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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 |
| 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 |
| Water quality should meet the following minimum criteria prior to discharge:<br>• Total suspended solids (TSS) – less than 50 mg/L<br>• pH – 6.5 to 8.5<br>• oil and grease – not visible and less than 10 mg/L | Supervisor / Environmental Site Representative | Duration |

| Environmental Management Controls | Person Responsible | Timing / Frequency |
|---|---|---|
| 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 |
| 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 |
| 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. | Supervisor / Environmental Site Representative | Duration |
| **Sediment Controls** | | |
| Commonly used sediment control devices have construction detail described 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 |
| Substitute materials may be utilised in the construction of erosion or sediment controls where functionality is not affected. | Supervisor / Environmental Site Representative | Duration |
| 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. | Supervisor / Environmental Site Representative | Duration |
| Sediment filters will be formed from straw bales, aggregate & geotextile filter bags, coir logs, etc, to control concentrated on-site water flows as required | Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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 |
| 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 |
| 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 |
| 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 |

| **Soil Contamination** | | |
|---|---|---|
| **Environmental Management Controls** | **Person Responsible** | **Timing / Frequency** |
| 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 |
| 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 |
| 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 '*Waste Classification Guidelines: Parts 1 and 2* (DECC 2008)'. | Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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 |
| The ground disturbance and machinery/vehicle movements in potentially contaminated areas will be minimised to essential works. | Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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** | | |
| All waste will be handled, stored and disposed of in accordance with the '*Waste Classification Guidelines: Parts 1 and 2* (DECC 2008)'. | Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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 |
| 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 |

| Environmental Management Controls | Person Responsible | Timing / Frequency |
|---|---|---|
| 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 |
| 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 |
| 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 |
| Mobile plant, machinery and vehicles are to be regularly inspected and maintained to manufacturer's specifications. | Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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 |
| 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 |
| Containment bunds are to be monitored regularly and captured materials removed as required to ensure bund capacity is maintained. | Supervisor / Environmental Site Representative | Duration |
| Bunded areas will satisfy requirements of the relevant Australian Standards and 'Bunding and Spill Management (DEC, 1997)' | Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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 |
| 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 |
| An adequate record or log of all environmentally hazardous chemicals received, used and/or disposed of will be maintained. | Supervisor / Environmental Site Representative | Duration |

| Environmental Management Controls | Person Responsible | Timing / Frequency |
|---|---|---|
| Substitution of less hazardous materials or chemicals, or modifying methods of use/storage etc. will be implemented where possible. | Supervisor / Environmental Site Representative | Duration |
| The quantities of hazardous materials and chemicals stored or used will be minimised as far as practical. | Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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** | | |
| 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 |
| Stabilisation of areas is to occur progressively in conjunction with the completion of earthworks. | Supervisor / Environmental Site Representative | Duration |
| 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 |
| 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 |
| 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 |
| 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 |
| 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

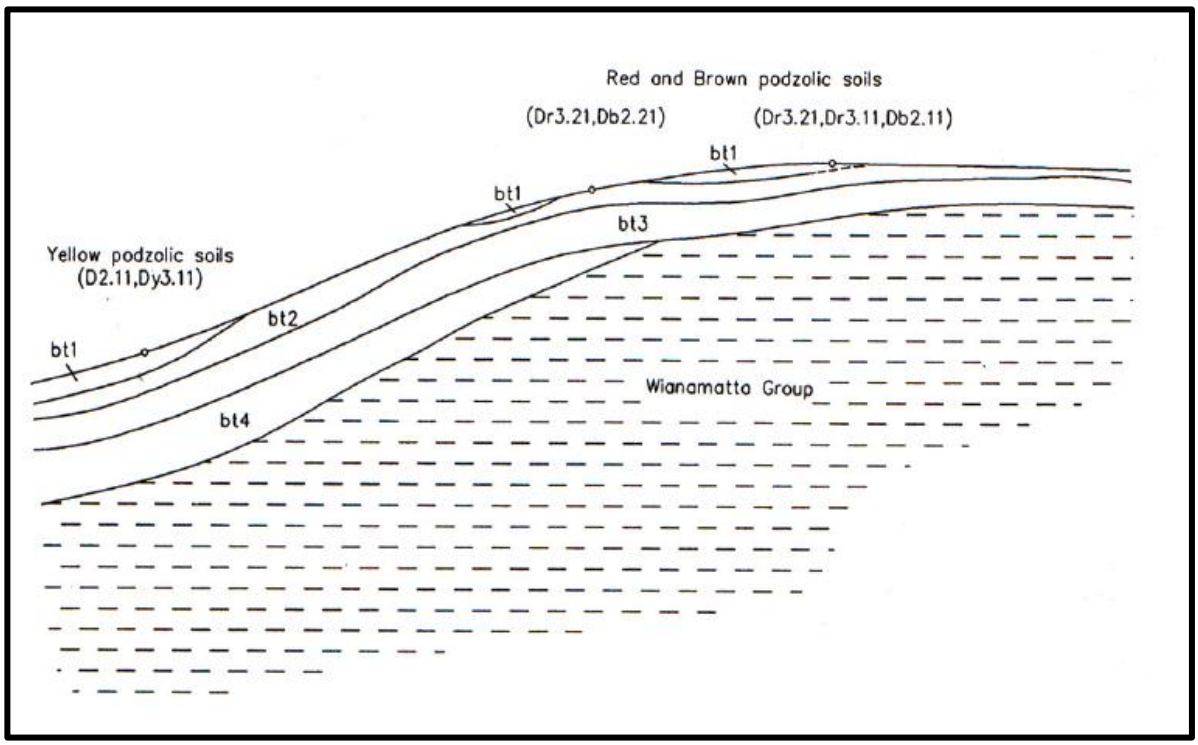
| Location | Oakdale West Estate -Building 4E |
|---|---|
| Construction duration | <12 months earthworks – 85th%ile adopted<br>(Sect. 6.3.4 – (f). Blue Book) |
| Erosion Hazard | High (On slopes >11%)<br>(Sect 4.4.1 & Figure 4.6 – Blue Book) |
| Soil Loss Class | Class 1<br>(Sect 4.4.2. & Table 4.2 – Blue Book) |
| Batter Restrictions | Yes<br>Generally, >20m batter length @ 2H:1V ranging to >30m @ 3H:1V<br>(Sect 4.4.2 – (a) & Figure 4.7 – Blue Book) |
| Seasonal erosion hazard | No<br>(Sect 4.4.2 – (c), Figure 4.9 & Table 4.3 – Blue Book) |
| Soil texture group | |
| Blacktown (bt) Soil Landscape:<br>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) |
| Soil erodibility factor – K factor | Blacktown (bt) Soil Landscape: 0.038<br>(0.050 Adopted)<br>(Appendix C – Table 19 – Penrith Soil Landscapes – Blue Book) |
| Sediment Type | Blacktown (bt) Soil Landscape: Type F & D<br>(Type D Adopted)<br>(Appendix C – Table 19 – Penrith Soil Landscapes – Blue Book) |
| Soil hydrologic group | Blacktown (bt) Soil Landscape: Group C<br>(Group C Adopted)<br>(Appendix C – Table 19 – Penrith Soil Landscapes – Blue Book)) |
| 85th %ile, 5-day rainfall event | 32.2 mm - Blacktown<br>(Sect 6.3.4 – Table 6.3a - Blue Book) |
| Rainfall Intensity - millimetres per hour | 9.2mm/hour<br>(0.5 Exceedance per Year) 2 Year, 6 Hour storm – BOM IFD Table) |

## Site Characteristics Table & Revised Universal Soil Loss Equation (Rusle) Data

| | |
|---|---|
| Rainfall Erosivity – R factor | 1920<br>(Calculated from 0.5 Exceedances per Year (EY), 6 Hour storm, where S=9.2mm/hour and where R = 164.74(1.1177) $^{s}S^{0.6444}$<br>Blue Book - Appendix A2 & B) |
| Volumetric runoff coefficient - Cv | 0.51<br>(Blue Book – Appendix F: Table F2 |
| Grade | 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<br>(Sect 6.3.4.- I (ii) - Blue Book) |

## Typical Soil Profile diagrams

Blacktown (bt) Soil Landscape



**Appendix B**

RUSLE Catchment Assessment & Sediment Basin Calculations

## SWMP Commentary, Detailed Calculations

Note: These "Detailed Calculation" spreadsheets relate only to high erosion hazard lands as identified in figure 4.6 or where the designer chooses to use the RUSLE to size sediment basins. The "Standard Calculation" spreadsheets should be used on low erosion hazard lands as identified by figure 4.6 and where the designer chooses not to run the RUSLE in calculations.

# 1. Site Data Sheet

**Site Name: Oakdale West Estate - Building 4E**

**Site Location:**

**Precinct:**

**Description of Site: Building 4E Construction Area**

| Site area | Sub-catchments | | | | | | Remarks |
|---|---|---|---|---|---|---|---|
| | 1%/80 | 2%/80 | 1%/85 | 2%/85 | | | |
| Total catchment area (ha) | 7.45 | 7.45 | 7.45 | 7.45 | | | |
| Disturbed catchment area (ha) | 7.45 | 7.45 | 7.45 | 7.45 | | | |

**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 |
| % sand (fraction 0.02 to 2.00 mm) | | | | | | | Soil texture should be assessed through mechanical dispersion only. Dispersing agents (e.g. Calgon) should not be used |
| % 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 (days) | 5 | 5 | 5 | 5 | | | See Sections 6.3.4 (d) and (e) |
| Design rainfall depth (percentile) | 80 | 80 | 85 | 85 | | | See Sections 6.3.4 (f) and (g) |
| x-day, y-percentile rainfall event | 24.6 | 24.6 | 32.2 | 32.2 | | | See Section 6.3.4 (h) |
| Rainfall R-factor (if known) | 1920 | 1920 | 1920 | 1920 | | | See Appendix B |
| IFD: 2-year, 6-hour storm (if known) | 9.2 | 9.2 | 9.2 | 9.2 | | | See IFD chart for the site |

**RUSLE Factors**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Rainfall erosivity (*R*-factor) | 1920 | 1920 | 1920 | 1920 | | | Auto-filled from above |
| Soil erodibility (*K*-factor) | 0.05 | 0.05 | 0.05 | 0.05 | | | |
| Slope length (m) | 80 | 80 | 80 | 80 | | | |
| Slope gradient (%) | 1 | 2 | 1 | 2 | | | RUSLE LS factor calculated for a high rill/interrill ratio. |
| 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 | |

**Calculations**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Soil loss (t/ha/yr) | 24 | 51 | 24 | 51 | | | |
| Soil Loss Class | 1 | 1 | 1 | 1 | | | See Section 4.4.2(b) |
| Soil loss ($m^3$/ha/yr) | 19 | 39 | 19 | 39 | | | |
| Sediment basin storage volume, $m^3$ | 23 | 50 | 23 | 50 | | | See Sections 6.3.4(i) and 6.3.5 (e) |

# 4. Volume of Sediment Basins, *Type D* and *Type F* Soils

Basin volume = settling zone volume + sediment storage zone volume

## Settling Zone Volume

The settling zone volume for *Type F* and *Type D* soils is calculated to provide capacity to contain all runoff expected from up to the y-percentile rainfall event. The volume of the basin's settling zone (V) can be determined as a function of the basin's surface area and depth to allow for particles to settle and can be determined by the following equation:

$$V = 10 \times C_v \times A \times R_{x\text{-day, y-\%ile}} \ (m^3)$$

where:

10 = a unit conversion factor

$C_v$ = the volumetric runoff coefficient defined as that portion of rainfall that runs off as stormwater over the x-day period

$R_{x\text{-day, y-\%ile}}$ = is the x-day total rainfall depth (mm) that is not exceeded in y percent of rainfall events. (See Sections 6.3.4(d), (e), (f), (g) and (h)).

A = total catchment area (ha)

## Sediment Storage Zone Volume

In the detailed calculation on Soil Loss Classes 1 to 4 lands, the sediment storage zone can be taken as 50 percent of the settling zone capacity. Alternately designers can design the zone to store the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(ii)). However, on Soil Loss Classes 5, 6 and 7 lands, the zone must contain the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(iii).

Place an "X" in the box below to show the sediment storage zone design parameters used here:

| | |
|---|---|
| | 50% of settling zone capacity, |
| X | 2 months soil loss calculated by RUSLE |

## Total Basin Volume

| Site | $C_v$ | $R_{x\text{-day, y-\%ile}}$ | Total catchment area (ha) | Settling zone volume ($m^3$) | Sediment storage volume ($m^3$) | Total basin volume ($m^3$) |
|---|---|---|---|---|---|---|
| 1%/80 | 0.51 | 24.6 | 7.45 | 934.677 | 23 | 957.677 |
| 2%/80 | 0.51 | 24.6 | 7.45 | 934.677 | 50 | 984.677 |
| 1%/85 | 0.51 | 32.2 | 7.45 | 1223.439 | 23 | 1246.439 |
| 2%/85 | 0.51 | 32.2 | 7.45 | 1223.439 | 50 | 1273.439 |
| | | | | | | |
| | | | | | | |

Note that designers should achieve a minimum 3:1 length:width ratio in Type D or F basins

**Appendix C**

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<br>• Construction of Sediment Basins<br>• Preliminary post-rainfall inspections<br>• Testing and recording<br>• Treatment methods and recording<br>• Details of the Water Discharge Permit<br>• Dewatering requirements, methods and recording<br>• Maintenance requirements, methods and recording<br>• 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:<br>• 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.<br>• Impervious clay to be used where required in construction of the internal basin invert and embankments.<br>• Inlet and outlet structures will be appropriately constructed to cater for the nominated rainfall event.<br>• 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.<br>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 | | |
| Captured water to be discharged from sediment basins must meet the following criteria:<br>• pH between 6.5 – 8.5<br>• TSS < 50mg/L and<br>• Oil and grease - no visible trace. | Supervisor / Environmental Site Representative | Duration |
| <u>Correlation between TSS and Turbidity</u><br>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.<br>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. | 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 |
| 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:<br>• pH between 6.5 – 8.5<br>• TSS < 50mg/L; and<br>• Oil and grease < 10mg/L (and no visible trace).<br>Treatment should commence as soon as practical following cessation of a rain to allow enough time for settlement of suspended solids. | Supervisor / Environmental Site Representative | Duration |
| Records of water quality management must be maintained and the required records include:<br>• The date(s) on which the sample was taken;<br>• The time(s) at which the sample was collected;<br>• The name of the person who collected the sample. | Supervisor / Environmental Site Representative | Duration |
| **pH**<br>Treatment should be undertaken as follows:<br>• Test basin water with a suitable pH meter. No action is required if the pH reading is between 6.5 and 8.5<br>• 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<br>• Determine volume of water to be treated in the sediment basin.<br>• 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.<br>• 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.<br>• Add the required amount of lime or acid to the basin and mix the water in the sediment basin well<br>• Treat for pH prior to T.S.S. | Supervisor / Environmental Site Representative | Duration |
| **Total Suspended Solids**<br>• 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.<br>• 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.<br>• 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 |
|---|---|---|
| **Total Suspended Solids**<br>• 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.<br>• 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.<br>• No further treatment action is required if T.S.S. results are <50mg/l.<br>• 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.<br>• Basins should be monitored daily after flocculation until desired TSS is achieved and to assist in determination of optimal dosage levels.<br>Methods of application to include:<br>• 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.<br>• 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.<br>• 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.<br>• 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.<br>• The process outlined may need to be repeated if acceptable water quality is not achieved initially.<br>**Oil and Grease**<br>• Examine surface of water for evidence (e.g. sheen, discoloration).<br>• No action if no visual contamination.<br>• Oil absorbent material to be spread if there is contamination (e.g. cell-u-sorb). Leave basins to compensate for 24 to 48 hours. | Supervisor / Environmental Site Representative | Duration |

| 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 not within the basin spillway. | Supervisor / Environmental Site Representative | Duration |
| Where sediment basins are to be dewatered by pump, 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 pumps 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 | | |
| Maintenance of the sediment basins will be ongoing for the duration of the Project and will comprise the following:<br>• 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.<br>• Sediment removed from basins may be reused on site by incorporating into spoil.<br>• 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.<br>• 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** | | |
| 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.<br>The following procedure will be implemented to determine the suitability and effectiveness of the various water treatment products.<br>• The product will be sourced from a reputable and traceable supplier together with MSDS and any other supporting documentation.<br>• 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.<br>• 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.<br>• Settling rates in the basin will be assessed to determine the efficiency of each product.<br>• On site water sampling and testing will progressively assess the water's pH and turbidity in NTU's prior to lab testing.<br>• 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 |
| The range and type of suitable flocculants/coagulants (including typical dosing rates described as product required to water volume)) that may be utilised include;<br>• Calcium Sulphate (Gypsum - powder) – 300ppm (30kg/100m3)<br>• Anionic Polyacrylamide (gel blocks) – 200ppm (20kg/100m3)<br>• Calcium Chloride (solid - flakes), – 200ppm (20kg/100m3)<br>• Aluminium Chlorohydrate (liquid) – 40ppm (4L/100m3)<br>• PAC23 (poly aluminium chloride 23% - solution) - 50ppm (12.5L/100m3)<br>• Aluminium Sulphate (crystals) – 200ppm (20kg/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** |
| All sediment basins will be inspected on a weekly basis as a minimum, with any defects or maintenance requirements reported immediately.<br>Sediment basins will be inspected immediately after rainfall events to assess:<br>• Water Storage capacity and water quality treatment requirements prior to discharge<br>• 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 |
| All discharges will be recorded on a discharge permit which will include:<br>• Volume to be discharged<br>• Treatment details (e.g. Coagulant/ flocculant used, dosage, duration and treatment date)<br>• Water quality monitoring results (including date and time of testing)<br>• Discharge water quality results<br>• 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 |
| 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:<br>• Removing all redundant basin equipment such as basin markers, siphons, spillway linings, etc.<br>• Spreading and compacting the embankment material in the basin area<br>• 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 D

## 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 | / /<br>am/pm |
| Subsequent amount of acid/lime used if pH correction is required. | | Date & time of acid/lime dosing | / /<br>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)<br>300ppm (30kg/100m3) | | | | / /<br>am/pm |
| Anionic Polyacrylamide (gel blocks)<br>200ppm (20kg/100m3) | | | | / /<br>am/pm |
| Calcium Chloride (solid - flakes)<br>200ppm (20kg/100m3) | | | | / /<br>am/pm |
| Aluminium Chlorohydrate (liquid)<br>40ppm (4L/100m3) | | | | / /<br>am/pm |
| PAC23 (poly aluminium chloride 23% - solution)<br>50ppm (12.5L/100m3) | | | | / /<br>am/pm |
| Aluminium Sulphate (crystals)<br>200ppm (20kg/100m3) | | | | / /<br>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) | | | / /<br>am/pm |
| Supervisor responsible for discharge: | Name: | | |
| Date: | Signed: | | |
| Comments?<br>(E.g. next rainfall predicted – slight, moderate, severe?)<br>Was rainfall received during treatment period affecting basin (start a new sheet) | | | |

## Appendix E

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<br>• Weather forecast monitoring procedures and interpretation of forecasting by BOM and other sources<br>• Site erosion and sediment control status and high-risk areas<br>• Roles and responsibilities for wet weather preparation<br>• Temporary measure selection for augmentation or additional ERSED measures<br>• Pre & post-rainfall inspections and recording<br>• Dewatering requirements, methods and recording<br>• 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 Penrith 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** | | |
| The high-risk work areas that are identified will be managed by;<br>• 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.<br>• Re-allocating resources from low risk activities to assist with completion of high risk works prior to the onset of a rainfall event.<br>• Implementation of erosion controls in high risk areas to minimise sediment control requirements. Erosion controls will be employed such as;<br>o temporary geotextile linings or soil binders will be installed around culverts, scour protection works and drain junctions,<br>o 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 |
| The site sediment controls and sediment basins are to be inspected and any necessary rectification works undertaken such as;<br>• Sediment basins are to be managed in accordance with Sediment Basin Management Procedure to regain the maximum runoff capacity parameters, where possible,<br>• Sediment traps and filters to be desilted where more than 60% storage capacity is exceeded,<br>• Spillways and discharge points from sediment traps to be inspected and reinstated as required.<br>• 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 Section 7.7 of this ESCP. 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 Section 7.7 of this ESCP. | 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;<br>• Dewatering to a sediment basin where sufficient capacity is available,<br>• Flocculated in-situ and discharged at a licensed discharge point when EPL water quality parameters are attained,<br>• 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 F**

Progressive Erosion and Sediment Control Plan

# Oakdale West Estate– Building 4E - 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**

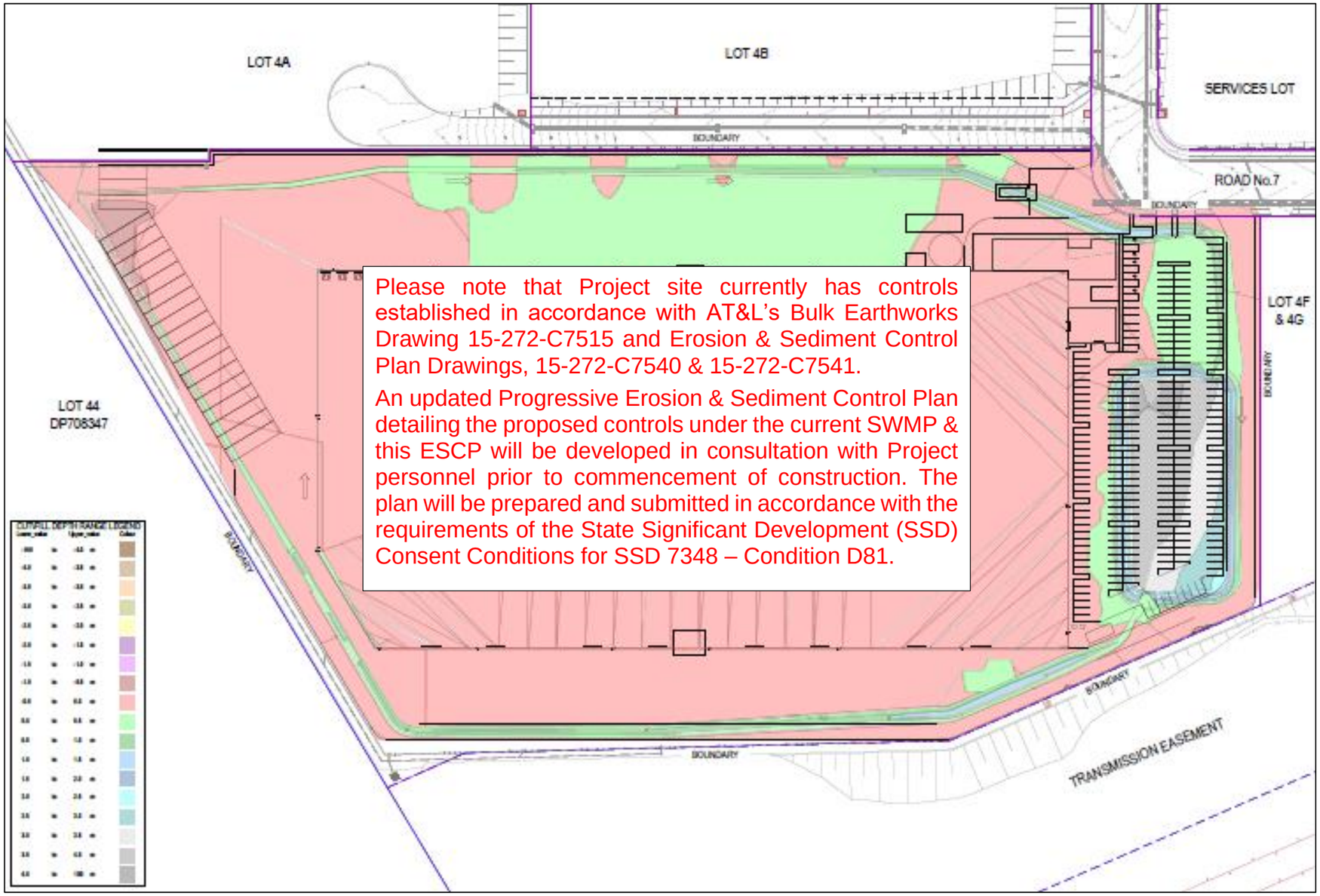
36. Erosion and sediment controls are to be maintained until the relevant catchments are stabilised, re-vegetated, or sealed adequately to achieve soil surface protection factors as per the 'Blue Book' and SWMP requirements.
37. Completed earthworks areas will be backfilled and compacted in a staged 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 | 25/06/2021 | | | |
| | | | | | |

Goodman

# Oakdale West Estate– Building 4E- Progressive Erosion & Sediment Control Plans

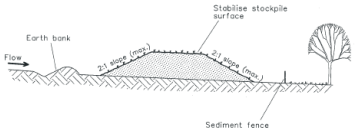
The drawing partially reproduced below is Drawing 15-272-C7515 extracted from AT&L's Bulk Earthworks Plan issued 24/06/2021.




| 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 / Wheelwash | |
| 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 G**
Standard drawings

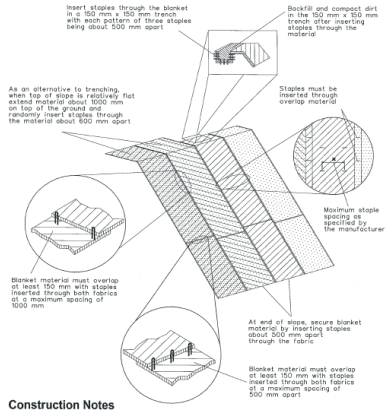
# Standard Drawings




**Construction Notes**

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. 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.
5. 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.

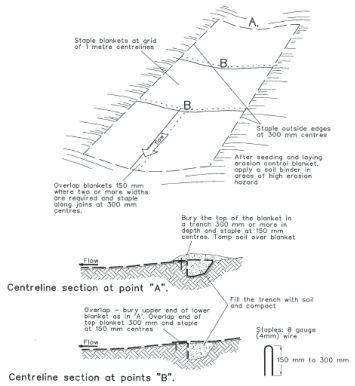
**STOCKPILES** **SD 4-1**




**Construction Notes**

1. Remove any rocks, clods, sticks or grass from the ground surface before laying the matting.
2. Spread topsoil to at least 75 mm depth.
3. Where appropriate, complete fertilising and seeding on a properly prepared seedbed (Standard Drawing 7-1) before laying the matting.
4. Ensure the fabric can be continuously in contact with the soil by grading the surface carefully first.
5. Lay the matting in "shingle-fashion" with the ends of each upstream roll overlapping the next roll downslope.
6. Ensure sufficient staples are used to maintain a good contact between the soil and the matting.

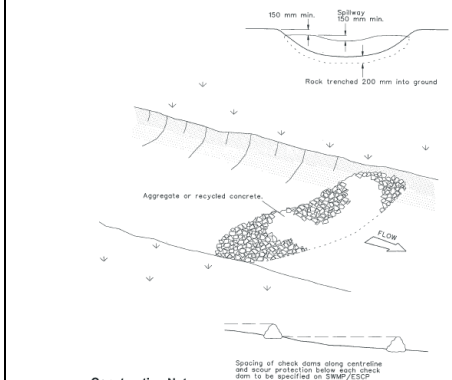
**RECP : SHEET FLOW** **SD 5-2**




**Construction Notes**

1. Remove any rocks, clods, sticks or grass from the surface before laying matting
2. Ensure that topsoil is at least 75 mm deep.
3. Complete fertilising and seeding before laying the matting.
4. Ensure fabric will be continuously in contact with the soil by grading the surface carefully first.
5. 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).
6. 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.
7. Divert water from the structure until vegetation is stabilised properly.

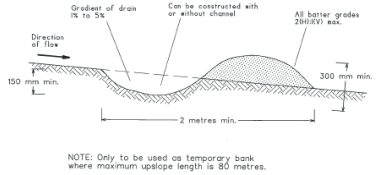
**RECP : CONCENTRATED FLOW** **SD 5-7**




**Construction Notes**

1. 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.
2. 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.
3. 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.
4. Space the dams so the toe of the upstream dam is level with the spillway of the next downstream dam.

**ROCK CHECK DAM** **SD 5-4**

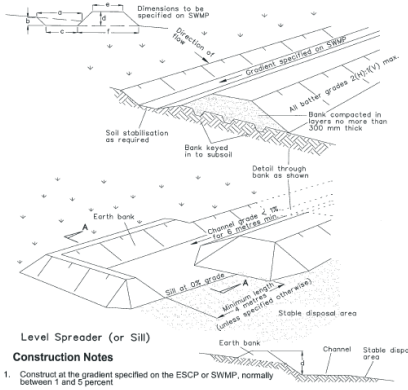



NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

**Construction Notes**

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

**EARTH BANK (LOW FLOW)** **SD 5-5**

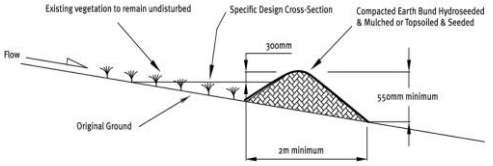



**Construction Notes**

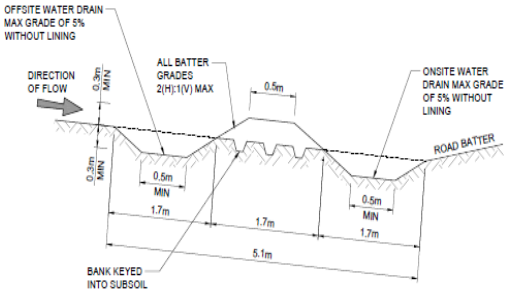
1. Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
7. Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
8. Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
9. 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**

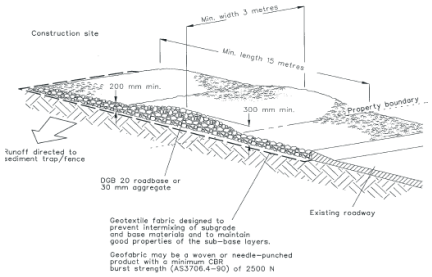



EARTH BANK (ONSITE & OFFSITE COMBINED)
N.T.S.

GENERAL CONSTRUCTION NOTES

1. CONSTRUCT WITH GRADIENT OF 1% TO 5%.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM
3. DRAINS TO BE CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTION NOT V-SHAPED.
4. EARTH BANK TO BE ADEQUATELY COMPACTED IN ORDER TO PREVENT FAILURE.
5. PERMANENT OR TEMPORARY STABILISATION OF THE EARTH BANK TO BE COMPLETED WITHIN 10 DAYS OF CONSTRUCTION.
6. ALL OUTLETS FROM DISTURBED LANDS ARE TO BE FED INTO A SEDIMENT BASIN OR SIMILAR.
7. 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.
8. COMPACT BANK WITH A SUITABLE IMPLEMENT IN SITUATIONS WHERE THEY ARE REQUIRED TO FUNCTION FOR MORE THAN FIVE DAYS.
9. EARTH BANK TO BE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT WILL IMPEDE NORMAL FLOW.

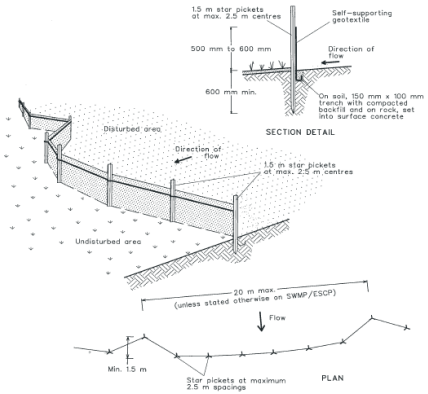
# Standard Drawings




**Construction Notes**

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200-mm thick pad over the geotextile using road base or 30-mm aggregate.
4. Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
5. Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence

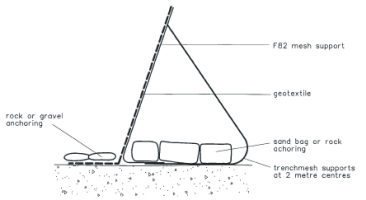
**STABILISED SITE ACCESS** **SD 6-14**




**Construction Notes**

1. 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.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. 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.
4. 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.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

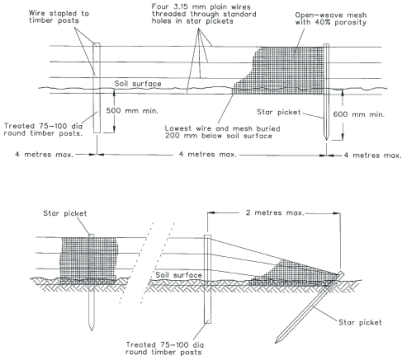
**SEDIMENT FENCE** **SD 6-8**




**Construction Notes**

1. 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.
2. 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.
3. 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.

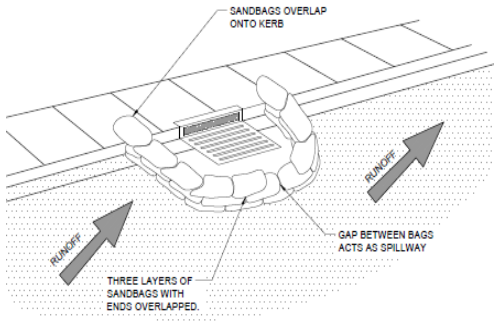
**ALTERNATIVE SEDIMENT FENCE** **SD 6-9**



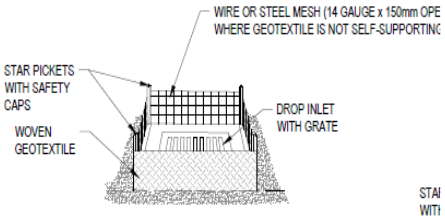

**Construction Notes**

1. Install the fence to the height specified in the ESCP/SWMP.
2. Cut a channel 200 mm deep along the fence line.
3. Place wire and light resistant, open-weave polymer mesh with 40 percent porosity on the prevailing wind side of fence.
4. 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.
5. Use one 75-mm to100-mm diameter treated round timber post every 20 metres.
6. Where star pickets are used, ensure they are fitted with safety caps.

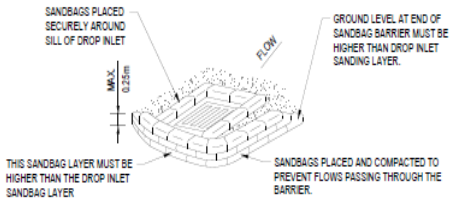
**CONTROL OF WIND EROSION** **SD 6-15**




SANDBAG SEDIMENT TRAP FOR KERB INLET
N.T.S.

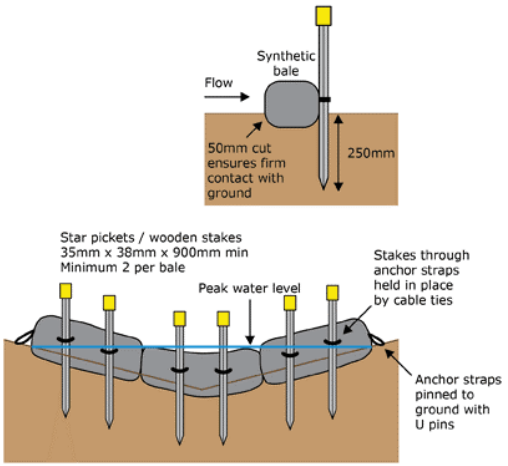



GEOTEXTILE INLET FILTER (SD 6-12) - PERSPECTIVE
NTS

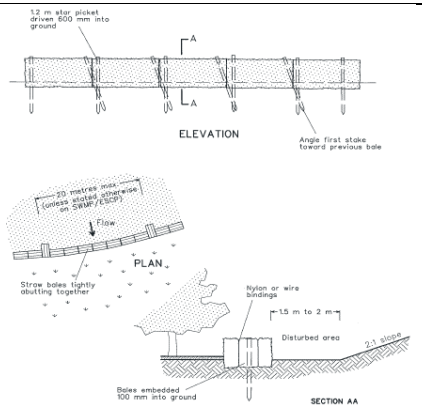



SEDIMENT BARRIER (SD 5-4) DETAIL

## Coir Log Filter



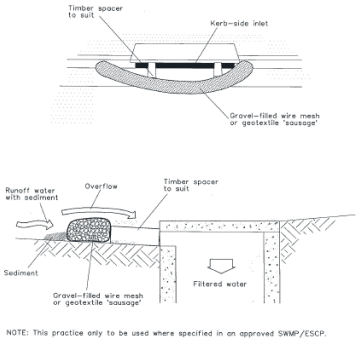
# Standard Drawings




**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**

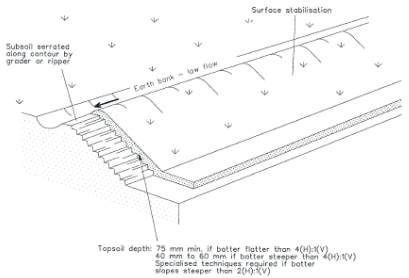



NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

**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.

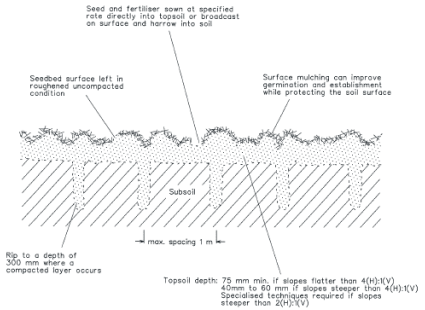
**MESH AND GRAVEL INLET FILTER** **SD 6-11**




**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.

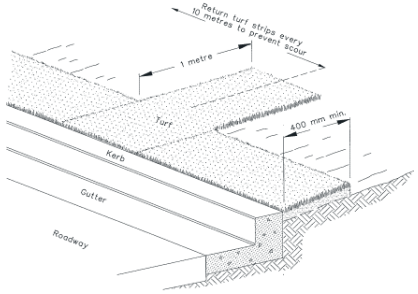
**REPLACING TOPSOIL** **SD 4-2**




**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 tilth 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**




**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**

# APPENDIX J

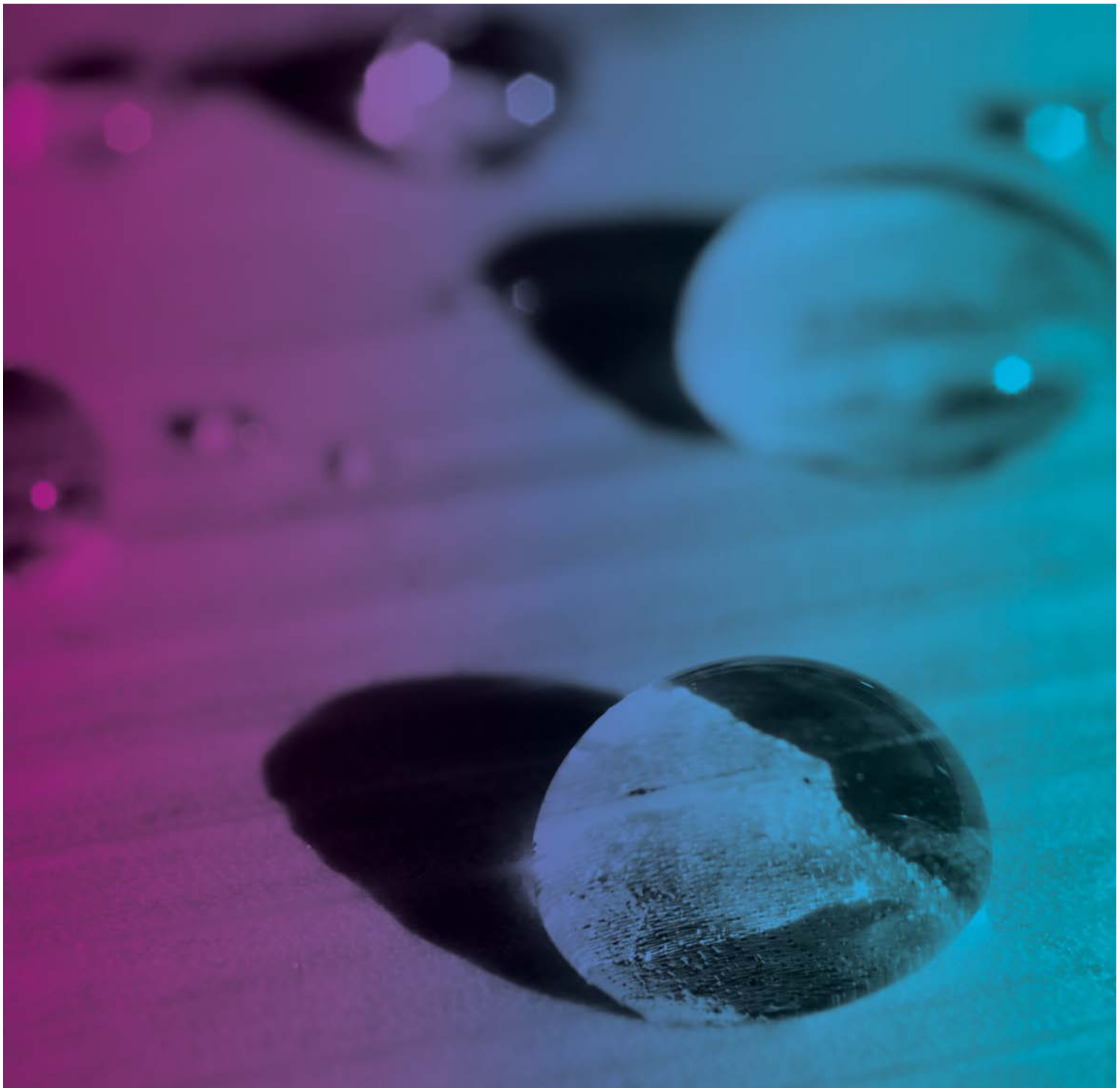
## Unexpected Finds Protocol - Contamination

AECOM Imagine it Delivered

Goodman Property Services (Aust) Pty Ltd
31-Oct-2019

# Unexpected Finds Protocol

Oakdale West Estate



# Unexpected Finds Protocol

Oakdale West Estate

Client: Goodman Property Services (Aust) Pty Ltd

ABN: 40 088 981 793

Prepared by

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# Quality Information

Document Unexpected Finds Protocol

Ref 60599325

Date 31-Oct-2019

Prepared by Alex Latham

Reviewed by Clayton Cowper

Revision History

| Rev | Revision Date | Details | Authorised | |
|---|---|---|---|---|
| | | | Name/Position | Signature |
| A | 07-Dec-2018 | Draft for comment | Alex Latham<br>Associate Director | |
| 1 | 24-Sep-2019 | Final | Alex Latham<br>Associate Director | |
| 3 | 31-Oct-2019 | Revised Final | Alex Latham<br>Associate Director | |

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Materials Tracking Register (proformas) B

# 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 |
| EIL | Ecological Investigation Level |
| EPA | Environment Protection Authority |
| ESL | Ecological Screening Level |
| 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 complete an Unexpected Finds Protocol (UFP) for the earthworks associated with the construction of the Oakdale West Estate (OWE), Kemps Creek, NSW (the Site).

The Site is approximately 154 hectares (Ha) of predominantly agricultural (grazing) land and riparian corridor associated with Ropes Creek. Goodman propose to develop approximately 90 Ha of the Site into a warehouse-style estate and distribution centre, under State Significant Development Application 7348 (SSD 7348).

OWE will include pads for building construction, roads, footpaths, bio-retention basins, wildlife corridor(s) and electricity transmission easements. It is expected that earthworks will include:

- Stripping of geotechnically unsuitable overburden in the developable areas (i.e. grass and surface soils to approximately 0.3 m depth), stockpiling and subsequent re-use in landscaping areas, or blended with other Site won materials and re-used in the earthworks.
- Proof rolling stripped areas.
- Extensive cut to fill and retaining wall construction.

This UFP relates to soil contamination and applies up to the completion of the construction of building pads at OWE.

AECOM has previously completed a Phase I Environmental Site Assessment (2007), targeted Phase II Contamination Assessment (2012), asbestos remediation validation sampling (2017) and assessment of sediment and surface water (2019) at OWE. Site features and sampling locations are shown on **Figure 1** and **Figure 2** in **Appendix A**.

Goodman has commissioned geotechnical investigations and a hazardous building material survey at the Site. Data from these investigations and survey have been reviewed and incorporated into this report.

Goodman has appointed a NSW EPA (land contamination) Auditor, Tom Onus of Ramboll Australia Pty Ltd (the Auditor) to the project. Where unexpected finds are encountered, the Auditor must be notified.

A Fill Importation Protocol (FIP) for OWE has been developed by AECOM. The FIP stipulates the soil and aggregates that will be imported to the Site for construction of the building pads, retaining walls, stormwater and sewer pipe trench backfill etc and the associated (contamination-related) testing requirements.

## 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 Site data.
- Provide management and assessment recommendations for any identified unexpected finds encountered during OWE construction earthworks.

## 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 OEH (2011). *Guidelines for Consultants Reporting on Contaminated Sites*. NSW Government Office of Environment & Heritage (OEH).
- 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.*
- WorkCover (2014). *Managing asbestos in or on soil.* March.


## 1.3 SSD Conditions of Consent

The SSD Conditions of Consent were issued to Goodman on 13 September 2019. With respect to soil contamination, these are summarised in the following table:

**Table 1 Consent Requirements**

| Condition Requirement | Section / Comment |
|---|---|
| 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. | This UFP. |
| D121 (k). As part of the CEMP required under Condition D119 of this consent, the Applicant must include an Unexpected Contamination Protocol. | This UFP is to be included in the CEMP prepared by SLR Consulting Australia Pty Ltd. |
| Management Plan Requirement | Section / Comment |
| D118. Management plans required under this consent must be prepared in accordance with relevant guidelines and include: | |
| a) details of:<br>i. the relevant statutory requirements (including any relevant approval, licence or lease conditions);<br>ii. any relevant limits or performance measures and criteria; and<br>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 1.2 and Section 5.0. |
| b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria; | This UFP |
| c) a program to monitor and report on the:<br>i. impacts and environmental performance of Stage 1; and<br>ii. effectiveness of the management measures set out pursuant to paragraph (b) above; | Continual monitoring during bulk earthworks. Sections 3.1 to 3.5. |

| Condition Requirement | Section / Comment |
|---|---|
| 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; | This UFP |
| e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time; | Completed in CEMP |
| f) a protocol for managing and reporting any:<br>i. incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);<br>ii. complaint;<br>iii. failure to comply with statutory requirements; and | Completed in CEMP |
| g) a protocol for periodic review of the plan. | Completed in CEMP |

# 2.0 Background Information

## 2.1 Site Conditions

The Site comprises undulating grasslands, with a ridge running from northeast to southwest. Three farm dams are located to the west of the ridge and two to the east. A Transgrid electricity easement is present in the eastern portion of the Site. Other Site features include:

- Residential house.
- In-ground water holding tank (previously referred to as “old well”).
- Unpaved internal access roads.
- Concrete slab, likely a former building.
- Concrete blocks in a drainage line, assumed to represent an erosion control mechanism.
- Pumping point. A small concrete slab that previously housed a pump. Based on anecdotal information obtained from the Brickworks Site caretaker, it is understood that the pump point was connected directly to the water supply pipeline.
- Two pipes (polyethylene and steel, both approximately 50 mm diameter) at the eastern end of the eastern most dam. The Brickworks Site caretaker was aware of the pipes but had no knowledge of any pump station or plinth for the pipes.

Ropes Creek is mostly located off-site to the east however, parts of the creek and the riparian corridor are located on the Site but are not subject to future development.

## 2.2 Surrounding Land Use

Land uses surrounding the Site include:

- North: water supply pipelines followed by commercial/industrial premises and undeveloped agricultural land (the Fitzpatrick Land).
- East: Oakdale South and Central Estates.
- South: rural/residential properties.
- West: schools and retirement village.

## 2.3 Phase I ESA 2007

The Phase I ESA included the proposed Oakdale development, representing approximately 420 Ha. OWE is situated within the Phase I ESA study area. Site history and background data for OWE is summarised below:

- The Site comprised rural (pastoral lands) since the early to mid 1800s.
- Site soils were expected to comprise clay of the Blacktown and/or Luddenham Soil Landscape Groups and fluvial soils of the South Creek Soil Landscape Group (near Ropes Creek), overlying Shale bedrock.
- 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.
- Surface application of “envirosoil” (recycled sewage waste) had occurred to approximately 80 mm depth in the north eastern portion of the OWE (refer **Appendix A**).
- A rubbish scrape and disposal area was identified in a gulley in the south west portion of the Site.
- Deposits of concrete blocks were identified in the drainage line down-stream of the rubbish disposal area, likely placed for erosion control (refer **Appendix A**).

- A concrete slab (probable floor of former building/shed) was identified in the western portion of the Site (refer **Appendix A**).
- An old wooden building (the Old Farmhouse) was present in the south west portion of the Site. Adjacent to the building were fragments of asbestos containing material (ACM), likely associated with an outhouse building. The Old Farmhouse building has subsequently been removed from Site.
- A residential house was located on the ridge line above the Old Farmhouse. The house was occupied at the time of the Phase I. The house was of brick construction with a tiled roof.
- Approximately two small buildings were formerly present to the north east of the residential house, adjacent and on the south side of the ridge-line access road (refer **Appendix A**).
- An in-ground concrete lined water tank was present in the south west portion of the Site. The tank contained minor quantities of waste material (e.g. steel, wire, tyres).
- A former piggery was identified in the southern central portion of the Site (refer **Appendix A**). Brick and steel waste was scattered over the ground surface.
- Some spot applications of phenoxyacetic acid herbicides (e.g. to control blackberry and other woody weeds) has been historically undertaken, on an 'as needs basis'.
- No burial pits for animal carcasses or cattle/sheep dips were known to be present.

## 2.4 Targeted Phase II Assessment 2012

AECOM completed a targeted assessment at OWE based on the results of the Phase I ESA. The Phase I ESA identified a low potential for the presence of soil contamination across the majority of OWE however, six areas of environmental concern (AEC) were identified. The six AEC were investigated in the targeted Phase II Assessment, as summarised below:

**Table 2 AEC and Targeted Assessment**

| AEC | Investigation | Results |
|---|---|---|
| In ground water tank | 2 test pits adjacent to tank (TP1 and TP2) | No contamination identified |
| Former piggery | 15 test pits across former piggery (TP3 to TP17) | No contamination identified |
| Rubbish burial and scrape | 6 test pits (TP18 to TP23) | No chemical contamination identified. Fragments of ACM and asbestos fibres identified in rubbish burial area. |
| Former buildings area | 5 test pits (TP24 to TP28) | No contamination identified |
| Envirosoil application area | 9 test pits (TP29 to TP37) | No contamination identified |
| Old Farmhouse | 3 test pits, 3 surface samples (TP38 to TP40 and SS01 to SS03) | No chemical contamination identified. Fragments of ACM identified. |

The sample location plan from the targeted Phase II assessment is included in **Appendix A**.

Other information from the targeted Phase II assessment and relevant to this UFP 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.
- Fill materials were logged at six locations and in each instance, 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 contaminants of potential concern (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.
- Waste materials (general rubbish, metal waste) and ACM were identified in the rubbish burial area. ACM was identified in the vicinity of the Old Farmhouse. Remediation of both areas was recommended.
- Concentrations of the chemical CoPC investigated at all test pits were below the ASC NEPM health investigation level (HIL) and health screening levels (HSL) applicable for commercial/industrial land use (HIL D and HSL D).

Groundwater was not investigated. Based on the Phase II data, the potential for groundwater contamination to be present is considered to be low.

## 2.5 Remediation Report 2017

AECOM was retained by The Austral Brick Company Pty Ltd (Austral) to provide remediation validation services for two AEC identified in the targeted Phase II assessment. The areas were the Old Farmhouse and the Rubbish Disposal Area.

In summary:

- Excavation activities were completed by the Austral appointed earthworks contractor, as well as disposal of rubbish materials and ACM impacted soils.
- The Old Farmhouse excavation footprint was approximately 650 $m^2$ and the Rubbish Disposal area excavation footprint was approximately 2800 $m^2$.
- Soils at the base of the excavations comprised natural, orange-brown clay.
- No obviously visible fragments of ACM were observed by AECOM at the final excavation surfaces.
- Laboratory analysis results for the validation samples collected from the final excavation surfaces did not identify asbestos at concentrations exceeding the ASC NEPM HSL D in the samples analysed.
- Concentrations of the non-asbestos CoPC investigated were below ASC NEPM HIL D and HSL D.

The sample location plan from the Remediation Report is included in **Appendix A**.

## 2.6 Surface Water & Sediment Report 2019

AECOM was engaged by Goodman to undertake surface water and sediment sampling at the Site, to assess:

- The suitability of dam sediments for use in bulk earthworks (i.e. re-use at the Site).
- 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 contaminants of potential concern.

Sediment samples were logged to comprise clay, clayey silt and silty clay. Some shale gravel was present. Concentrations of the CoPC investigated were below the ASC NEPM HSL D and HIL D.

Water in the dams was noted to be low to medium turbidity, with aquatic vegetation present. No obvious indicators of contamination were observed. 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 Site.
- Water in the Dams would be suitable for use in the bulk earthworks.
- Water in the Dams appear suitable for discharge to Ropes Creek. This may require evaluation by the Goodman-appointed ecological consultant.

## 2.7 Hazmat Assessment 2019

EP Risk completed a destructive hazardous materials (Hazmat) assessment of the residential house in 2019. Data from the EP Risk report indicated:

- The house had a footprint of approximately 160 $m^2$ and was constructed circa 1960. The house will be demolished as part of the OWE development works.
- Lead based paints were not identified.
- Asbestos was identified in:
    - Fuses within the electrical box (Class A friable)
    - Backing board within the electrical box, eaves, internal wall panels and vinyl floor tiles (Class B non-friable).
- Asbestos removal works will be required to be undertaken by appropriately licensed contractors under controlled conditions.
- An in-ground septic tank (concrete construction) was present on the western side of the house.

Goodman has advised that the head earthworks contractor will undertake the demolition (via a sub-contractor). AECOM has requested the following information for ‘validation’ reporting:

- Copies of asbestos licenses.
- Copies of all landfill disposal documents for asbestos containing materials.
- Air monitoring results (taken during asbestos removal works).
- Hygienist clearance inspection reports.
- Soil sample analysis data. It is expected that:
    - Surface soil samples will be collected from the building footprint and analysed for asbestos, OCP, OPP and M8.
    - Soil samples will be collected from a small excavation formed by the removal of the septic tank and pipe run and analysed for asbestos, OCP, OPP, M8, TRH and BTEXN.
    - Soil samples will be collected from excavated materials (i.e. from pipe run and around septic tank) and analysed for asbestos, OCP, OPP, M8, TRH and BTEXN.

## 2.8 Geotechnical Investigations

Goodman commissioned Pells Sullivan Meynink (PSM) to undertake geotechnical assessments of the Site. These are summarised below. Sample location plans are included in **Appendix A**.

**PSM 2015a**

The PSM investigation was based on the proposed cut to fill earthworks. PSM inferred fill depth up to approximately 12 m and cut depth up to approximately 15 m. Fieldworks were completed in October 2015 and included:

- 13 boreholes (BH01 to BH13) completed by a 14 tonne (t) excavator with a pendulum auger attachment. These locations were completed to depths between 1.5 and 4.95 m, predominantly in 'cut' areas.
- 2 boreholes (BH14 and BH15) were completed by drill rig to approximately 15 m depth. The boreholes were completed by auger then coring.
- 27 test pits (TP01 to TP27) were completed by a 12 t excavator to a maximum depth of 2 m.

PSM noted that the Site comprised 'grassy paddocks separated by steel wire fencing and several dams.

In summary, PSM logged the conditions as:

- Topsoil (0 to 0.04 m): low plasticity, soft to stiff, dark brown clay with rootlets.
- Natural Soil (0.04 to 0.7 m): medium to high plasticity, stiff to very stiff, light brown to grey clay.
- Bedrock (0.7 to 4 m): extremely to moderately weathered, light brown to grey, shale and sandstone.
- No groundwater was encountered.
- No anthropogenic inclusions or fill materials were noted on the logs.

**PSM 2015b (soil salinity and aggressivity)**

The fieldwork was undertaken concurrently with 2015a. Samples were collected from the geotechnical investigation locations and called E1 to E25. PSM noted that the Site was covered in grass and trees and that no indications of salinity were observed (e.g. salt crystals, bare soil patches, salt pans, die-back of trees, gully erosion etc.).

The PSM data indicated:

- The majority of soils on Site are classified as non-saline, with some soils classified as slightly saline.
- The risk of acid sulfate soils to be present was considered to be low.
- Soils ranged from non-sodic to highly sodic (the measure of the likely dispersion on wetting and to shrink-swell properties).

**PSM 2018a**

Six boreholes were drilled in or within close proximity to the water pipeline easement. Logged conditions were:

- Northern side of pipeline easement: approximately 2.5 m of grey-red-brown sandy clay (reworked natural, or easement spoil), overlying orange-red-brown clay, grading to shale bedrock at approximately 4 to 4.5 m bgs.
- Pipeline Easement: asphalt access road with roadbase sub-grade overlying grey-red-yellow-brown sandy clay, grading to shale bedrock at approximately 3 to 3.8 m bgs.
- Southern side of pipeline easement: red-grey-brown clay to approximately 8 m bgs, overlying shale bedrock.

**PSM 2018b**

The investigation targeted the location of the proposed sewer infrastructure. PSM understood that approximately 3.8 km of sewer main (with 56 manholes) would be constructed, between 1.2 and 15.8 m below existing ground level.

The investigation included:

- Boreholes BH01 to BH47 were drilled by track and truck mounted drill rigs. Primary boreholes were drilled at proposed manhole locations or at intermediate locations where the distance between manholes exceeded 120 m. Secondary boreholes were drilled where the distance between manholes was less than 50 m. Some boreholes were not completed or were moved, due to:
  - Proposed manhole/sewer was above the existing ground surface (within future fill)
  - Presence of services (BH01 moved)
  - Presence of ponds (BH16 and BH17).
- Boreholes were completed to depths between 6 and 15 m.
- Logged conditions were consistent with PSM 2015a. No anthropogenic inclusions or fill materials were noted to be present.
- Groundwater was observed at 11 locations, as wet material on the auger rods, between 3.5 and 13.5 m. Shallow groundwater (i.e. at approximately 3.5 to 5 m) was present in proximity to Ropes Creek.

## 2.9 Site Inspections

The inspection undertaken on 5 December 2018 was targeted to the rubbish disposal excavation, Old Farmhouse excavation, two small dams and concrete slab in the western portion of the Site, former piggery and traverses of the paddock between the residential house and main northern farm dam (by car).

In summary:

- Conditions were similar to those previously observed.
- The residential house was present but not occupied.
- Remedial excavations were still identifiable.
- The Old Farmhouse was not present.
- The traverses were undertaken to assess for a possible old water pump location. This was not identified. It is noted that long grass negated a detailed inspection of the ground surface.

Inspection was undertaken during the sediment and surface water sampling in March 2019, which primarily focused on the five dams and the pump point. In summary:

- Vegetation (grass and trees) appeared healthy.
- Inspection observations relating to the dams and Ropes Creek are provided in AECOM 2019.
- Two pipes were noted at the eastern end of Dam 5. No obviously visible buildings/sheds/concrete plinths etc associated with the pipes were observed.
- The pumping point was identified. The pump was not present. No obvious indications of contamination were observed.
- No areas of bulk excavation or stockpiling were observed, consistent with previous inspections.

# 3.0 Unexpected Finds

## 3.1 Roles and Responsibilities

Roles and responsibilities for the Site works are expected to include:

**Table 3 Roles & Responsibilities**

| Company | Role / Responsibility |
|---|---|
| Goodman | Owner / Development Manager |
| AT&L | Project Manager / Superintendent |
| Burton | Earthworks Contractor |
| AECOM | Contamination Consultant |
| Ramboll | Auditor (contamination) |

In the event that unexpected finds are encountered:

- The Earthworks Contractor will immediately inform the Superintendent.
- The Superintendent will inform Goodman and AECOM.
- AECOM will inspect the unexpected find (if required) and inform the Auditor.

In the event that any identified unexpected find requires remediation, the following is noted:

- A Remedial Action Plan (RAP) should be prepared by the Contamination Consultant and be approved by the Auditor 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 Planning Secretary, prior to removal from Site.
- 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 available to the Planning Secretary of the Department of Planning upon request.

## 3.2 Areas with Perceived Higher Risk

The presence of unexpected finds cannot be discounted at the Site however, the following areas are considered to pose a higher risk of the presence of ACM:

- Former piggery.
- Two former small buildings to the north east of the residential building.
- Concrete slab in western portion of Site.
- Area of deposited concrete blocks in the gulley / creek line.

These are shown in figures provided in **Appendix A**.

## 3.3 Asbestos Containing Materials

In the event that fragments of ACM are identified during the earthworks, works will cease in that area and AECOM, Goodman and/or the Site Superintendent will be contacted immediately and the Auditor will be notified. 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 Earthworks Contractor (EC) 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 Material 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 kept moist and covered until disposed off-Site.

Validation sampling of the stockpiles to assess suitability for potential re-use is not recommended.

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 $m^2$ 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 $m^2$ 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.

## 3.4 Burial Pits

In the event that burial pits relating to the former grazing activities are exposed, works will cease in that area and AECOM, Goodman and/or the Site Superintendent will be contacted immediately and the Auditor will be notified. 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.

## 3.5 Other Unexpected Finds

If materials are encountered during the earthworks which are significantly different to those described herein (including the identification of drums or underground storage tanks, etc.), works will cease in that area and AECOM, Goodman and the Site Superintendent will be contacted immediately and the Auditor will be notified. 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. AECOM 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 (refer **Section 2.4**) 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 Earthworks Contractor (EC). All materials handled during the earthworks 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 AECOM, the EC appointed environmental consultant (as applicable), the EC 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 ensure that backfilling of excavations and beneficial reuse of material only occurs following the successful validation of the subject materials.

The EC must implement a MTP, to appropriately control and manage the excavation of material at the Site. The purpose of the MTP is to ensure 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 the Site 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 backfilled on the Property 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 earthworks, AECOM will prepare a Validation Report (or reports) in accordance with the requirements of the NSW OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites* 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 earthworks carried out.
- Survey plans outlining the extent and elevations of the earthworks.
- 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 EC's documentation.
- Landfill weighbridge dockets (if required).
- A summary of data reviewed and collected under the FIP.
- Conclusion as to the suitability of the Site for the proposed land use.

# 6.0 References

AECOM. 2007. *Phase I Environmental Site Assessment, Oakdale Concept Plan, Kemps Creek/Horsley Park, NSW*. 13 December 2007 (ref: S4074201_RPTFinalRev02_13Dec07).

AECOM. 2012. *Oakdale Western Precinct, Targeted Phase II Contamination Assessment*. 27 July 2012 (ref: 60268528-RPE-20120727_0).

AECOM. 2016. *Phase I ESA, Oakdale Western North-South Link Road*. 21 June 2016 (ref: 60441214-RPE-20160621_0).

AECOM. 2017. *Oakdale West Estate, Remediation Report*. 22 August 2017 (ref: 60479363-RPT-20170822_0).

AECOM. 2019a. *Oakdale West Estate, Surface Water & Sediment Sampling*. 11 April 2019 (ref: 60599325_RPT_20190411_0).

AECOM. 2019b. *Oakdale West Estate, Status Up-date Report*. 03 May 2019 (ref: 60599325_RPT-SU_20190503_0).

EP Risk. 2019. *Destructive Hazardous Materials ('HAZMAT') Assessment, Oakdale West Estate, Bakers lane, Kemps Creek NSW 2178*. February.

NEPC, 2013. *National Environment Protection (Assessment of Site Contamination) Measure 1999*. National Environment Protection Council. ASC NEPM, May 2013.

NSW EPA. 2017. Contaminated Land Management: *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*. October 2017.

NSW EPA. 2014. *Waste Classification Guidelines, Part 1: Classifying Waste*. November 2014.

NSW OEH. 2011. *Guidelines for Consultants Reporting on Contaminated Sites*. NSW Government Office of Environment & Heritage (OEH).

PSM. 2015a. *Oakdale West Estate, Kemps Creek, Geotechnical Investigation*. November 2015 (ref: PSM1541-123R).

PSM. 2015b. *Oakdale West Precinct, Soil Salinity and Aggressivity Investigation*. November 2015 (ref: PSM1541-124R).

PSM. 2018a. *Western North South Link Road, Additional Geotechnical Investigation – Bridge*. 10 August 2018.

PSM. 2018b. *Oakdale West Estate, Proposed Sewer Alignment, Geotechnical and Salinity Investigation*. October 2018 (ref: PSM1541-370L).

SafeWork NSW. 2016a. Code of Practice*: How to Manage and Control Asbestos in the Workplace*.

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.

WorkCover NSW. 2014. Managing asbestos in or on soil. March.

# Appendix A

Figures

G:\ENV\GIS\Projects\60516\60599325 Goodman Oakdale West Estate\FIGURES\60599325 Fx Targeted Phase II Sample Locations 18 04 2019

AECOM Imagine it. Delivered.

**Source**: LTS Lockley Registered Surveyors NSW (50034 011 Site Audit.dwg (26/02/2019)

# TARGETED PHASE II SAMPLE LOCATIONS

Unexpected Finds Protocol

Oakdale West Estate, New South Wales

FIGURE 1

G:\ENV\GIS\Projects\605\60599325 Goodman Oakdale West Estate\FIGURES\605599325 Fx Targeted Phase II Sample Locations 23 04 2019

AECOM Imagine it. Delivered.

**Source**: LTS Lockley Registered Surveyors NSW (50034 011 Site Audit.dwg (26/02/2019)

# VALIDATION SAMPLE LOCATIONS

Unexpected Finds Protocol

Oakdale West Estate, New South Wales

FIGURE 2

G:\Jobs\S4\S40700_S40799\S40742\S404201 F2.cdr 13 12 2007 TO www.hlaensr.aecom.com

| | |
|---|---|
| 1 | Former building |
| 2 | Residence |
| 3 | Old farmhouse |
| 4 | Former buildings |
| 5 | Waste materials |
| 6 | Well |
| 7 | Rubbish scrape |
| 8 | Former (possible) piggery |
| 9 | Soil stockpiles |
| 10 | Dam with concrete blocks |
| 11 | Well |
| 12 | Settlement ponds |
| 13 | Cattle yards |
| A | Visual bunds |

ENSR | AECOM

Not to Scale

Approximate site boundary

Approximate areas of enviro-soil application

12 Plate number and direction of view

**Figure 2** | **Site Plan (Aerial Photograph - 2005)**

**Goodman International Limited**

*Phase I Environmental Site Assessment*

Oakdake Concept Plan

Concrete blocks downstream of former rubbish disposal area.

G:\Jobs\S4\S40700_S40799\S40742\S404201 F4.cdr 13 12 2007 TO www.hlaensr.aecom.com

ENSR | AECOM

Not to Scale

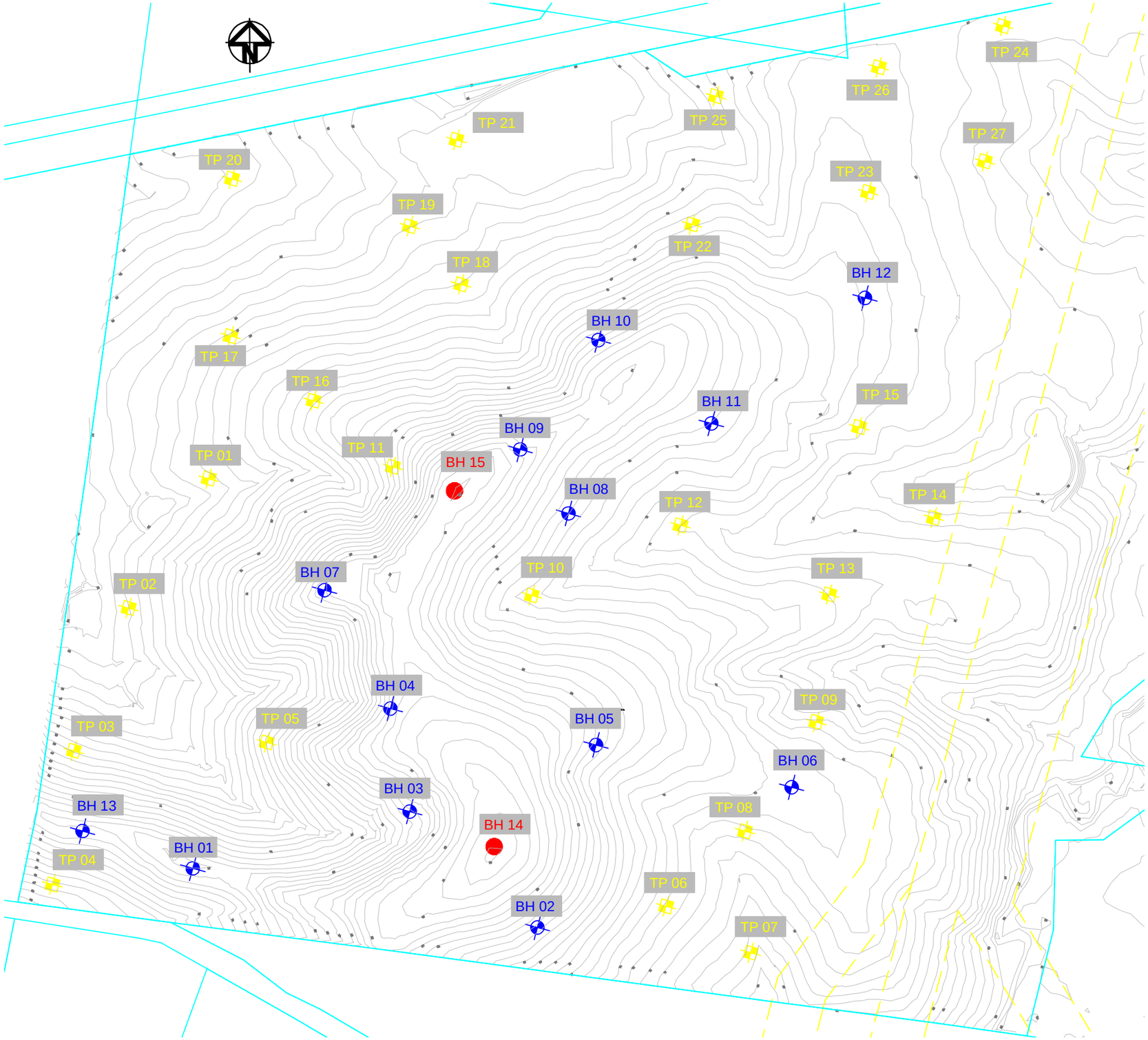
Approximate site boundary

**Figure 4** | **Aerial Photograph - 1956**

**Goodman International Limited**

*Phase I Environmental Site Assessment*

Oakdake Concept Plan




0 100 200

Scale (m) 1:5000 @ A3

NOTE:

1. PSM geotechnical investigation undertaken between 14 and 20 October 2015.

2. Test locations were surveyed by a hand-held GPS unit with a vertical accuracy of ± 5 m.

3. The base plan was taken from "SKC051 - OPTIMISED MASTER PLAN CUT TO FILL PLAN" dated 14 September 2015

BH 02 - PSM augured borehole locations

TP 02 - PSM augured borehole locations

BH 15 - PSM cored borehole locations

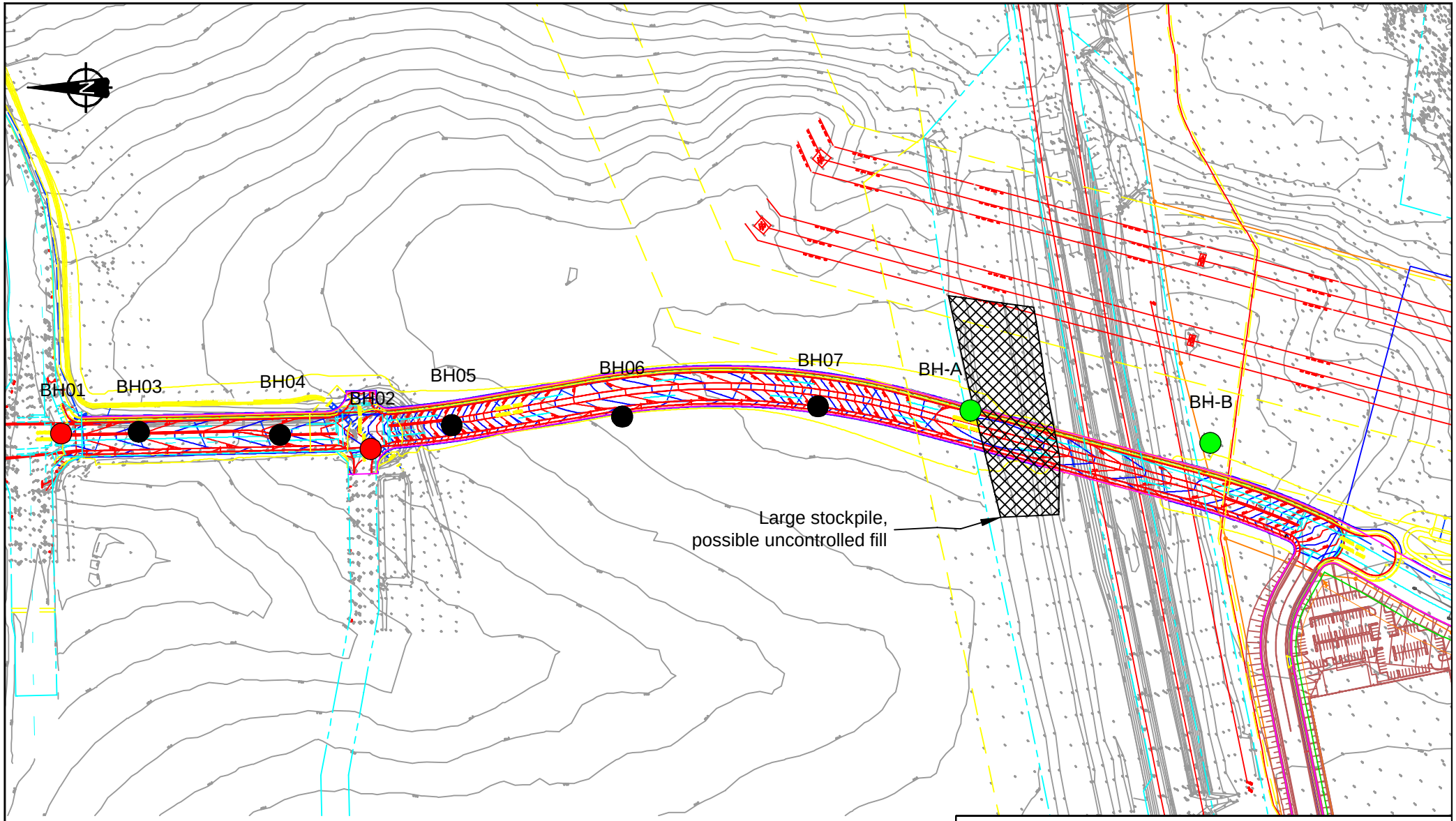
PSM

**Pells Sullivan Meynink**

Goodman Pty Ltd
Oakdale West Estate
Kemps Creek, NSW

GEOTECHNICAL INVESTIGATION
LOCALITY PLAN

| PSM1541-123R | FIGURE 1 |
|---|---|




LEGEND

- PSM existing pavement borehole
- PSM new pavement borehole
- PSM cored corehole

0 50 100 150 200

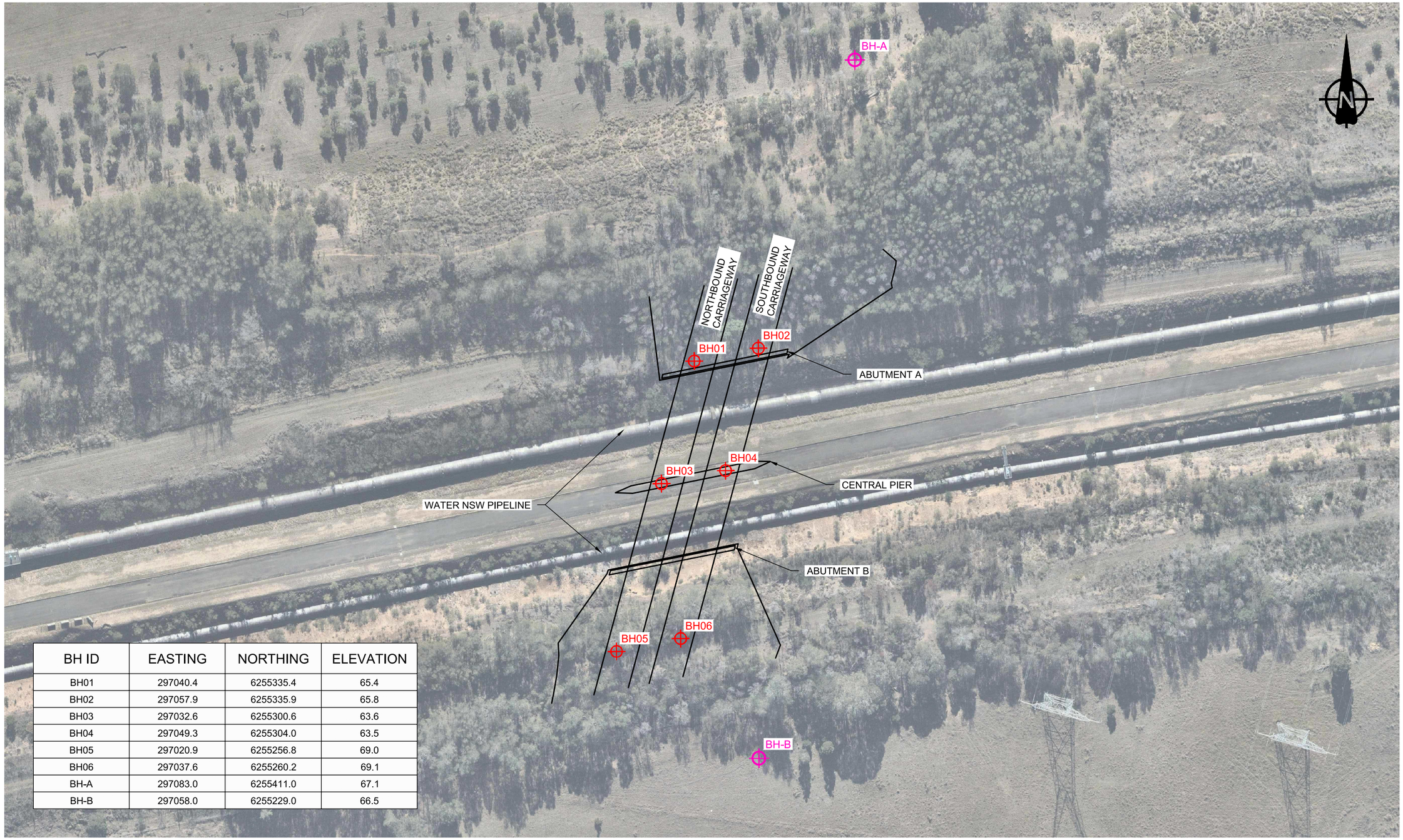
Scale (m)

**Pells Sullivan Meynink**

Goodman Property Services (Aust) Pty Ltd
Western North South Link Road
Erskine Park, NSW

LOCALITY PLAN

| Figure 1 | PSM1541-140R |
|---|---|




| BH ID | EASTING | NORTHING | ELEVATION |
|---|---|---|---|
| BH01 | 297040.4 | 6255335.4 | 65.4 |
| BH02 | 297057.9 | 6255335.9 | 65.8 |
| BH03 | 297032.6 | 6255300.6 | 63.6 |
| BH04 | 297049.3 | 6255304.0 | 63.5 |
| BH05 | 297020.9 | 6255256.8 | 69.0 |
| BH06 | 297037.6 | 6255260.2 | 69.1 |
| BH-A | 297083.0 | 6255411.0 | 67.1 |
| BH-B | 297058.0 | 6255229.0 | 66.5 |

NOTES:

1. BRIDGE LAYOUT FROM AT&L DRAWING "*WNSLR BOREHOLE TESTING LOCATIONS FOR BRIDGE PIERS PLAN*"
2. BOREHOLE ELEVATIONS ESTIMATED FROM CONTOURS ON AT&L DRAWING (SKC121)
3. NEARMAP IMAGERY DATED 22 JUNE 2018

PSM BH LOCATIONS (CURRENT INVESTIGATION)

PREVIOUS PSM BH LOCATIONS (REFER PSM1541-140R)

0 10 20 30 40 50

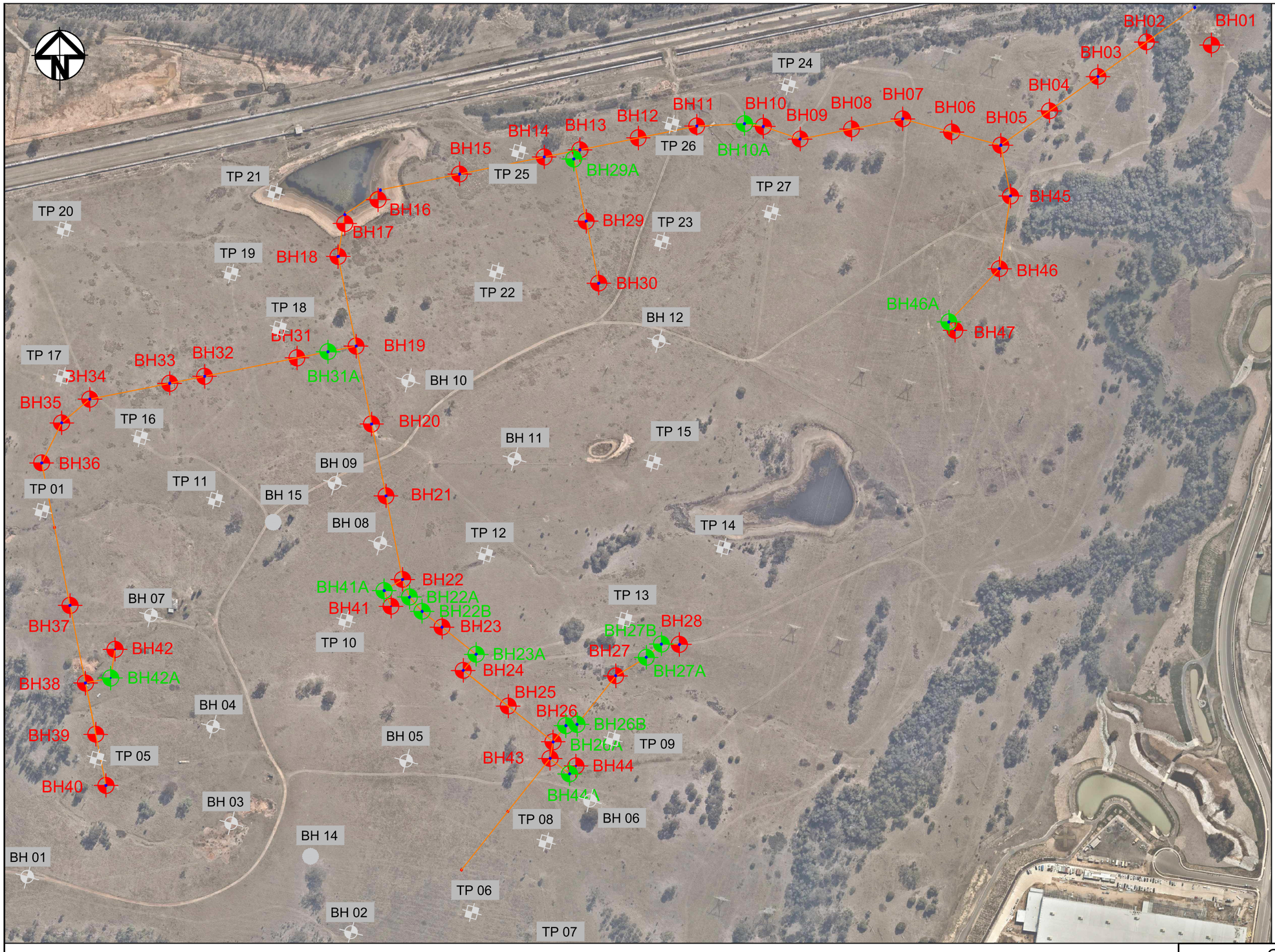
SCALE: 1:1000 @A3

**Pells Sullivan Meynink**

AT&L
WESTERN NORTH-SOUTH LINK ROAD
EASTERN CREEK

BOREHOLE LOCALITY PLAN

PSM1541-367R | FIGURE 1




LEGEND:

- Primary borehole location
- Secondary borehole location
- Sewer manhole location
- Sewer manhole location - above existing ground surface
- Previous PSM test pits
- Previous PSM augered boreholes
- Previous PSM cored boreholes

NOTES:

1. Primary boreholes are located at sewer manholes or at interim locations where manhole distance is greater than 120 m.
2. Secondary boreholes are located between manholes where distance is less than 50 m.
3. No boreholes were drilled at manhole locations where sewer level will be above existing ground surface (manholes 3-7, 6-2 and 6-3).
4. For details of previous PSM investigation, refer to PSM1541-123R.

0 50 100 150 200
Scale (m)

**Pells Sullivan Meynink**

Goodman Property Pty Ltd
Oakdale West Estate Proposed Sewer
Kemps Creek, NSW

LOCALITY PLAN

PSM1541-370L | Figure 1

# 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**

| Material type | Backfill quantity | Source location | Validated |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

**MATERIALS OFF-SITE TRANSFER FORM**

| Source Location/ Stockpile No. | Material Description | Volume ($m^3$) or Tons | Waste Classification received (date) | Landfill Disposal Dockets |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

# APPENDIX K

## Flora and Fauna Management Plan

# Oakdale West Estate

## SSD 22191322 (Stage 5) Building 4E
## Flora and Fauna Management Plan

Prepared for

Goodman Property Services (Aust.) Pty Ltd

écologique | environmental consulting

# Oakdale West Estate SSD 22191322 (Stage 5) Building 4E – Flora and Fauna Management Plan

prepared for

Goodman Property Services (Aust.) Pty Ltd

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## Document control

| Prepared by | | |
|---|---|---|
| Kat Duchatel<br>BSc. Env. CEnvP EIANZ #691<br>BAM Accreditation no.BAAS17054 | | 20/10/2021 |

| Revision | Date | Description | Issued to |
|---|---|---|---|
| 01 | 07/07/2021 | Flora and Fauna Management Plan (FFMP) | Goodman |
| 02 | 20/10/2021 | FFMP amended to address revised SSD conditions | Goodman |
| | | | |
| | | | |

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0437 821 110 | kat@ecologique.com.au

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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 deterrrent fencing; and
- Dam decommissioning.

The current development precincts of the estate do not contain any native vegetation or fauna habitat. However, subsequent staged development must ensure that potential indirect impacts, on retained native vegetation and downstream aquatic environments, is prevented.

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 4E within Precinct 4 of the estate, which is identified as SSD 22191322 - Stage 5.

Relevant SSD 22191322 consent conditions are as follows:

- Part C (Environmental Management, Reporting and Auditing), which require that as part of the CEMP, the Applicant must include (d) measures to protect retained native vegetation adjacent to the site (see Condition B36).
- Condition B36: The Applicant must implement measures to protect retained native vegetation adjacent to the site during construction and operation.

## 1.2 SSD7348 Consent Conditions

The estate wide FFMP (v.7, écologique, 11/03/2020) addressed the following SSD 7348 consent conditions:

**Table 1-1.Consent conditions relevant to the estate wide SSD7348 FFMP and biodiversity mitigation measures**

| Condition | Mitigation and management measures | Reference/Details |
|---|---|---|
| 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:<br>(a) Be prepared by a suitably qualified and experienced person(s); | Completed (Oakdale West FFMP v7 (écologique, 11/03/2020) |

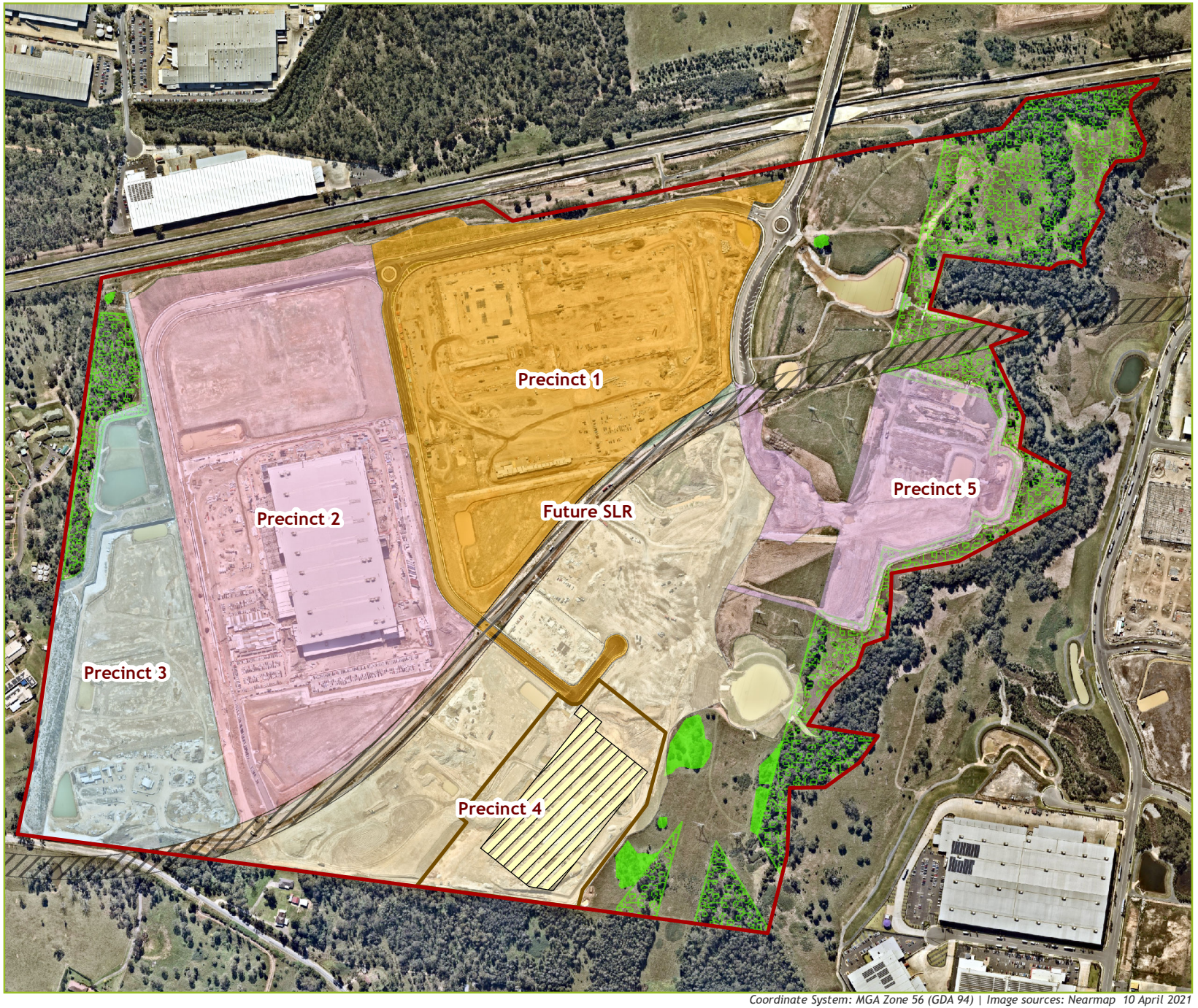
| Condition | Mitigation and management measures | Reference/Details |
|---|---|---|
| | (b) Describe procedures to manage impacts on biodiversity values during earthworks, clearing and dam decommissioning;<br>(c) Include procedures for clearing marking and protecting the areas of vegetation to be retained 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;<br>(d) Detail the specific erosion and sediment controls to protect the retained vegetation. | |
| D89 | The Applicant must:<br>(a) Not commence bulk earthworks until the FFMP required by Condition D88 is approved by the Planning Secretary; and<br>(b) Implement the most recent version of the FFMP approved by the Planning Secretary for the duration of bulk earthworks and construction. | The Oakdale West FFMP v7 (écologique, 11/03/2020) was approved by the Planning Secretary and was implemented compliantly. |
| D90. Offsets for Stage 1 | 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. | Completed |
| D91. Vegetation Management Plan | 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*. | Not relevant to this FFMP<br>Addressed in the Oakdale West VMP (écologique, 02/10/2019), which was amended under SSD 7348 MOD 6 and is currently being implemented. |
| D93. Offsets for the WNSLR | Within 12 months of the date of this development consent, or as otherwise agreed with the Planning Secretary, the Applicant must:<br>(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 | Not relevant to this FFMP.<br>Addressed in the WNSLR OSL Vegetation Management Plan prepared for SSD 7348 MOD 5 (écologique, 01/07/2020) and iscurrently being implemented. |

| Condition | Mitigation and management measures | Reference/Details |
|---|---|---|
| | (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). | |
| 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 | 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.<br>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. | Completed |
| D115. Pests, Vermin and Noxious Weed Management | The Applicant must:<br>(a) Implement suitable measures to manage pests, vermin and declared noxious weeds on the Site; and<br>(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.<br>Note: For the purposes of this condition, noxious weeds are those species subject to an order declared under the *Biosecurity Act 2015* (NSW). | An ongoing requirement<br>Refer Section 4 and Table 4-1 (Item no. FF5 and FF6) of this FFMP. |

## 1.3 Subject area

Within the context of the estate, Building 4E is located along the southern boundary of Oakdale West and is bounded by the Transgrid easement to the east and adjacent to other development areas within Precinct 4 (as shown in Figure 1-1).

Substantial cut and fill earthworks have been undertaken across the wider estate area in compliance with the wider estate's FFMP v7 (écologique, 2020). No native vegetation or fauna habitat features have been retained within the Lot 4E (the subject area).




Coordinate System: MGA Zone 56 (GDA 94) | Image sources: Nearmap 10 April 2021

# Oakdale West Estate

## Figure 1-1. SSD 22191322 Stage 5 site context

**Legend**

- Oakdale West Estate
- LOT 4E
- Building 4E
- Precinct 1
- Precinct 2
- Precinct 3
- Precinct 4
- Precinct 5
- Future SLR
- Biodiversity Management Area
- Other retained vegetation

N

0 55 110 220 330 440

m

# 2 Site Flora and Fauna

## 2.1 Flora

Retained native vegetation within the 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).

Relevant to the subject site, proximal remnant native vegetation is shown in Figure 2-1 and occurs within the following areas:

- Neighbouring land to the south of the estate's boundary,
- Retained patches of native vegetation located in the adjacent electricity transmission easement, and
- A biodiversity management area (BMA), which is isolated from larger BMA locations by the transmission easement.

Native plant community types (PCTs) occurring within these areas are listed as Critically Endangered Ecological Communities (CEECs) under both the NSW *Biodiversity Conservation Act 2016* (BC Act) and the Australian *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and 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

## 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 Estate's various BMAs along with peripheral and internal 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 snaked 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 western BMA area; and
- Placement of large woody debris (additional snake refuge habitat) located within the western BMA area.
- Additional large woody debris has been installed in the main eastern BMA area.

Precinct 4 is significantly distanced from the Emmaus Catholic College, which is located adjacent to the Estate's western boundary and further isolated by way of Estate roads and the future Southern Link Road.

Regardless, buildings within all Precincts are required to install controls to minimise populations of vermin, such as *Rattus rattus* (the black rat) and *Mus musculus* (house mouse), which are common snake prey (refer Section 4).

### 2.2.3 Aquatic fauna

Four farm dams were decommissioned during the earthworks for the Estate's 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 4E.

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 the construction detention basin located within Lot 4E is 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 all areas of the Estate.

*Coordinate System: MGA Zone 56 (GDA 2020) | Image sources: Nearmap 5 June 2021*

**Legend**

- Oakdale West Estate
- LOT 4E
- Building 4E
- Biodiversity Management Area
- Other retained vegetation

N

0 15 30 60 90 120

m

## Oakdale West Estate - Building 4E

Figure 2-1. Proximal biodiversity values

# 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.

As all approved clearing of native vegetation has been completed under SSD 7348, no further clearing of any native vegetation is permitted without first seeking additional approval.

### 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 4 and the wider estate area have been substantially modified, the potential to impact on retained native vegetation and/or 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 |
|---|---|---|---|
| [PROTECTION OF NATIVE VEGETATION] | | | |
| FF1 | • All contractors are to be made aware during site induction of the environmental sensitivity of all retained native vegetation, which are critically endangered ecological communityies under both State and Federal legislation.<br>• Site induction is to clearly describe the following:<br>○ Legal duty of care to ensure that no deliberate or inadvertent clearing or damage resulting from the activities being undertaken; and<br>○ The penalties that apply under both State and Federal legislation for any deliberate or inadvertent clearing or damage resulting from the activities being undertaken; and<br>○ The stop work procedure required should any damage occur to native vegetation (refer Section 5). | Management / Contractors | Pre-construction |
| FF2 | • Retained vegetation is to be appropriately demarcated with readily visible signage to plant operations that it is a 'no go' construction zone;<br>• Erosion and sediment controls must be installed to protect the retained vegetation from potential sediment laden runoff during construction and must stay in place until the embankment is adequately stabilised; and<br>• All control materials are collected from the site once site stability is achieved. | Management / Contractors | Pre-construction |

| ID | Measure/Requirement | Responsibility | Timing / Frequency |
|---|---|---|---|
| [WILDLIFE PROTECTION] | | | |
| FF3 | • All contractors are to be made aware through the site induction process of both:<br>  ○ The potential to encounter wildlife; and<br>  ○ The protocols that must be implemented in the event wildlife is encountered.<br>• Vehicle and mobile plant operators shall remain vigilant when entering and exiting the works area, particularly at dusk and dawn;<br>• 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; and<br>• All on site personnel including contractors are to report any injured or near miss incidents with wildlife. | Management / Contractors | Ongoing throughout construction |
| FF4 | • 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] | | | |
| FF5 | • Offsite discharge shall be managed in strict accordance with Erosion & Sediment Control Plans prepared for Lot 4E;<br>• A spill kit should be provided in an easily accessible location in the event that fuel or other contaminant spills occur.<br>• The contractor must continually monitor works within this area to ensure that erosion and sediment controls are functioning optimally and compliance with site induction requirements are being adhered to.<br>Refer to FF2 for additional related erosion and sediment control requirements, as relevant to protection of retained native vegetation. | Management / Contractors | Throughout construction |

| ID | Measure/Requirement | Responsibility | Timing / Frequency |
|---|---|---|---|
| [WEED, PEST SPECIES AND PATHOGEN MANAGEMENT] | | | |
| FF6 | The following hygiene procedures are to be implemented to avoid the introduction and/or spread of soil borne pathogens and weeds:<br>• Minimise work during wet/rainy periods;<br>• Vehicles, plant and machinery are to be clean and free of soil on arrival to the works area;<br>• 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;<br>• Mud spilt on roads to be immediately removed by a road sweeper. | Management / Contractors / Employees | Ongoing throughout construction |
| FF7 | Future tenants are to install rodent (electronic or sonar) repellents to minimise prey for snakes | Management / Future tenants | Post construction, operation |
| [WASTE MANAGEMENT] | | | |
| FF8 | Waste management shall ensure the following:<br>• 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;<br>• Lids on skips or bins are to be kept closed at all times; and<br>• Employ adequate environmental management controls to prevent off-site migration of waste materials and contamination from the waste.<br>For example, consideration of slope, drainage, proximity relative to waterways, stormwater outlets and vegetation | Management / Contractors / Future tenants | Ongoing throughout construction and operation |

# 5 Stop Works Procedure

## 5.1 Native vegetation

The stop work procedure in the event that required work activities are likely to result in damage to native vegetation, is shown in the following flow diagram.

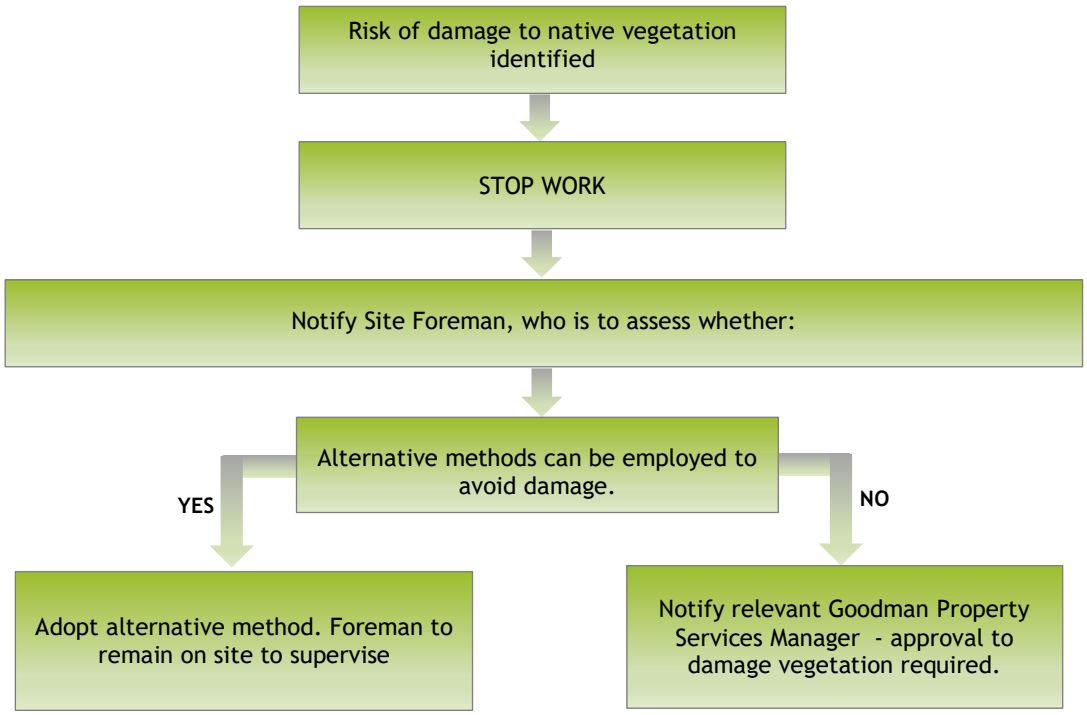



**Figure 5-1. Stop work procedure**

## 5.2 Wildlife

All personnel working on the Project will need to be inducted on the potential to encounter wildlife within the wider estate area as well as their works area. The stop work procedure in the event any fauna unexpectedly occurs is shown in the following flow diagram.

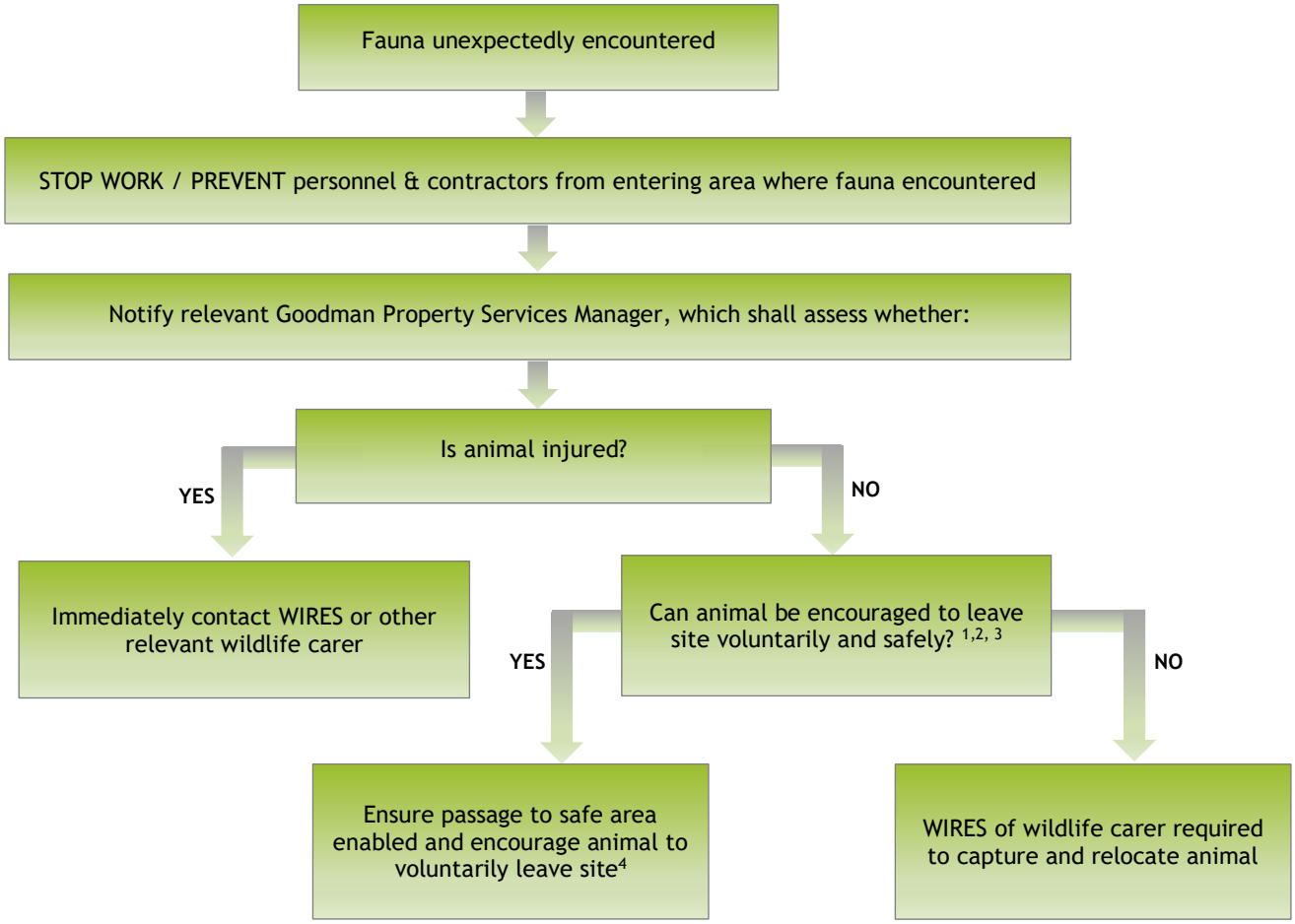



**Figure 5-2. Stop work procedure**

**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).

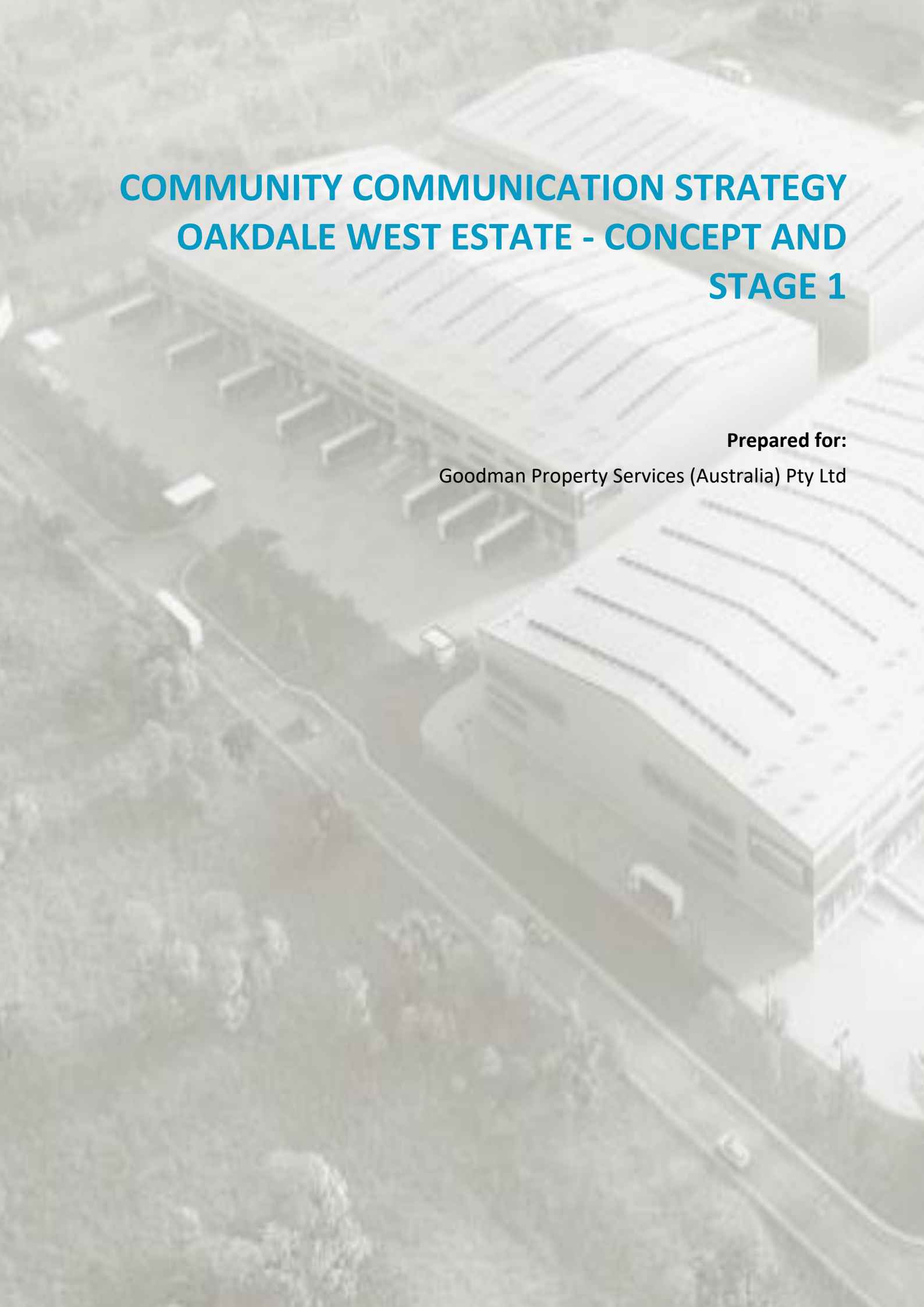
[2] Nocturnal species (e.g. any small marsupials such as possums) should be left alone until wildlife carer is able to capture and relocate animal at dusk.

[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.

# APPENDIX L

## Community Communication Strategy



# COMMUNITY COMMUNICATION STRATEGY OAKDALE WEST ESTATE - CONCEPT AND STAGE 1

**Prepared for:**

Goodman Property Services (Australia) Pty Ltd

# 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 (Australia) 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 |
|---|---|---|---|---|
| 660.20005.00000-R01-v6.0 | 11 November 2019 | Kate McKinnon | Samantha Hayes | Dan Thompson |
| 660.20005.00000-R01-v5.0 | 30 October 2019 | Kate McKinnon | Samantha Hayes | Dan Thompson |
| 660.20005.00000-R01-v4.0 | 20 September 2019 | Kate McKinnon | Samantha Hayes | Dan Thompson |
| 660.20005.00000-R01-v3.0 | 1 July 2019 | Kate McKinnon | Samantha Hayes | Dan Thompson |
| 660.20005.00000-R01-v2.0 | 21 June 2019 | Kate McKinnon | Samantha Hayes | Dan Thompson |

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Appendix B Key Stakeholder Contact Details
Appendix C Registered Aboriginal Parties
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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 been prepared in accordance with Condition C19 and supporting conditions within the Development Consent, 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, along with changes in stakeholder situation that impacts on stakeholder interests, with these articulated through the feedback mechanisms.

SSD 7348 contained the following conditions of relevance to this CCS used to benchmark the contents:

- C19 & C20 – Community Communication Strategy
- D37 – Landscaping
- D71 – Hours of Work
- D117 – Ongoing Community Engagement
- D118 - Management Plan Requirements
- D127 & D128 – Environmental Representative
- 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 | 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:<br>a) assign a central contact person to keep the nearby sensitive receivers regularly informed throughout the Development;<br>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;<br>c) detail a procedure for consulting with nearby sensitive receivers to schedule high noise generating works, vibration intensive activities or manage traffic disruptions;<br>d) include contact details for key community groups, relevant regulatory authorities, Registered Aboriginal Parties and other interested stakeholders; and<br>e) include a complaints procedure for recording, responding to and managing complaints, including:<br>i. email, contact telephone number and postal addresses for receiving complaints;<br>ii. advertising the contact details for complaints before and during operation, via the local newspaper and through onsite signage;<br>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<br>iv. procedures for the resolution of any disputes that may arise during the course of the Development. | This CCS Document<br>a) Section 4<br>b) Section 5<br>c) Sections 5 & 6<br>d) Section 2.2<br>e) Section 5.4 |
| C20 – Community Communication Strategy | The Applicant must:<br>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<br>b) implement the CCS for each stage of the Concept Proposal and following the completion of operation of the Development. | a) Section 1.2<br>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<br>Appendix A |

| Condition Number | Condition Detail | Report Reference |
|---|---|---|
| D71 – Hours of Work | Works outside of the hours identified in Condition D70 may be undertaken in the following circumstances:<br>(a) works that are inaudible at the nearest sensitive receivers;<br>(b) works agreed to in writing by the Planning Secretary;<br>(c) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or<br>(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 | Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:<br>a) details of:<br>i. the relevant statutory requirements (including any relevant approval, licence or lease conditions);<br>ii. any relevant limits or performance measures and criteria; and<br>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;<br>b) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;<br>c) a program to monitor and report on the:<br>i. impacts and environmental performance of Stage 1; and<br>ii. effectiveness of the management measures set out pursuant to paragraph (b) above;<br>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;<br>e) a program to investigate and implement ways to improve the environmental performance of Stage 1 over time;<br>f) a protocol for managing and reporting any:<br>i. incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria);<br>ii. complaint;<br>iii. failure to comply with statutory requirements; and<br>g) a protocol for periodic review of the plan.<br>Note: The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans. | a) Refer to Project CEMPs (SLR, 2019a & SLR 2019b)<br>b) Sections 3.2, 5.3 and 5.4<br>c) Section 6<br>d) Section 5.4.4<br>e) Section 6<br>f) Section 5.4<br>g) Section 6 |

| Condition Number | Condition Detail | Report Reference |
|---|---|---|
| D127 - Environmental Representative | For the duration of construction of Stage 1, or as agreed with the Planning Secretary, the approved ER must:<br>(a) receive and respond to communication from the Planning Secretary in relation to the environmental performance of Stage 1;<br>(b) consider and inform the Planning Secretary on matters specified in the terms of this consent;<br>(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;<br>(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:<br>(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<br>(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);<br>(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;<br>(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;<br>(g) as may be requested by the Planning Secretary, assist the Department in the resolution of community complaints;<br>(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 | 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:<br>(a) the complaints register; and<br>(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 | Within three months of:<br>(a) the submission of a Compliance Report under Condition D141;<br>(b) the submission of an Environmental Representative Monthly Report under Condition D127;<br>(c) the submission of an incident report under Condition D135;<br>(d) the approval of any modification of the conditions of this consent; or<br>(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. | Section 6.2 |
| D143 – Access to Information | At least 48 hours before the commencement of construction until the completion of all works under this consent, the Applicant must:<br>a) make the following information and documents (as they are obtained or approved) publicly available on its website:<br>i. the documents referred to in Condition D2 of this consent;<br>ii. all current statutory approvals for the Development;<br>iii. all approved strategies, plans and programs required under the conditions of this consent;<br>iv. the proposed staging plans for the Development if the construction, operation or decommissioning of the Development is to be staged;<br>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;<br>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;<br>vii. a summary of the current stage and progress of the Development;<br>viii. contact details to enquire about the Development or to make a complaint;<br>ix. a complaint register, updated monthly;<br>x. the Compliance Report of the Development;<br>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;<br>xii. any other matter required by the Planning Secretary; and<br>b) keep such information up to date, to the satisfaction of the Planning Secretary. | 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 | Communications and Community Liaison Representative<br>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.<br>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.<br>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:<br>emerging stakeholders;<br>planned construction activities;<br>planned traffic arrangements, including any temporary traffic switches;<br>current landowner discussions with members of your staff;<br>planned community and stakeholder consultations;<br>complaints or enquiries received;<br>duties and accountabilities of your staff; and,<br>commitments to stakeholders made by you or Goodman.<br>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.<br>The CCLR is to facilitate meetings, forums and arranging interviews to address concerns from community.<br>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.<br>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.<br>The CCLR must be available for contact by local residents, key stakeholders and community representatives to answer queries and provide more information or feedback. | Section 4 |

| Specification Number | Relevant Specification Detail | Report Reference |
|---|---|---|
| 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.<br>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. | Refer to Project CEMPs (SLR, 2019a & SLR 2019b)<br><br>Section 5.3 |
| 3.7.1 - Liaison with EPA and/ or other Government Agencies | 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.<br>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. | Section 4 |
| 3.7.2 - Community Liaison and/or Notification<br><br>3.7.2.1 New or Changed Construction Activities | 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.<br>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.<br>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. | Section 5.3.2 |
| 3.7.2.2 - Extended Working Hours – No Environmental Protection Licence | 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.<br><br>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.<br><br>Refer to Practice Note vii of RMS publication “Environmental Noise Management Manual” when preparing the letter and notifying the affected residents. | Section 5.3.2 |

| Specification Number | Relevant Specification Detail | Report Reference |
|---|---|---|
| 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:<br>a) an advertised 24 hour contact telephone number listed with a telephone company and include a contact name;<br>b) a postal address to which written complaints and enquiries can be sent;<br>c) an email address to which electronic complaints and enquiries can be sent;<br>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;<br>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;<br>f) a mediation system for complaints unresolved through the above system.<br>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.<br>Keep a register of all complaints or enquiries, which must include the following details:<br>(a) date and time of complaint or enquiry;<br>(b) method by which the complaint or enquiry was made (telephone, letter, meeting, etc);<br>(c) name, address, contact telephone number of complainant (if no such details were provided, a note to that effect);<br>(d) nature of complaint or enquiry;<br>(e) action taken in response including follow up contact with the complainant.;<br>(f) any monitoring to confirm that the complaint or enquiry has been satisfactorily resolved;<br>(g) if no action was taken, the reasons why no action was taken by you. | Section 5.4 |

<table>
<tr><th>Specification Number</th><th>Relevant Specification Detail</th><th>Report Reference</th></tr>
<tr><td>3.7.4 - Notification to communities and stakeholders</td><td>Notify Goodman in advance of the following construction activities:
<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>
<tr><td>Impacts on pedestrians and/or bicyclists</td><td>At least 4 weeks</td></tr>
<tr><td>Commencement, rescheduling or completion of key construction activities</td><td>At least 4 weeks for commencement and completion, 24 hours’ notice for rescheduling</td></tr>
<tr><td>Commencement or rescheduling of property adjustment work</td><td>At least 2 weeks (4 weeks for businesses)</td></tr>
<tr><td>Alteration to property access arrangements</td><td>At least 4 weeks</td></tr>
<tr><td>Other activities not identified above which may impact on the community stakeholders</td><td>At least 24 hours</td></tr>
<tr><td>Any form of community protest on site</td><td>Immediately</td></tr>
</table>
In your communications with the community, you must comply with the requirements of the Privacy and Personal Information Protection Act 1998 (NSW).<br>
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:
<table>
<tr><th>Notification Type</th><th>Submission to Goodman</th><th>Distribution</th></tr>
<tr><td>Out of Hours Works / Night Works<br>(refer to clause 3.7.2.3)</td><td>Draft a notification letter at least 24 hours prior to the works being carried out</td><td>2 weeks where possible, a minimum of 1 week prior to the works being carried out</td></tr>
<tr><td>Traffic Conditions</td><td>Draft letter at least 4 weeks prior to the traffic conditions changing</td><td>At least 5 business days prior to the traffic conditions changing if deemed necessary by Goodman</td></tr>
<tr><td>Individual private properties regarding property adjustments or changes to access (refer to clause 3.7.2.1)</td><td>Draft letter at least 4 weeks prior to the works being carried out</td><td>At least 2 weeks prior to the works being carried out of access changes</td></tr>
</table></td><td>Sections 5.3.2</td></tr>
</table>

| Specification Number | Relevant Specification Detail | | | Report Reference |
|---|---|---|---|---|
| | 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 (refer to clause 3.7.2.1) | 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 | |

## 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 and 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

The project as described by the SSD 7348 consent comprises:

*The Staged Development Application for the Oakdale West Estate, comprising:*

*A Concept Proposal including:*

- *Concept layout of 22 warehouse buildings providing 453,000 square metres of gross floor area and ancillary offices, built over five development stages*
- *Concept layout of development lots, internal roads, drainage, landscaping and biodiversity offsets*
- *Development controls*

*A Stage 1 Development Application including:*

- *Bulk earthworks across all five stages including retaining walls and noise walls*
- *Construction and operation of three warehouse buildings in Precinct 1 (1A, 1B and 1C) providing 111,000 square metres of gross floor area and ancillary offices*
- *West-North-South Link Road and associated subdivision*
- *Estate roads 1, 2, 6 and the eastern part of road 7*
- *Service infrastructure to Precinct 1, including drainage, power, sewer, water and telecommunications*
- *Landscaping of Stage 1, the western site boundary, West-North-South Link Road, estate roads 1, 2, 6 and the eastern part of road 7 and detention basins*
- *Subdivision of Stage 1 lots and road infrastructure*
- *Stormwater drainage infrastructure for Lots 2A and 2B.*

Further project details are located in the Environmental Impact Statement, Oakdale West Estate, State Significant Development Application (EIS) (Urbis, 2017).

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. Note, the figure is orientated with south upwards to allow the inclusion of a wider extent of the road network.

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 School, 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 3** below.

**Table 3 Key Stakeholders**

| Stakeholder Agency/Authority | Interests/Issues |
|---|---|
| Directly affected stakeholders | Adjacent and directly affected properties, businesses and schools including:<br>• Residential property – 20 Aldington Road<br>• Emmaus Catholic College<br>• Trinity Catholic Primary School<br>• Emmaus Retirement Village<br>• Mamre Anglican School<br>• Catholic Healthcare Emmaus Village<br>• Little Smarties Early Learning Centre |
| Local Councils | • Penrith City Council |
| State Government Departments and Offices | • NSW EPA<br>• NSW Heritage Office<br>• NSW Biodiversity and Conservation Division, Department of Planning Industry and Environment<br>• NSW Department of Industry<br>• Roads and Maritime Service<br>• Transport for NSW<br>• NSW Rural Fire Service<br>• WaterNSW<br>• National Resources Asset Regulator |
| Utility and Service Providers | • TransGrid<br>• Endeavour Energy<br>• WaterNSW<br>• Sydney Water<br>• Jemena<br>• NBN<br>• Telstra |
| Other Interested Parties | • Registered Aboriginal Parties |

Contact details for the key stakeholders listed in **Table 3** above are included in **Appendix B & C**.

### 2.2.1 Properties receiving adjustments or architectural treatment and mitigating works

It is proposed to provide window glazing treatments to assist in acoustic attenuation to dwellings located at 20 Aldington Road, Kemps Creek.

A landscape bund is to be formed along the Western boundary of the development site to create an acoustic barrier to properties to the West. The location of the landscape bund is shown at **Appendix A**. The landscape bund shall be completed within 6 months of the commencement of any construction work, including bulk earthworks.

# 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 4** 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 4 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. | 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.<br>Up to date information on current and proposed works will be accessible to stakeholders and the wider public on the project web page.<br>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.<br>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. |
| Stormwater, Sediment Control, Erosion, Water Quality | High rainfall events could result in localised flooding.<br>Construction could result in impacts to local water quality, associated with sediment laden runoff. | 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.<br>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. |
| 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. | Sensitive receivers will be notified prior to actions likely to cause traffic disruption in accordance with Section 5.4.2 of this strategy.<br>The CEMP and supporting Construction Traffic Management Plan and Fill Importation Plan identify specific mechanisms to manage and mitigate these impacts. |

| 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.<br>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.<br>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. | 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.<br>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 | 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.<br>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. | 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.<br>Contact details including the hotline details will be provided on site, the project web page and in all information issued. |
| Emergency Event | 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. | 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. |

# 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 5** 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 5 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 quarterly, 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.<br>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. |
| 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.<br>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. |
| 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.<br>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. |

| Tool/ Technique | Description | Person Responsible | Audience | Frequency/timing | Specifications |
|---|---|---|---|---|---|
| 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.<br>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 |
| 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. |

| Tool/ Technique | Description | Person Responsible | Audience | Frequency/timing | Specifications |
|---|---|---|---|---|---|
| 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.<br>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 6 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 7 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 Primary School and High School and Retirement Village on Bakers Lane.

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 8** below:

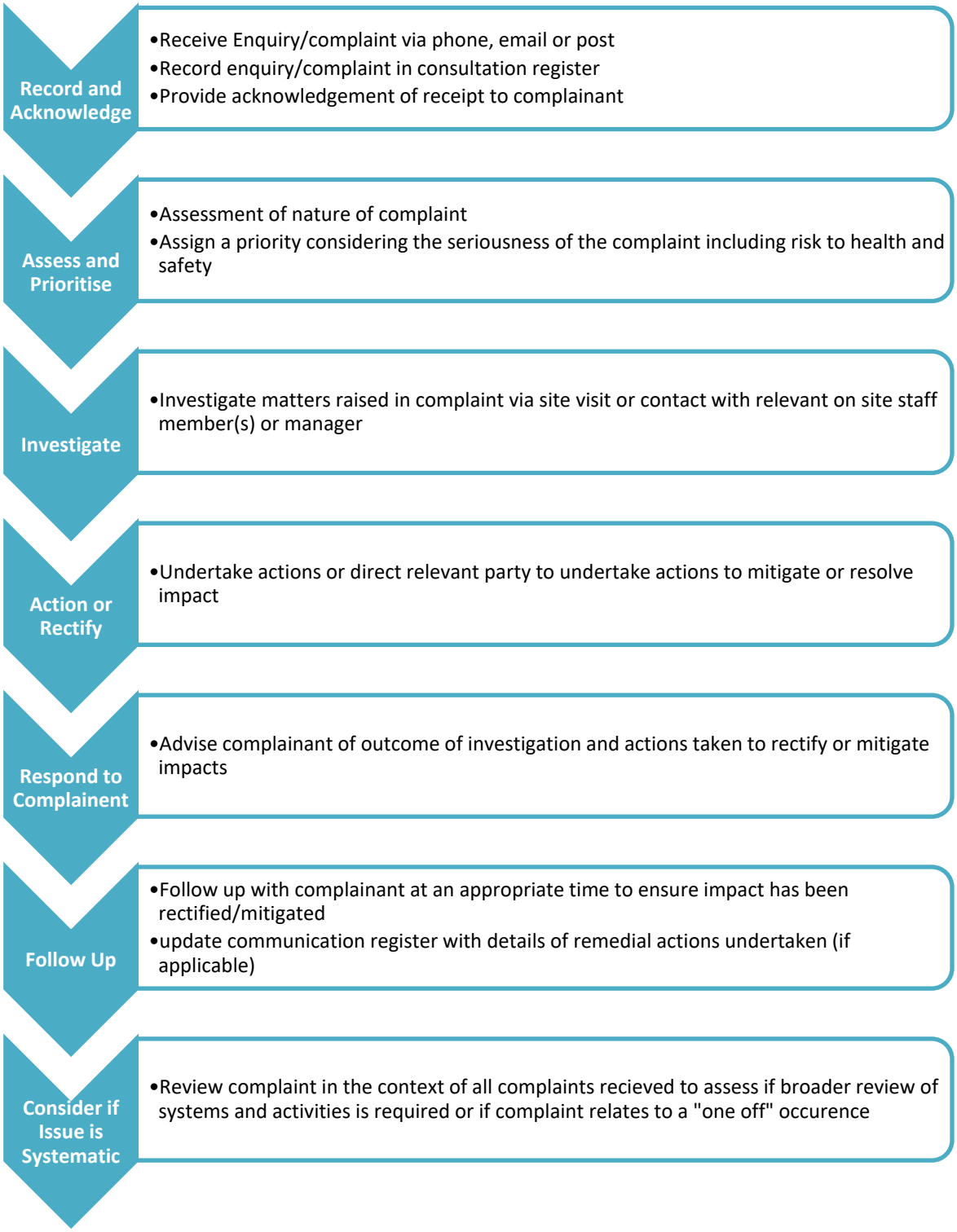
**Table 8 Sensitive Receiver Procedure**

| 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<br>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 9**.

**Table 9 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 10** below:

## Table 10 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.<br>No further response required. | Record in consultation register and advise Goodman media/marketing team.<br>No further response required. | Record in consultation register and advise Goodman Project Team for further action and response.<br>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.<br>Identify opportunities for improvement to manage potential future events. | Contact relevant person for actioning and response within 48 hours. Acknowledge in consultation register.<br>Identify opportunities for improvement to manage potential future events. | Contact relevant person for actioning and response immediately. Acknowledge in consultation register.<br>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.<br>Record in consultation register. | Community consultation team in conjunction with Goodman Project Team to prepare and provide response within 48 hours.<br>Record in consultation register. | Community consultation team in conjunction with Goodman Project Team to prepare and provide response within 24 hours.<br>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 11** below.

**Table 11 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

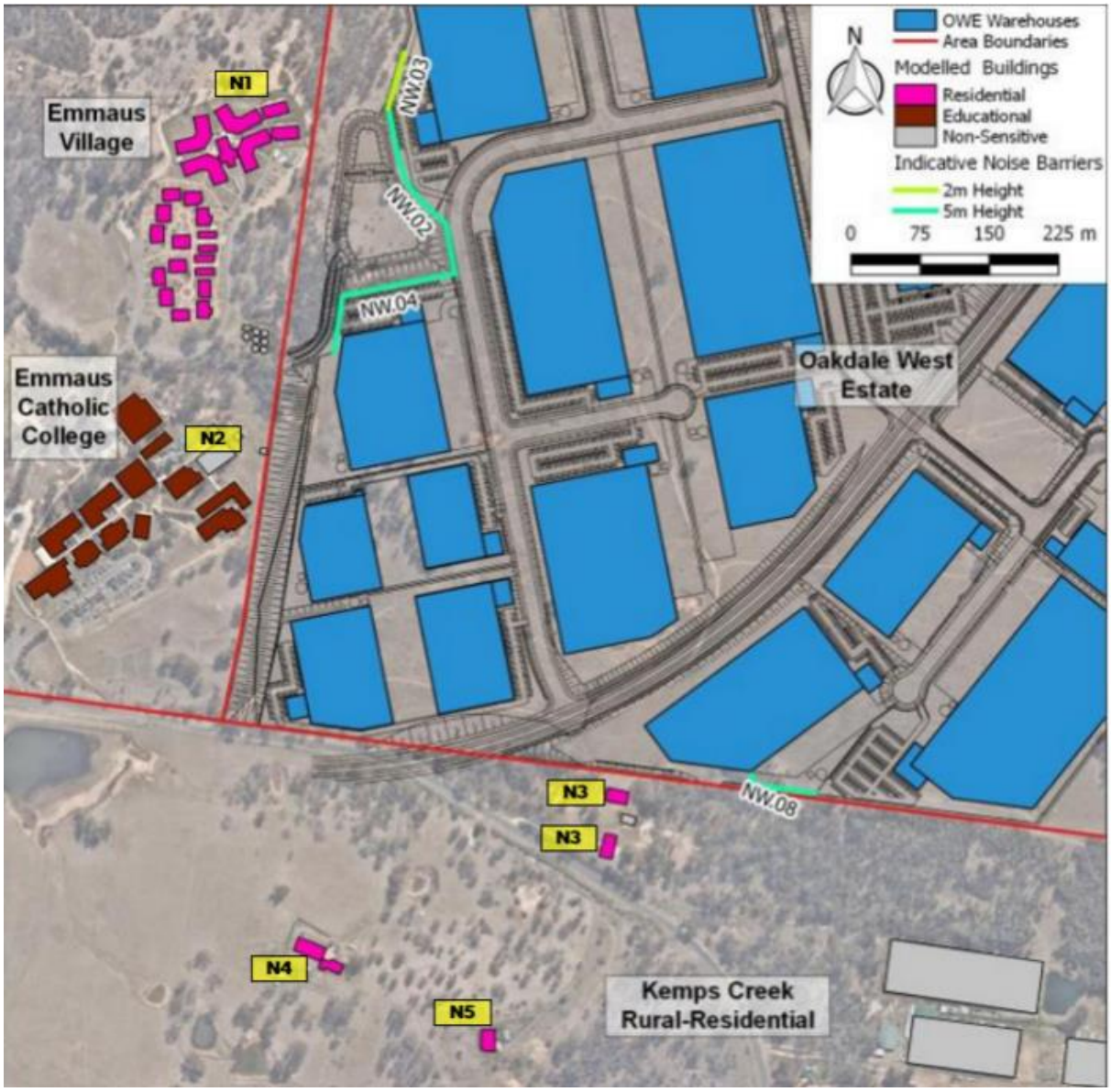
Where performance criteria are not being satisfied, review of this strategy and its implementation will be undertaken by the Community Consultation Team and changes to the strategy may be made to rectify the short fall. Where systematic issues are identified associated with construction activities, the 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*
- 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)*

# APPENDIX A

Sensitive Receiver Map


N
OWE Warehouses
Area Boundaries
Modelled Buildings
Residential
Educational
Non-Sensitive
Indicative Noise Barriers
2m Height
5m Height
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75
150
225 m
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N3
N3
N4
N5
NW.02
NW.03
NW.04
NW.08
Emmaus Village
Emmaus Catholic College
Oakdale West Estate
Kemps Creek Rural-Residential

# APPENDIX B

Key Stakeholder Contact Details

| Contact Name/Organisation | Contact Details |
|---|---|
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| Mamre Anglican School | Cathie Graydon – Principal (02)98341881, cathie.graydon@mamre.nsw.edu.au<br>Marijana Motrivic, Business Manager 02, 8073 6908 marijana.mitrovic@mamre.nsw.edu.au, |
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| 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 |
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| 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

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| Simalene Cariage | Bilinga | | | | | bilingachts@gmail.com | | |
| | | | | | | | | OR Wandai Kirkbright??? Website: http://www.butucarbin.org.au/, postal address: PO Box E18 Emerton |
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# APPENDIX D

Complaints Register

| Date | Time | Responsible Party | In/Out | Initial Communication Method/Tool | Contact Name/ Organisation | Contact Details | Documentation Location (if applicable) | Communication Type: Complaint/ Enquiry/ Communication | Summary of Issues/ Details | Action Taken | Further Action/ Monitoring to Confirm Resolution |
|---|---|---|---|---|---|---|---|---|---|---|---|
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# APPENDIX M

## Waste Management Plan

# OAKDALE WEST BUILDING 4E

## Waste Management Plan

**Prepared for:**

Goodman Property Services (Aust) Pty Ltd
1-11 Hayes Rd, Rosebery NSW 2018

**SLR Ref: 610.30399.00000-R01**
**Version No: -v1.1**
**June 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 |
|---|---|---|---|---|
| 610.30399.00000-R01-v2.0 20210526 | 24 June 2021 | Emerson Helmi Patch | Celine El-Khouri | Celine El-Khouri |

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## APPENDICES

Appendix A – Architectural plans
Appendix B – Penrith City Council Waste forms

# 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 4E of the Oakdale West Estate. The WMP is for the site preparation, construction and operational activities of Building 4E of the Oakdale West Industrial Estate (the Project). This WMP will comply with the requirements of the Secretary's Environmental Assessment Requirements (SEARs) relevant to this 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**.

## 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 proposal includes the construction, fit-out and use of Building 4E as the first stage of development within Precinct 4 of the Oakdale West Estate (Stage 4 Development). The proposed development comprises a warehouse and associated car and truck parking, office facilities and loading bays along with landscaping, signage, solar panels and lighting and includes subdivision approval. 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 and will include the storage and distribution of liquor.

The proposal does not require clearing or supporting infrastructure as all necessary infrastructure installation and other investigations were approved and undertaken under SSD 7348.

## 2.2 Overview of Proposed Construction Work

Project works 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 the Project include the construction of the below:

- A single building housing a single warehouse
- One ancillary office
- Two dock offices
- One ancillary workshop
- Two gatehouses
- Truck and car parking areas, and associated site hardstand.

## 2.3 Overview of Proposed Operations

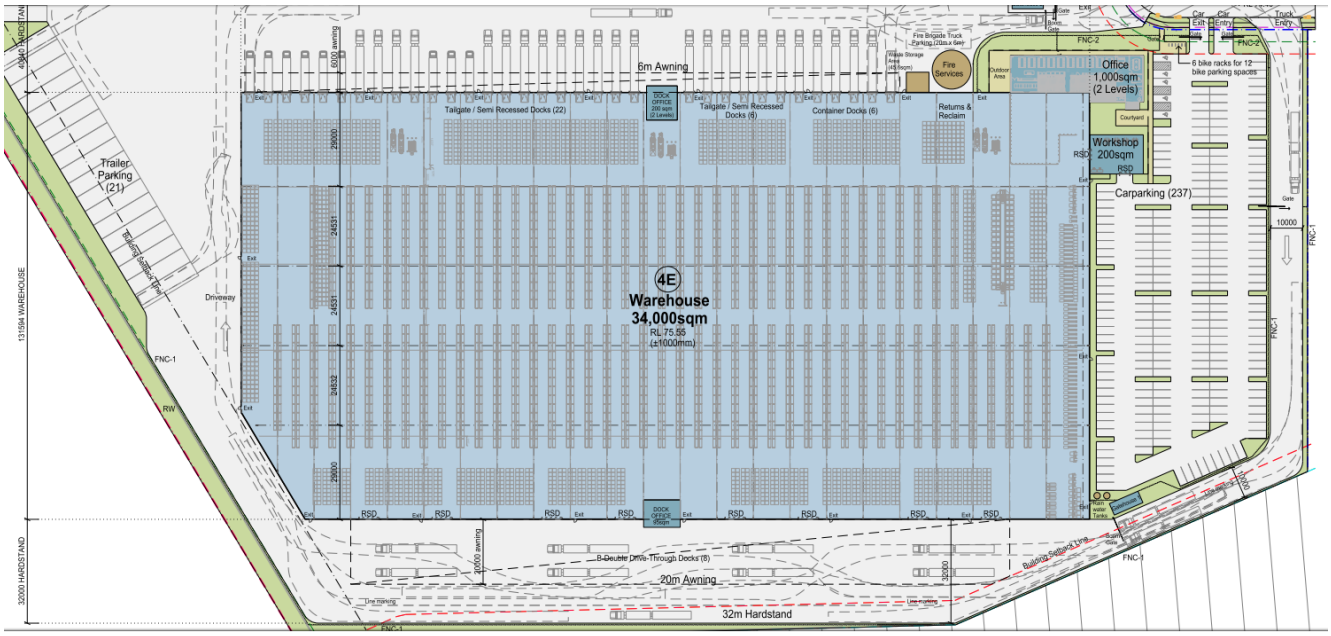



**Figure 1 Site plan**

Based on communication with the Client, SLR understands the Project will function as a standard warehouse with distribution operations for storage of liquor.

# 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.

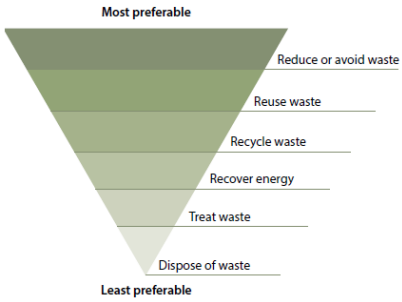



Image from NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21.

**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 *Waste Avoidance and Resource Recovery Act 2001*.<br>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.<br>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 Waste and Sustainable Materials Strategy 2041: Stage 1 – 2021-2027 | Replacing the *NSW Waste Avoidance and Resource Recovery Strategy (2014-21)* (see below), the NSW Waste and Sustainable Materials Strategy 2041 focuses on the transition of NSW to a circular economy. The strategy focuses on minimising what is thrown away, and to use and reuse resources more efficiently, making them as productive as possible. The strategy identifies the need to identify infrastructure needs, the mandating of separation of some organic waste streams, and incentivising biogas generation from waste materials. |
| NSW EPA (2014) NSW Waste Avoidance and Resource Recovery Strategy 2014-21 | The *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* 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 | 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.<br>• Resource recovery orders present conditions which generators and processors of waste must meet to supply the waste material for beneficial re-use.<br>• Resource recovery exemptions contain the conditions which consumers must meet to use waste for beneficial re-use. |
| NSW EPA's Waste Classification Guidelines 2014 | The NSW EPA *Waste Classification Guidelines* 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 *POEO Act 1997* and is associated regulations. |
| *Protection of the Environment Operations Act (POEO) 1997 and Amendment Act 2011* | The *POEO Act 1997* and *POEO Amendment Act 2011* 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. |
| The Work Health and Safety Regulation 2017 | The Work Health and Safety Regulation 2017 provide detailed actions and guidance associated with the topics discussed in *The Work Health and Safety Act 2011*. 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. |
| *Waste Avoidance and Resource Recovery Act 2001* | The *Waste Avoidance and Resource Recovery Act 2001* aims to promote waste avoidance and resource recovery and repeals the *Waste Minimisation and Management Act 1995*. Specific objectives of the *Waste Avoidance and Resource Recovery Act 2001* include:<br>• Encouraging efficient use of resources<br>• 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<br>• Ensuring industry and the community share responsibility in reducing/dealing with waste, and<br>• Efficiently funding of waste/resource management planning, programs and service delivery.<br>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. |

# 5 Site Preparation and Construction Waste and Recycling Management

## 5.1 Targets for Resource Recovery

Targets for new development are expected to contribute to state specific targets. The NSW Waste and Sustainable Materials Strategy 2041 (DPIE, 2021) sets a target of:

- 80% average recovery rate from all waste streams by 2030.

Analysis by DPIE (2021) indicates that construction and demolition waste recovery rates in FY19 were 77%.

The Penrith City Council Waste and Resources Strategy (2017-2026) has not yet been updated to reflect the recently released Waste and Sustainable Materials Strategy and is based on the Waste Avoidance and Resource Recovery Strategy 2014-2021. Specifically, Council's Waste and Resources Strategy identifies a target for FY21-22 of:

- Increasing recycling rates to 80% for construction and demolition waste
- Increasing waste diverted from landfill to 75%

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 website[4].

[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<br>*Treated*: reused for formwork, bridging, blocking, propping or second-hand supplier<br>*Untreated*: reused for floorboards, fencing, furniture, mulched second hand supplier<br>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 *FluoroCycle* 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.<br>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<br>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.<br>Contact *Business Recycling* 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 of 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 $m^2$ of construction.

[9] Available 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 the 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 carparks and heavy and light duty surfaces. The areas are based on the areas provided in the architectural 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 4E 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 | 34,000 | 10 | 75 | 60 | 20 | 165 | 25 | 20 |
| Office (2 level) | 1,000 | 10 | 20 | 10 | 10 | 10 | 5 | 5 |
| Dock office x2 | 295 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Workshop | 200 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Gatehouse | 65 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Hardstand area | 27,530 | - | 845 | - | - | 395 | 125 | 225 |
| Light duty area | 5,995 | - | 185 | - | - | 90 | 30 | 50 |
| **Total** | 69,085 | 35 | 1,140 | 85 | 45 | 675 | 200 | 315 |

Waste estimates have been rounded up to the nearest 5 $m^3$.

A waste management plan form provided by Council is attached in **Appendix B**. The form is also available on Council's website[10]. 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 Council's 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 online[11] 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 waste[12]. 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

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 |
| 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 |

[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 |
|---|---|---|
| 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. |
| 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 |

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/

## 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 m²/day) | Recycling Generation (L/100 m²/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 (m²) | General Waste (L/week) | Recycling (L/week) |
|---|---|---|---|---|
| Warehouse 4E | Warehouse 2 | 34,000 | 23,800 | 23,800 |
| | Office (2 level) | 1,000 | 700 | 700 |
| | Dock office | 295 | 210 | 210 |
| | Workshop | 200 | 140 | 140 |
| | Gatehouse | 65 | 70 | 70 |
| | **Total** | **35,560** | **24,920** | **24,920** |

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**.

### 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**

**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 4E | 3 x 3 $m^3$ | 3 x 3 $m^3$ | 3 | 3 | 37.6 |

### 6.4.2 Bulky and Hazardous Waste Management

As outlined in Council's 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 $m^2$ for developments between 100 $m^2$ and 2,000 $m^2$, and
- An additional 4$m^2$ for developments over 2,000 $m^2$ and for every 20,000 $m^2$ of office space.

SLR recommends 8 $m^2$ 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 4E | 37.6 | 8 | 45.6 |

The waste storage area for the project is shown on the architectural drawing attached in **Appendix A** in line with Council's requirements.

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.

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.

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. The waste storage area for the project is shown on the architectural drawing attached in **Appendix A** in line with Council's 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 $m^3$ 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 EPA[16]. 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:

16 NSW EPA waste signage and label designs http://www.epa.nsw.gov.au/wastetools/signs-posters-symbols.htm

- 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.

## 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 12**.

### Table 12 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. |

| Responsible Person | General Tasks |
|---|---|
| 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. |

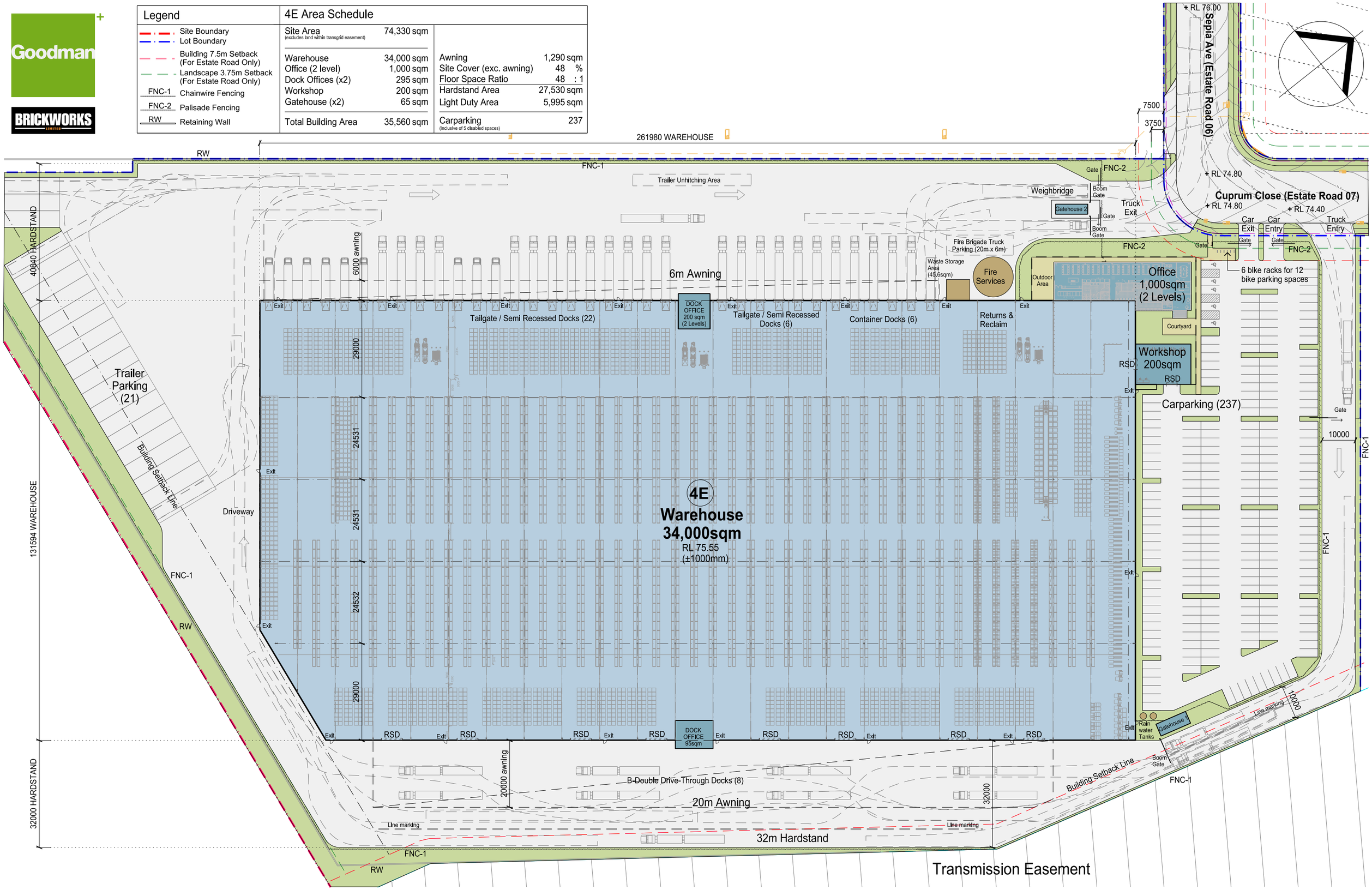
# APPENDIX A
# ARCHITECTURAL DRAWINGS

Goodman

BRICKWORKS LIMITED

| 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 |

| 4E Area Schedule | | | |
|---|---|---|---|
| Site Area (excludes land within transgrid easement) | 74,330 sqm | | |
| Warehouse | 34,000 sqm | Awning | 1,290 sqm |
| Office (2 level) | 1,000 sqm | Site Cover (exc. awning) | 48 % |
| Dock Offices (x2) | 295 sqm | Floor Space Ratio | 48 : 1 |
| Workshop | 200 sqm | Hardstand Area | 27,530 sqm |
| Gatehouse (x2) | 65 sqm | Light Duty Area | 5,995 sqm |
| Total Building Area | 35,560 sqm | Carparking (Inclusive of 5 disabled spaces) | 237 |




| | | | | |
|---|---|---|---|---|
| SBA ARCHITECTS | Oakdale West Estate - **MOD 7** | Proposed Warehouse Facility | 4E Site & Warehouse Plan | 1:500 @ A1<br>1:1000 @ A3 |
| | Kemps Creek, NSW | | | 23 June 2021 |
| | | | | OAK 4E DA 30 (A)<br>Job No 21116 |

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# APPENDIX N

## Unexpected Finds Protocol – Archeological

artefact

# Unexpected Finds Protocol – Archaeological Items

| | |
|---|---|
| **Project:** Oakdale West Estate | **Date:** Wednesday, 13 November 2019 |
| **Client: Goodman Group** | **Author:** Sandra Wallace (Senior Heritage Consultant) |

## Project Background

On 13 September 2019 consent for the proposed Stage 1 works was granted by the Secretary of the NSW Department of Planning and Environment. The development consent is for a State Significance Development (SSD), reference number is 15_7348, referred to as SSD 15_7348.

Artefact Heritage has prepared this Unexpected Finds Protocol (UFP) to satisfy the conditions of approval for the project, as below:

**Table 1: Table of conditions**

| **Archaeology** | | | |
|---|---|---|---|
| Condition No. | | Condition | Action |
| 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; | Refer to Unexpected Finds Protocol |
| | (b) | A 10 m wide buffer area around the suspected item of 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. | | | Refer to the Office of Environment and Heritage 2011 *Guide to Investigating, assessing and reporting on Aboriginal cultural heritage in NSW: Part 6 National Parks and Wildlife Act 1974* |

| | |
|---|---|
| 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). | The significance of unexpected finds will be assessed against the seven heritage criteria as outlined in the NSW Heritage Manual, including historical, associative, aesthetic or technical, social, research potential, rarity, and representativeness criterion. The aim of assessing significance is to identify if an unexpected find is of local or state significance. The assessment will guide recommendations for further management, approvals, and mitigations measures that may be required prior to recommencement of works |

This UFP should be implemented if any potentially significant Aboriginal object or Non-Aboriginal archaeological remains are identified during proposed groundworks.

Examples of types of unexpected archaeological finds include:

- Potential Aboriginal flaked items
- Concentrations of artefacts – this may take the form of a number of artefacts concentrated in a single location, typically associated with a dark silty soil deposit. Artefacts may include complete or broken glass bottles and ceramic items, animal bone and other domestic items.
- Structural remains i.e. brick or stone footings, areas of buried paving.

## NSW Heritage Legislation and Protection

Three Acts afford protection to cultural heritage and archaeology in NSW:

- *National Parks and Wildlife Act 1974* (NPW Act)
- *Heritage Act 1977* (Heritage Act)
- *Environmental Planning and Assessment Act 1979* (EP&A Act).

**Aboriginal sites** are protected by all three acts. It is an offence to knowingly or unknowingly damage or disturb an Aboriginal site without the appropriate approval. Fines and prison sentences may apply.

Historical archaeological sites in NSW are protected by the NSW *Heritage Act 1977*. Sections 139-145 of the *Heritage Act 1977* prevent the excavation or disturbance of land known or likely to contain **historic Archaeological Relics**, unless in accordance with an excavation permit or with the conditions of approval for a State Significant Development. If an archaeological site or object is damaged or disturbed prosecution may result.

## Unexpected Finds Protocol

If unanticipated archaeological items are uncovered at any time throughout the life of the project the following actions must be followed:

- Cease all activity in the vicinity of the find
- Leave the material in place and protect it from harm
- Erect a 10 m exclusion zone (temporary fencing/signage)
- Take note of the details of the material and its location, take a photograph of the find *in situ*
- Inform the site manager/area supervisor, who would then inform the superintendent / principal

The superintendent / principal must:

- Notify the Biodiversity and Conservation Division: **(02) 6274 1111**
- Notify OEH on the Environment Line: **131 555**
- Call the archaeologist to identify whether additional investigation is required in accordance with the conditions of approval and OEH guidelines
- Notify OEH if confirmed as an Aboriginal object or relic
- Await further advice before proceeding with work in the area.

## Artefact archaeologist contact

Artefact Heritage, Pyrmont Office **02 9518 8411,** office@artefact.net.au

## Examples of Aboriginal heritage and historical archaeological remains

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