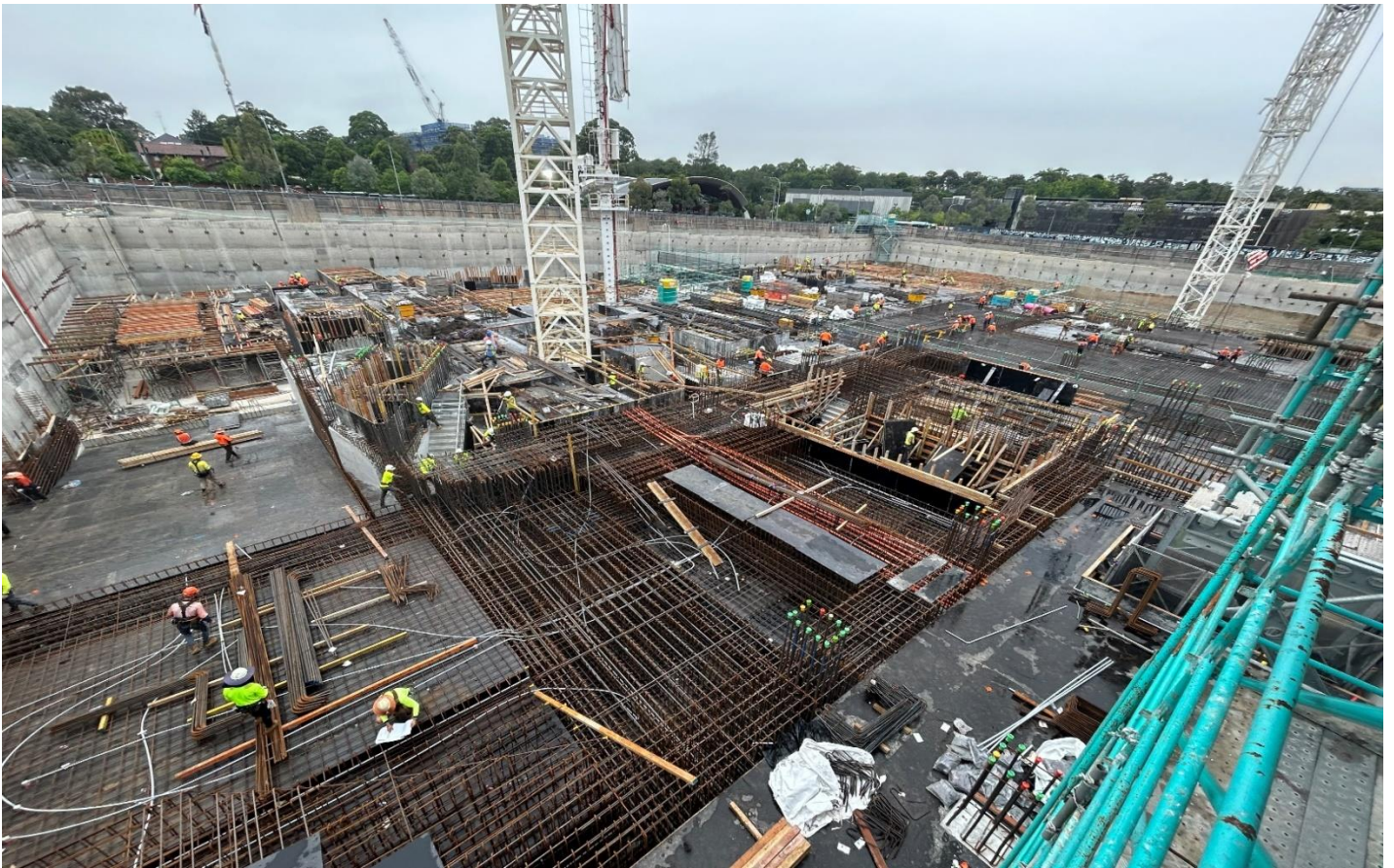


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## Construction & Environmental Management Plan (CEMP)

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SSD-15882721  
Rev 10. 15.01.2024

# Construction & Environmental Management Plan

## 2 Mandala Parade, Castle Hill – 22080N



### Revision Controls

Rev No	Date Issued	Comments
1	20/05/2021	
2	26/05/2021	Minor Amendments
3	29/06/2021	Landcom Comments + Amended Plans
4	08/07/2021	Amended Plans
5	09/09/2022	CC1 Issue
6	03/04/2023	Amendments + All Reports Updated
7	23/05/2023	Amendments
8	5/7/2023	Update of CSWMP, UFP, External Lighting + General
9	18/10/2023	Inclusion of Street Tree Management
10	15/01/2024	Amendments + Updated Appendix E, F, G, P

### SSDA Cross Reference Table

Refer to Appendix J for complete SSDA Conditions.

Condition	Section
C22 – Construction Environmental Management Plan	Addressed in EMP – Appendix G
C23– Construction Pedestrian and Traffic Management Sub-Plan	Addressed in CPTMP – Appendix C
C24 – Construction Noise and Vibration Management Sub-Plan	Addressed in CNVMP – Appendix H & I
C25– Air Quality Management Sub-Plan	Addressed in AQMP – Appendix F
C26 – Dust and VOC/Odour management	Addressed in AQMP – Appendix F
C27 – Reactive Air Quality and Odour Management Plan	Addressed in AQMP – Appendix F
C28 – Construction Waste Management Sub-Plan	Addressed in CWMP – Appendix D
C29 – Construction Soil and Water Management Sub-Plan	Addressed in CSWMP – Appendix E
C30 – Construction Parking	Addressed in CPTMP – Appendix C
C31 – Worker awareness to SSDA requirements	Addressed in Section 12.4
C32 – Barricade Permit	Addressed in Appendix A
C33 - Hoarding	Addressed in Appendix A
C34 – Outdoor Lighting	Addressed in Section 8.5
C35 – Public Liability insurance	Addressed in Appendix N
C36 – Unexpected Finds Protocol	Addressed in UFP – Appendix O
C37 – Groundwater Management	Addressed in SWMP – Appendix E

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Temporary Tree Removal Approval	
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# Construction & Environmental Management Plan

## 2 Mandala Parade, Castle Hill – 22080N



	Tunnel Survey Report
<b>Appendix J</b>	– SSDA Conditions
<b>Appendix K</b>	– Project Quality Management Plan
<b>Appendix L</b>	– Project WHS Management Plan
<b>Appendix M</b>	– Construction Program
<b>Appendix N</b>	– Insurances
<b>Appendix O</b>	– Unexpected Finds Protocol (UFP)
<b>Appendix P</b>	– Community Communication Strategy

## 1. Introduction

The following details the Construction & Environmental Management Plan (CEMP) in accordance with the requirements of NSW Department of Planning, Industry and Environment and The Hills Shire Council. The plan is prepared in accordance with SSD-15882721 for the Doran Drive Precinct 2 Mandala Parade, Castle Hill.

The CEMP responds to Condition no's C22 through to C37, of development consent SSD 15882721 and outlines the demolition, excavation and building process for the proposed development and how Deicorp and contractors will manage the demolition, excavation and building works.

The CEMP includes a description of the project, outlines the process, and addresses mitigation measures relating to the potential impacts of construction on the environment and the public, including noise and vibration, air pollution, water pollution, waste and recycling measures and traffic management.

### 1.1. Implementation

This CEMP is to be read in conjunction with the following documents attached in the Appendices:

- Construction Pedestrian and Traffic Management Sub-Plan (Appendix C)
- Construction Waste Management Sub-Plan (Appendix D)
- Construction Soil and Water Management Sub-Plan (Appendix E)
- Air Quality Management Sub-Plan (Appendix F)
- Construction Environmental Management Plan (Appendix G)
- Construction Noise and Vibration Management Sub-Plan (Appendix H)

This CEMP is to be adjusted as required by the during the progress of works on site, based on the additional reports / plans recommended and other site-specific conditions during the progress of works.

Where this plan conflicts with the requirements of the Deicorp and Subcontractors Safe Work Method Statements (SWMS) or Work Health and Safety (WHS) Policy then the SWMS's and WHS and their safety and environmental obligations of the more detailed plans shall override this CEMP.

## 1.2 Limitations

This CEMP has been prepared to provide a general understanding of the construction activities for delivering 2 Doran Drive Project.

This CEMP will be modified from time to time to adjust to developing site conditions.

## 2. Project Overview

### 21. Existing Site

The site has been cleared for development with no structures remaining.

Aerial imagery identifying the site and surrounding development is provided at Figure 1.



**Figure 1:** Aerial view of site and surrounding development

### 22. Development Description

The site incorporates a total area of 7,969 square meters and is currently vacant of structures.

A development application was approved by NSW Department of Planning, Industry and Environment for the proposed excavation and construction of a mixed-use development (DA No. SSD 15882721).

The approved development comprises of a residential unit and retail mix as outlined in the table below:

Land Use		Yield
Residential	1 Bedroom	76 units
	2 Bedroom	311 units
	3 Bedroom	43 units
	<b>Total</b>	<b>430 units</b>
Retail /Commercial		10,935m <sup>2</sup>

The project also includes basement parking and construction of street and upper-level open space elements as provided in the Architectural Plans submitted with the DA.

**3. Project Staging and Program**

**3.1. Project Staging**

This CEMP covers the excavation, shoring and the construction of the new buildings.

It is proposed to construct the works in three (3) stages from excavation through to the construction of a mixed-use precinct comprising of residential apartments, commercial and retail space, basement parking and associated facilities.

**3.2 Project Program**

A detailed construction programme has been developed for the project, and include in Appendix M. This programme will be monitored and amended from time to time as the project progresses. In summary, upon the completion of the excavation, the project will be constructed in 3 phases

STAGE	ESTIMATED DURATION
Earthworks	10 months
Stage 1 construction <ul style="list-style-type: none"> <li>Basement car park,</li> <li>Retail and commercial</li> </ul>	14 months
Stage 2 <ul style="list-style-type: none"> <li>Residential Tower A and B</li> <li>Public Domain</li> </ul>	6 months
Stage 3 <ul style="list-style-type: none"> <li>Residential Tower C and D</li> <li>Childcare</li> </ul>	6 months

Materials handling plans identifying staging are provided in **Appendix A**

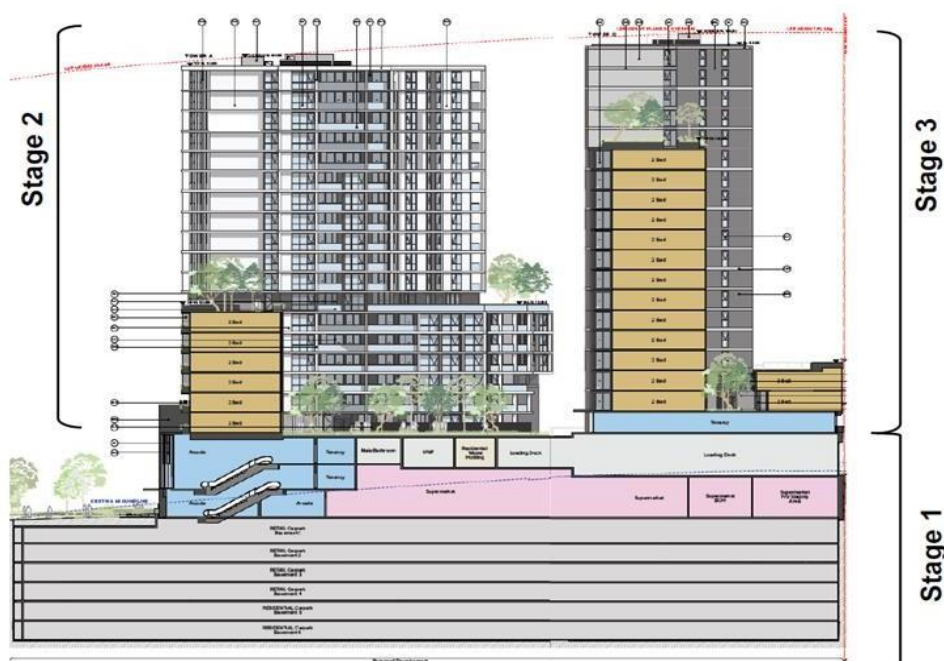


Figure 2: Proposed staging diagram



### 33. Building and Construction Works

All excavation and building works are to be undertaken in accordance with the conditions of development consent.

The following items summarise the aspects of the demolition, excavation and building works that have been considered in relation to the application of this Construction Management Plan;

- All works are to be undertaken in accordance with the requirements of the conditions of development consent (SSD 15882721).
- All construction vehicles enter and exit the site via site entry gates, as shown in the Materials Handling Plans in **Appendix A**.
- Construction Traffic is managed to minimise the impact on the local residents in the vicinity of the site.
- The proposed crane, hoist and landing platform locations are shown on the Crane Radial Plans in **Appendix B**.
- A combination of Heavy Rigid Vehicles (HRV) and Truck and Dog (Articulated) with a combined length of 12.5m - 17m will be used to export approximately 157,000m<sup>3</sup> of excavated material from the site. The swept paths are shown in the Construction Traffic Management Plan in **Appendix C** which confirm an AV can enter and exit the site.
- Cranes and other machines will be floated on trucks approximately 19m in length (Articulated Vehicle (AV)).
- No stockpile sites will be required as the material will be progressively loaded and removed from site on a daily basis.
- Shaker pads will be constructed at site egress points accessed from Andalusian Way and DeClambe Drive for erosion and sediment control.
- Waste and recycling containers are to be located within materials handling areas shown on the Material Handling Plans in **Appendix A**.
- Concrete pumping is to be undertaken from the construction pumping and lifting zones or from within the site.
- All excavation and building works are to be undertaken in accordance with the conditions of development consent.
- The estimated time frame to complete the excavation works is 10 months.
- The estimated time frame to complete the building works is 26 months.
- All construction vehicles enter and exit the site via Andalusian Way and DeClambe Drive, as shown in the Materials Handling Plans in **Appendix A**.
- Construction traffic is managed to minimise the impact on the users of the existing road network in the vicinity of the site.
- A mix of A class and B class hoarding plus scaffold are to be erected during stages as shown on the Materials Handling Plans in **Appendix A**.

Note all demolition, excavation and building works, including and site establishment are to be carried out in accordance with relevant Australian Standards and Work Health and Safety requirements.

## 4. Construction Staff, Amenities and Machinery

The demolition, exaction and building site requires detailed management of staff, facilities, and services. It is important to understand the number and type of staff on site to ensure appropriate facilities, services, parking and training is provided.

The follow table outlines potential issues and the measures adopted by Deicorp, contractors and construction workers to ensure an adequate and safe working environment for staff.

### 4.1. Construction Staff and Amenities

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Staff numbers	<p><b>Staff - Stage 1</b></p> <ul style="list-style-type: none"> <li>A maximum of 50 construction staff will be onsite during stage 1 excavation works.</li> </ul> <p><b>Staff - Stage 2 and 3</b></p> <ul style="list-style-type: none"> <li>A maximum of 350 and average of 150 construction staff will be onsite during stage 2 building works.</li> </ul>	Ongoing	Supervisor
Provide sufficient amenities for both male and female staff	<p><b>Staff Amenities - Stages 1, 2 and 3</b></p> <ul style="list-style-type: none"> <li>The site will contain a staff amenity blocks during stages 1, 2 and 3 (refer to the Materials Handling Plans at Appendix A).</li> <li>The staff amenities block will include the main office, meeting rooms, induction room, office toilet amenities, first aid facilities and a lunchroom.</li> <li>An adjoining vacant block of land has been secured to house worker and staff amenities (refer attached Plans at Appendix A)</li> </ul>	Ongoing	Supervisor
Staff Parking	<p><b>Staff parking – Stages 1, 2 and 3</b></p> <ul style="list-style-type: none"> <li>No on-site parking will be provided for construction staff during stages 1, 2 and 3.</li> <li>Staff are encouraged to utilise the adjacent Sydney Metro.</li> <li>No parking is permitted in the Sydney Metro commuter car par on in the residential streets to the south.</li> <li>Although discouraged, an adjoining vacant block of land has been secured to accommodate vehicle holding and worker parking (refer attached Plans at Appendix A)</li> </ul>	Ongoing	Supervisor
Ongoing supervision	<p><b>Measurement and Monitoring</b></p> <ul style="list-style-type: none"> <li>Monitoring of the staff amenities cleanliness, security, etc to ensure their effectiveness, safety and compliance is to be carried out by the Supervisor and recorded in the weekly Inspection.</li> </ul>	Ongoing	Supervisor



**42. Construction Machinery**

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Location, operation and security of cranes	<p><b>Crane location</b></p> <ul style="list-style-type: none"> <li>The crane locations are to be contained within the site as shown on the Crane Radial Plans at Appendix B.</li> <li>The crane hoist locations are shown on the Site Crane Radial Plans at Appendix B.</li> <li>The cranes are to be secured during non-operating times.</li> <li>All crane operators are to have undertaken training with appropriate accreditation in the use of the cranes.</li> </ul>	Ongoing	Supervisor
Use of machinery resulting in a negative impact on neighbouring properties	<p><b>Machinery</b></p> <ul style="list-style-type: none"> <li>Stages 1, 2 and 3 unloading of machinery to occur within the site accessed from Andalusian Way and De Clambe Drive as shown on the Materials Handling Plans at Appendix A.</li> <li>The machinery will be secured during non-operating times.</li> <li>All staff are to have undertaken training with appropriate accreditation in the use of the machinery.</li> <li>When using cranes or mobile lifting equipment, the following steps are to be taken to prevent disruption to public areas: <ul style="list-style-type: none"> <li>Ensure equipment does not restrict public thoroughfares and pedestrian access or, where restricted access is unavoidable, use gantries or other overhead protection</li> <li>Determine lifting zones for medium to long term use of the equipment</li> <li>Protect pavements and streets and conduct dilapidation surveys before and after works have taken place</li> <li>Implement procedures and lifting techniques to ensure safety on adjoining streets and footpaths</li> <li>Use traffic management controls and signage.</li> </ul> </li> </ul>	Ongoing	Supervisor
Concrete pumping location	<p><b>Concrete pumping</b></p> <ul style="list-style-type: none"> <li>Concrete pumping will be commonly pumped from on site or the Materials Handling Zones.</li> </ul>	Ongoing	Supervisor
Ongoing supervision	<p><b>Measurement and Monitoring</b></p> <ul style="list-style-type: none"> <li>Monitoring of the cranes, hoist and concrete pouring facilities to ensure their effectiveness, safety and compliance is to be carried out by the Supervisor and recorded in the daily and weekly Inspection.</li> </ul>	Ongoing	Supervisor

## 5. Construction Traffic Management

Appropriate access to and from the site by staff, contractors, deliveries and the general public is to be managed through the implementation of a Construction Traffic Management Plan prepared in accordance with the requirements of development consent SSD 15882721 condition C23 (see Appendix C).

The follow table summarises the potential issues and how they are to be controlled.

IMPACT	CONTROL MEASURES	TIMING	OFFICER
Increased traffic congestion	<p><b>Construction Traffic Management Plan</b></p> <ul style="list-style-type: none"> <li>Refer to Construction Traffic Management Plan at <b>Appendix C</b> for measures to address increased traffic in the local road network.</li> </ul>	Ongoing	Supervisor
Altered traffic conditions	<p><b>Control Measures</b></p> <ul style="list-style-type: none"> <li>A range of traffic control measures will be implemented to provide safe movement of traffic.</li> <li>Truck control on the site and surrounding streets will be signed to control operation.</li> <li>RMS accredited traffic controllers are to manage the traffic in accordance with the requirements of the Traffic Control Plan at <b>Appendix C</b>.</li> </ul>	Ongoing	Supervisor and RMS accredited traffic controllers
Construction Parking Strategy	<p><b>Staff/Contractors Car Parking</b></p> <p>On-site parking will not be provided for construction staff. Use of adjacent Sydney Metro train services and/or other local public transport options will be encouraged. The adjoining Sydney Metro vacant site has been secured to accommodate some worker parking and a vehicle standdown area (refer attached plan)</p>	Ongoing	Supervisor
Vehicular queueing at entrances	<p><b>Access</b></p> <ul style="list-style-type: none"> <li>RMS accredited traffic controllers are to manage the traffic in accordance with the requirements of the Traffic Control Plan at <b>Appendix C</b>.</li> <li>Access into and out of the site will be via the designated entrance, refer to Appendix E, Traffic Management Plan.</li> <li>Adjacent public roads will be maintained free of construction material.</li> <li>Loaded trucks leaving the site will have tray covers and tailgates closed to prevent dust during transport.</li> </ul>	Ongoing	Supervisor and RMS accredited traffic controllers
Limited access and parking impacting traffic and parking on the local road network	<p><b>General Public</b></p> <ul style="list-style-type: none"> <li>No general admission will be provided during Stages 1, 2 and 3.</li> <li>Appropriate fencing and gates will be provided to restrict access.</li> <li>Pedestrians will be protected by Class A and B hoardings in the locations shown on the materials handling plans in <b>Appendix A</b>.</li> </ul>	Ongoing	Supervisor

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Reduced safety due to altered traffic conditions and increased rates of heavy vehicles	<p><b>Safety</b></p> <ul style="list-style-type: none"> <li>RMS accredited traffic controllers are to manage the traffic in accordance with the requirements of the Traffic Control Plan at <b>Appendix C</b>.</li> <li>Loading and unloading is to be undertaken on site or within the construction/loading zone within the site adjacent to Mandala Parade and Andalusian Way.</li> <li>The use of mobile phones will be banned on site whilst operating machinery.</li> </ul>	Ongoing	Supervisor and RMS accredited traffic controllers
Dispersal of dust from site	<p><b>Cleanliness</b></p> <ul style="list-style-type: none"> <li>Shaker pad on exit will be maintained to ensure wheel cleanliness.</li> <li>The roads surrounding the site shall be regularly swept to ensure pavements are kept clean and safe.</li> </ul>	Ongoing	Supervisor
Staff movements impact traffic and parking on the local road network	<p><b>Construction workers parking</b></p> <ul style="list-style-type: none"> <li>During stages 1, 2 and 3 construction staff will be required to park off site.</li> <li>The adjoining Sydney Metro vacant site has been secured to accommodate some worker parking and a vehicle standdown area (refer attached plan)</li> </ul>	Ongoing	Supervisor
Regular deliveries impacting traffic and safety on the local road network.	<p><b>Delivery of goods and materials</b></p> <ul style="list-style-type: none"> <li>Construction vehicles will enter the site via Andalusian Way and De Clambe Drive (See Appendix A).</li> <li>Loading and unloading will occur on site in the crane location shown on the Crane Radial Plans (See Appendix B).</li> </ul>	Ongoing	Supervisor
Increased traffic congestion impacting movements into and out of the neighbouring properties	<p><b>Adjacent properties</b></p> <ul style="list-style-type: none"> <li>Appropriate traffic management procedures will be in place to minimise the impact of increased traffic and queueing vehicles on neighbouring development.</li> </ul>	Ongoing	Supervisor
	<p><b>Crane and Hoist Locations</b> <b>NOTE: outlined in other sections</b></p>		
Ongoing supervision	<p><b>Measurement and Monitoring</b></p> <p>Monitoring of the traffic control measures to ensure their effectiveness and compliance with CTMP's is to be carried out by the Supervisor and recorded in the daily and weekly Inspection</p>	Ongoing	Supervisor



## 6. Public Safety, Amenity and Site Security

The excavation and building works raise several concerns and potential risks in relation to safety and security. These risks include damage to neighbouring properties, injury to local residents, impacts to the amenity of locals and site security for the builders and contractors.

The following table outlines potential impacts and mitigation measures adopted by the Deicorp, sub-contractors and construction workers to ensure a safe and secure working site for the community and workers.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Restricting public access to the site.	<b>Hoarding/Fencing</b> <ul style="list-style-type: none"> <li>The site will be secured by A and B class hoardings around the entire perimeter as shown in the Materials Handling Plans in <b>Appendix A</b>.</li> <li>Gates will be secured after work hours to prevent unauthorised entry.</li> <li>The excavation and building site will be fenced to prevent entry.</li> <li>All fencing and hoardings will screen public view of the site to minimise any impact on pedestrian traffic flow.</li> </ul>	Ongoing	Supervisor
Impacts of Piling	<b>Piling</b> <ul style="list-style-type: none"> <li>There will be no pile 'driving' necessary, the piling to be installed will be for perimeter retention and will be drilled (bored) piers.</li> <li>The Impacts of piling are to be mitigated in accordance with the requirements outlined in the Safe Work Method Statement prepared by the contractors that will undertake the excavation works.</li> </ul>	Ongoing	Supervisor
Impacts of Demolition	<b>Demolition</b> <ul style="list-style-type: none"> <li>There is minimal demolition works, the site has been cleared prior to acquisition, it is anticipated there will potentially be some remnant foundations that will need to be removed.</li> <li>The Impacts of demolition are to be mitigated in accordance with the requirements outlined in the Safe Work Method Statement and Management Plan prepared by the excavation contractor.</li> </ul>	Ongoing	Supervisor
Impacts of Excavation	<b>Excavation</b> <ul style="list-style-type: none"> <li>The Impacts of excavation are to be mitigated in accordance with the requirements outlined in the Safe Work Method Statement and Management Plan prepared by the excavation contractor.</li> </ul>	Ongoing	Supervisor

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Reduced way finding and unauthorised access to the site	<p><b>Safety &amp; Security</b></p> <ul style="list-style-type: none"> <li>Adequate lighting will be provided across the site at night.</li> <li>The site will be fully secured outside of working hours. Security measures will include fencing, locks, surveillance systems, security lighting and motion detectors.</li> <li>Site equipment and materials will be fully secured at night.</li> <li>Site materials and equipment will be located away from neighbouring properties to limit the potential use as climbing aids.</li> <li>All chemicals will be securely stored I designated containments, away from emergency exits and stormwater pits.</li> </ul>	Ongoing	Supervisor
Security signage	<p><b>Signage</b></p> <ul style="list-style-type: none"> <li>Contact and procedural details will be provided, at entrances and exits, in case of an emergency or security breach.</li> <li>Safety, traffic control and restricted access signage will be located on fencing and at entrances to the site.</li> </ul>	Ongoing	Supervisor
Damage to public areas	<p><b>Public Areas</b></p> <ul style="list-style-type: none"> <li>Any damage to public areas and assets will be rectified.</li> <li>The construction team will ensure there are no trip hazards from the hoarding or fencing on adjacent footpaths.</li> <li>Any utilities or services that cross the path will be covered with ramps in accordance with the relevant standards.</li> <li>Public areas will be protected from construction activities including vehicle loading and unloading.</li> <li>All bins will be stored on site in secure areas away from public access.</li> <li>All materials and machinery will be stored onsite, away from public areas.</li> </ul>	Ongoing	Supervisor
Use of street and pathway	<p><b>Street Space Occupation</b></p> <ul style="list-style-type: none"> <li>All necessary permits will be obtained from the Hill Shire Council, permitting occupation of the footpath as required.</li> </ul>	Ongoing	Supervisor
Reduced visual amenity and outlook for neighbouring properties	<p><b>Prevent Unsightly Premises</b></p> <ul style="list-style-type: none"> <li>Trucks will be washed down to prevent soil, dust or debris falling on the adjacent roadway and footpaths.</li> <li>Hoardings are designed to reduce the potential for posters and graffiti through the use of wire mesh guards, signage and/or public art. Graffiti and posters will be removed on a regular basis.</li> </ul>	Ongoing	Supervisor
General Site Management	<p><b>General Management</b></p> <ul style="list-style-type: none"> <li>The Principal Contractor will provide written notice prior to commencement of works in accordance with the Conditions of Consent.</li> <li>Existing pedestrian and traffic signs will be retained.</li> </ul>	Ongoing	Supervisor

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	<ul style="list-style-type: none"> <li>Additional safety signage will be in accordance with requirements.</li> </ul>		
Ongoing supervision	<p><b>Measurement and Monitoring</b> Monitoring of public safety, amenity and site security to ensure effectiveness and compliance is to be carried out by the Supervisor and recorded in the daily and weekly inspection.</p>	Ongoing	Supervisor



## 7. Operating Hours, Noise and Vibration Controls

A **Construction Noise and Vibration Management** Plan (CN&VMP) has been prepared by **Acoustic Logic** (refer to **Appendix H**) to identify noise emissions likely to be generated during construction (mechanical plant noise and increased vehicle noise). The Report provides recommendations for acoustic management controls to reduce noise impacts on surrounding development. Construction vibration control and mitigation measures are also addressed within the report.

In addition to all measures and recommendations identified in the Construction Noise and Vibration Management Plan, the following table outlines operating hours (as outlined in SSDA condition no's D3 to D7, and the noise and vibration controls and mitigation measures to be adopted by the Deicorp, sub-contractors and construction workers to meet the compliance requirements of the Council and the relevant Australian Standards.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Noise impacts on neighbouring residents and businesses	<b>Hours of Operation</b> <ul style="list-style-type: none"> <li>Hours of onsite work operation will be limited to 7am to 6pm, Monday to Friday and 8am to 1pm on Saturdays.</li> <li>No onsite work operations will be undertaken on public holidays.</li> <li>Rock breaking, rock hammering, sheet piling, pile driving, may only be carried out between the hours between 9am to 12 pm and 2pm to 5pm Monday to Friday and 9am to 12pm Saturday.</li> <li>Apart from Emergency Works, any proposed onsite work outside of these hours will be required to be approved by The Hills Shire Council.</li> </ul>	Ongoing	Supervisor
Noise nuisance Noise pollution caused by loud noise from site disturbing workers	<b>Noise - Plant and equipment</b> <ul style="list-style-type: none"> <li>All practical precautions are to be taken to minimise the impact of noise emissions from the site.</li> <li>Equipment and machinery will be selected to meet the noise emissions requirements outlined in the Noise and Vibration Assessment report. Where practical equipment will be fitted with silencers.</li> <li>Regular monitoring of equipment will be undertaken to ensure all equipment meets requirements.</li> <li>Vehicles and machinery will be turned off when not in use.</li> </ul>	Ongoing	Supervisor

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<p>Vibration damage to structures and potential impacts to nearby business, residents and public infrastructure</p>	<p><b>Vibration – Plant and equipment</b></p> <ul style="list-style-type: none"> <li>• The major sources of vibration caused by the project during excavators with rock breakers (or grinding heads attached), bulldozers and vibratory rollers.</li> <li>• The following vibration mitigation measures are adopted during site project activities: <ul style="list-style-type: none"> <li>• Staging of site works to maximise use of the existing site features/facilities as barriers where possible.</li> <li>• All site personnel must adhere to the site OH&amp;S requirements in relation to use of appropriate personal protective equipment (PPE) when operating, or in the vicinity of noise/vibration generating plant/equipment.</li> <li>• Noise and vibration awareness training for all site staff including subcontractors as part of general site induction and tool-box talk activities.</li> </ul> </li> </ul>	<p>Ongoing</p>	<p>Supervisor</p>
	<ul style="list-style-type: none"> <li>• Strict adherence to approved works times. In the event that out of hours delivery activities are required, the approval process will be completed via consultation with the Project Managers office.</li> <li>• Works will be scheduled, where practical, to avoid simultaneous vibration causing activities occurring on site.</li> <li>• Vehicles, plant and machines/equipment used intermittently during construction activities (i.e. cranes, excavators, bobcats, lifting equipment, etc) will be shut down, as practicably achievable, in the period between works activities rather than allowed to idle.</li> <li>• The duration of noise/vibration intensive works will be minimised through a regular review of the program and construction methodologies during project team meetings.</li> <li>• Regular and effective plant/equipment maintenance will be completed and documented throughout the project period and documentation will be maintained on site demonstrating completion of maintenance logs and associated checklists in order to ensure all machinery is in good working order and use does not generate excess noise/vibration.</li> <li>• Plant, equipment and vehicles will not be operated in the event that excessive noise/vibration is produced at start up as a result of maintenance being required.</li> <li>• Care will be taken by site personnel to ensure materials will not be dropped from a height or raised location.</li> <li>• Power drills, saws, planers, nail guns etc will be used inside where possible to achieve acoustic muffling or where possible, to the North of buildings to provide shielding between the user and sensitive receptors.</li> </ul>		

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Construction noise impacting the amenity of neighbouring properties	<p><b>Neighbours</b></p> <ul style="list-style-type: none"> <li>Activities which may impact on the amenity of neighbouring properties will only be conducted for short durations and these neighbours will be notified prior to the works.</li> </ul>	Ongoing	Supervisor
Ongoing supervision	<p><b>Measurement and Monitoring</b></p> <p>Noise effects shall be observed and recorded on the daily inspection report in accordance with the requirements of the Noise and Vibration Report.</p>	Ongoing	Supervisor



## **8. Environmental Management**

### **8.1. Environmental Management Plan**

An Environmental Management Plan has been prepared by Deicop to comply with the Protection of the Environment Operations Act 1997 (included in **Appendix G**)

### **8.2. Flora And Fauna**

Investigated with the biodiversity report by WSP 09/06/20, and addressed in the CityPlan EIS section 7.15, dated July 2021

A BDAR was previously prepared by WSP for the concept application for the Hills Showground Station Precinct. This report found no recorded remnant vegetation or associated Plant Community Types (PCT), noting that the absence of any remnant native vegetation is the result of clearing for urban development. No threatened flora species, ecological communities or their habitat listed under the BC Act were determined to be affected by the concept proposed although one threatened fauna species (i.e. the Grey-headed Flying-fox) was recorded flying over the adjoining Cattai Creek to the west of the site. The BDAR also found the concept proposal to have the potential to have indirect impacts on Cattai Creek but concluded that these impacts (e.g. stormwater run-off) could be managed through mitigation measures. Moreover, given that the concept proposal was found not to have any direct impacts on PCTs and only minor impacts on Cattai Creek the Biodiversity Offset Scheme (BOS) is not applicable for the development.

Should unexpected circumstances arise requiring management of Flora and Fauna reference can be made to the Construction Environmental Management plan (**Appendix G**, section 3.2.6)

Trees are located alongside the site boundary and will be susceptible to damage during certain construction activities. Because of this it is crucial that proper tree protection is always in place and all activities must be carried out in a way which minimises potential impact to trees. Refer to the arboricultural assessment and tree protection plan (**Appendix G**).

Trees must remain intact unless council approval has been sought and granted for street tree removal. If this is the case removal must take place in accordance with council instructions and with minimal impact to surrounding fauna and general public activity.

Updated approval has been granted to remove 20 eucalyptus sideroxylon trees around the perimeter of the construction site, please refer to **Appendix G** for more information on the granted approval and plans highlighting the trees to be removed.

### **8.3. Heritage – Aboriginal and Non-Aboriginal**

A heritage investigation was undertaken by GML Heritage, in October of 2019

The site is located within the Hills Showground Station Precinct, Castle Hill. The precinct was one of a number of Priority Precincts along the Sydney Metro North West. The Showground Station Precinct was rezoned in December 2017

The Secretary's Environmental Assessment Requirement (SEARs) was received on 26 October 2018, and

an amended SEARs was received on 9 October 2019. The SEARs included the requirements that the Environmental Impact Statement (EIS) address the following key heritage issues:

**Heritage and Archaeology**

- a detailed heritage impact statement that identifies and addresses the extent of heritage impact of the proposal on the site, site curtilage and surrounding area, including any built and landscape items, conservation areas, views and settings, and in particular the impact of the proposal on heritage items of local and State significance and on items of Aboriginal culture heritage.
- consider any endorsed conservation management plans for heritage items and conservation areas in the vicinity of the site and the surrounding area; and
- include a heritage interpretation strategy
- where the heritage impact statement identifies potential historical archaeological impacts, a historical archaeological assessment is to be prepared by a qualified historical archaeologist in accordance with the relevant guidelines published by the Office of Environment and Heritage.

**Aboriginal Heritage**

- The EIS shall provide a detailed Aboriginal heritage impact statement (AHIS) that identifies and addresses the extent of Aboriginal heritage impacts of the proposal on the site and the surrounding area, including objects, places or features (including biological diversity) of cultural value within the landscape.
- If Aboriginal Cultural Heritage is found at the site, a full Aboriginal Cultural Heritage Assessment Report (ACHAR) together with document of required consultation must be provided in accordance with relevant legislation requirements and guidelines published by the Office of Environment and Heritage.

The report evaluated the potential of the site to contain archaeological resources both Aboriginal and historical and identified the potential development impacts on the predicted resources. It further identified the heritage significance of the site and heritage items in the vicinity of the development lot and assessed the potential impacts of the proposed development on those heritage items.

The key findings of the report were.

**Aboriginal Due Diligence Process**

- The site inspection of the development lots did not encounter artefacts or other evidence of Aboriginal archaeological sites.
- The environmental context of the land surrounding the study area, predictive models established to ascertain the likelihood of Aboriginal archaeological sites, and levels of previous land disturbance indicate that it is unlikely that Aboriginal objects will be located within the site.
- The proposed development is unlikely to impact on Aboriginal archaeological objects.
- This assessment satisfies condition 12 of the SEARs and no further assessments are required.
- If during the process of future physical works, Aboriginal sites and/or objects are suspected and/or identified, an Aboriginal unexpected finds protocol should be enacted. This can be found in the **Construction Environmental Management plan Appendix G, (section 3.4.1)**.

**Historical Archaeology**

- The study area has been assessed as having nil–low potential for locally significant historical archaeological remains or 'relics', as defined by the Heritage Act, associated with the subdivision, houses, timber yard and factories.
- The proposed development is unlikely to impact significant historical archaeological remains and relics.
- If during the process of future physical works, historical archaeological remains are suspected and/or identified, an unexpected finds procedure should be enacted. This can be found in the **Construction Environmental Management plan Appendix G, (section 3.4.1)**
- Refer to **Appendix G** for the full GML heritage report.

#### **Built Heritage**

- The Hills Showground Station Precinct is located within the vicinity of a number of heritage items, including 128–132 Showground Road and 107 Showground Road. The Concept Proposal is not considered to have an adverse impact on the significance of those items in the vicinity, or their setting or curtilage.
- The Hills Showground Station Precinct is located directly adjacent to the Castle Hill Showground, which has been identified in previous studies as having cultural significance at a local level.
  - The proposal will not materially impact on the significant fabric, structures or elements of the Castle Hill Showground. The proposed development will, however, alter the scale of development surrounding the showground, impacting the setting and visual curtilage of the Showground.
  - However, the area has been rezoned to accommodate this scale of development. In addition, the proposed development will also generate better public access to and awareness of the site that will facilitate its ongoing use and conservation, having a positive impact.
  - The Hills Shire Council is currently undertaking a master planning process for the Showground to guide its future development.

It was recommended that the future detailed design stages of the buildings ensure that they respond to the interface with the Showground site and provide an appropriate transition of scale, through built form articulation and streetscape interface, to mitigate the impact on its setting.

#### **84. Unexpected Finds Protocol (UFP)**

An Unexpected Finds Protocol has been prepared by Metech Consulting to detail the actions and procedures which will be taken should potentially contaminated materials be encountered during works (Included in **Appendix O**)

#### **85. Control of outdoor Artificial Lighting during Construction**

As per JHA review and recommendations dated 4/7/23, proposed construction external will

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consider the following to minimize the external lighting effects and spill onto sensitive receivers as per AS4282. Following is a list of precautions to be followed by all relevant parties:

- No lights will be facing outwards from the site.
- All lights will be facing inwards towards the construction.
- Flood/spot lights will be facing into the excavation.
- Surface mounted battens only will be provided on construction floors for general safety lighting.
- Security lighting will be provided into the site.
- Flood lights on the hoarding will be facing downwards.
- Where required, back-shielding will be provided to minimize light spill onto sensitive receivers and neighbors.

## **8.6. Air and Dust Management**

**An Air Quality Management Plan (AQMP)** has been prepared by **EI Australia** and included in **Appendix F**. The Report provides recommendations for reducing the Air Quality impacts on surrounding the site and the surrounding neighbourhood. Furthermore, the monitoring of dust within the construction site and site compound has been undertaken, and referenced in **Appendix F**.

In conjunction, the following table outlines the air and dust management items that are considered during construction.

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POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Generating dust pollution	<b>Dust</b> <ul style="list-style-type: none"> <li>Fencing will be designed to minimise the impact of dust on neighbouring sites.</li> <li>Soil and other materials stored onsite will be covered to prevent dust.</li> <li>Site compound dust monitoring – Refer Report 'Site Compound Dust Monitoring Report' in <b>Appendix F</b>.</li> <li>Construction Site dust monitoring – Refer latest dust monitoring report 'Dust Monitoring 30/10/2023 – 06/11/2023' in <b>Appendix F</b>.</li> </ul>	Ongoing	Supervisor
Dust pollution generated by machinery	<b>Machinery</b> <ul style="list-style-type: none"> <li>Equipment used on site shall not emit visible exhaust fumes for no more than 10 seconds after power has been applied.</li> </ul>	Ongoing	Supervisor
Dust pollution generated by machinery	<b>Excavation</b> <ul style="list-style-type: none"> <li>Excavation will be avoided during high wind conditions.</li> <li>Exposed or excavated soils will be regularly rehabilitated where possible to minimise dust.</li> <li>Exposed areas will be watered down to prevent dust, especially on windy days and in close proximity to dwellings and public areas.</li> <li>All excavation activities will be monitored and where necessary to control dust, hoses, misters and water cannons will be used to control dust.</li> </ul>	Ongoing	Supervisor
Dust pollution generated due to vehicular movements into and out of the site	<b>Traffic/Vehicular Movement</b> <ul style="list-style-type: none"> <li>Loaded trucks leaving the site will have tray covers to prevent dust during transport.</li> <li>A shaker pad will be located at exits to remove soil from vehicle tyres.</li> <li>Internal driveways near boundaries will be watered down to minimise airborne particles.</li> <li>Construction traffic will be confined to designated entry/exit in Andalusian Way and DeClambe Drive.</li> </ul>	Ongoing	Supervisor
Impacts of Piling	<b>Piling</b> <ul style="list-style-type: none"> <li>The Impacts of piling are to be mitigated in accordance with the requirements outlined in the Safe Work Method Statement prepared by the contractors that will undertake the excavation works.</li> </ul>	Ongoing	Supervisor
Impacts of Excavation	<b>Excavation</b> <ul style="list-style-type: none"> <li>The impacts of excavation are to be mitigated in accordance with the requirements outlined in the Safe Work Method Statement and Management Plan prepared by the excavation contractors.</li> </ul>	Ongoing	Supervisor



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	<p><b>Other</b></p> <ul style="list-style-type: none"> <li>No burning will be undertaken on site.</li> <li>Waste and scrap materials will be stored to prevent dust emissions.</li> </ul>	Ongoing	Supervisor
Ongoing supervision	<p><b>Measurement and Monitoring</b></p> <ul style="list-style-type: none"> <li>Continual visual monitoring to be undertaken by the Supervisor. Any evidence of dust shall be recorded.</li> </ul>	Ongoing	Supervisor

## 8.7. Geotechnical

A Geotechnical investigation has been prepared by El Australia for the following purpose:

- Assess the subsurface conditions within the site,
- Provide site classification,
- Provide recommendations regarding the appropriate foundation system for the site including design parameters, and
- Provide parameters for the temporary and permanent support of the excavation.

In addition to all recommendations provided in the Geotechnical Investigation Report, the following table outlines the Geotechnical management items that are to be considered.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Geotechnical requirements and excavation support	<p><b>Geotechnical requirements</b></p> <ul style="list-style-type: none"> <li>• During construction, should the subsurface conditions vary from those inferred in the Geotechnical Report, the Geotechnical Consultant should be contacted to determine if any changes should be made to their recommendations.</li> <li>• The excavation will inspected regularly by the Geotechnical Consultant as it progresses.</li> <li>• The exposed bearing surfaces for footings will be inspected by the Geotechnical Consultant</li> <li>• Permanent shoring of the 3 meters of excavations is required, and has designed as a temporarily anchored piered and shotcreted wall.</li> <li>• The lower levels of excavation are anticipated in medium to strong sandstone, and will be sawn cut surfaces, and monitored during excavation by the geotechnical consultant for any seems, which will be treated in accordance with the geotechnical recommendations.</li> </ul>	Ongoing	Supervisor / Geotechnical consultant
Road Authorities	<p><b>Road Authority requirements</b></p> <ul style="list-style-type: none"> <li>• Detailed documents and geotechnical reports relating to excavation adjacent to the adjoining Street and neighbouring Sydney Metro assets have been submitted to and approved by Council and Sydney Trains for the Excavation CC.</li> </ul>	Ongoing	Supervisor / Geotechnical consultant
Ongoing supervision	<p><b>Measurement and Monitoring</b></p> <p>Measuring and monitoring is to be undertaken in accordance with the requirements of the Geotechnical Report.</p>	Ongoing	Supervisor / Geotechnical consultant

## 88. Contamination Management

The following table outlines contamination management items that are to be considered during construction.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Soil and excavated material found to be other than the materials classifications obtained	<b>Excavation</b> <ul style="list-style-type: none"> <li>Materials classifications to be verified at each stratum level.</li> <li>Classification and clearance certificates for the site to be obtained upon reaching VENM material.</li> <li>Should materials other than those predetermined, be identified further testing and classification to occur.</li> <li>Excavation and disposal to proceed according to any revised classification</li> </ul>	ongoing	Site manager
Pollution of soils on the site and pollution of ground waters by chemical, organic or physical contamination	<b>General</b> <ul style="list-style-type: none"> <li>All staff will be aware of proper handling procedures and appropriate measures will be taken to minimise the potential for contamination.</li> <li>Chemical spillage kits will be kept on site, staff will be made aware of the appropriate use of kits.</li> </ul>	Ongoing	Site manager
Contamination from machinery	<b>Machinery</b> <ul style="list-style-type: none"> <li>High risk activities, including refuelling and servicing, will be undertaken allocated areas, controlled to reduce environmental impact.</li> <li>Fuel and oil storage areas will be bunded with a 120% capacity.</li> <li>Machinery will be inspected on a regular basis for leaks. Repairs will be undertaken immediately.</li> </ul>	Ongoing	Site manager
Contamination from chemicals/materials	<b>Chemicals/materials</b> <ul style="list-style-type: none"> <li>All contaminants shall be handled in a manner so as to confine the material completely and prevent any fugitive emission. Material will be kept on segregated, covered, bunded areas and then disposed of by removal to a registered waste depot.</li> <li>Paint and slurry will not be discharged into the stormwater. A designated paint brush and roller washing area will be located near each building to prevent contaminating the stormwater.</li> <li>Construction materials and chemical will be stored appropriately to prevent leakages into surrounding water ways.</li> </ul>	Ongoing	Site manager

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Ongoing supervision	<p><b>Measurement and Monitoring</b></p> <ul style="list-style-type: none"> <li>Waste product will be assessed and categorised as contaminated or non-contaminated and disposed of accordingly.</li> <li>If contaminated material is encountered, then it will be monitored for each type of material and the method of disposal recorded in the Contaminated Material Register.</li> <li>All hazardous materials will be removed from site and correctly disposed on completion of the works.</li> </ul>	Ongoing	Site manager
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The site was acquired from Sydney Metro / Landcom, as a cleared site. Geotechnical and Soil investigations were undertaken by EI Australian. Reports can be found in **Appendix E**.

- Geotechnical Investigation Report [E24724.G03 Rev4]
- Waste classification certificate insitu Fill
- Waste classification certificate insitu VENM

The site was found to consist generally of a fill layer estimated at 0.6 – 4m, followed by residual soil varying in depth between 0.2 and 1.9m, followed by natural sandstone ranging in strength from class IV to 1 at the base of the proposed excavation. Materials classification for the fill layer was General solid Waste (non-putrescible) followed by VENM for the residual soil and natural sandstone.

Accordingly, excavation and disposal to proceed in alignment with the relevant classification.

## 9. Stormwater Management and Sediment Control

During construction activities the soil and water management procedures are to be implemented to ensure all runoff and discharge from the site is done so without environmental impact. A Soil & Water Management Plan has been prepared in line with the Dewatering Management Plan. These are attached at **Appendix E**.

PR Water has been engaged to undertake water treatment operations in accordance with the Soil & Water Management Plan. A copy of the latest report can be located in **Appendix E**.

Further, a groundwater take assessment was undertaken by EI Australia, to determine the inflow of water into the basement during and after construction, and the necessary steps required to control the water flow. This report is attached in **Appendix E**.

The following table outlines potential impacts as well as appropriate erosion and sediment control and stormwater measures to control sediment and reduce runoff generally.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Erosion and sediment control	<p><b>Erosion Sediment Control Measures</b></p> <ul style="list-style-type: none"> <li>All control measures will be installed prior to commencing works in accordance with the Soil and Water Management Plan, refer to <b>Appendix E</b>.</li> <li>Works will be appropriately staged where possible to minimise potential for erosion and sedimentation during the project.</li> <li>Silt fencing will be erected along batter slopes, stockpiles, and any disturbed surfaces that may drain into any adjacent water bodies and stormwater systems.</li> <li>Sandbags and other sediment controls shall be installed around stormwater inlets and outlets to prevent dirty discharge from works area entering stormwater systems.</li> <li>Soil and waste stores will be in designated areas to prevent run off into drains.</li> <li>On project completion, the site will be left protected by temporary measures as required. Once permanent measures (i.e. completed structures, landscaping and stormwater detention / retention systems) have been established the temporary measures may be removed.</li> <li>All sediment basins and traps will be managed in accordance with the requirements of the Soil and Water Management Plan at Appendix E.</li> </ul>	Ongoing	Supervisor
Stockpile locations	<p><b>Stockpiles</b></p> <ul style="list-style-type: none"> <li>Stockpiles for loose materials such as soil, sand and gravel are to be in areas clear of overland flow paths. Sediment barriers are required around the stockpiles.</li> </ul>	Ongoing	Supervisor



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Reduced water quality	<p><b>Water Quality</b></p> <ul style="list-style-type: none"> <li>The site is not identified as having Acid Sulfate Soil issues.</li> <li>Temporary diversion drains will be installed to divert clean run-off around the works area.</li> <li>Drainage system outlets will be directed to temporary or permanent retention basins.</li> </ul>	Ongoing	Supervisor
Sediment runoff due to excavation	<p><b>Excavation</b></p> <ul style="list-style-type: none"> <li>Disturbance onsite will be minimised by clearly marking boundaries and designating areas for construction activities and traffic movements.</li> <li>Exposed surfaces will be stabilised as soon as possible by hydro mulching or other means.</li> </ul>	Ongoing	Supervisor
Sediment washed into the stormwater network	<p><b>Stormwater</b></p> <ul style="list-style-type: none"> <li>Stormwater measures will be put in place during construction.</li> <li>The entrances/exit be stabilised with rock.</li> <li>Shaker pads will be installed to collect mud from exiting vehicles.</li> <li>Shaker pads will be cleaned daily and link to the designated stormwater outlets.</li> </ul>	Ongoing	Supervisor
Dispersal of sediments during the transportation of material	<p><b>Traffic</b></p> <ul style="list-style-type: none"> <li>Trucks transporting materials will be inspected before leaving or entering the site to prevent spillage of soil and other materials on roads and footpaths.</li> </ul>	Ongoing	Supervisor
Excessive use of water during construction	<p><b>Water Saving Measures</b></p> <ul style="list-style-type: none"> <li>All hoses will be in good condition and fitted with a trigger nozzle.</li> <li>Any wash down areas will utilise high pressure water nozzles.</li> </ul>	Ongoing	Supervisor
Ongoing Supervision	<p><b>Measurement and Monitoring</b></p> <ul style="list-style-type: none"> <li>Soil erosion and sediment control devices will be installed and maintained in accordance with the Soil and Water Management Plan (<b>See Appendix E</b>)</li> <li>Weekly site inspections by the Supervisor with appropriate corrective actions taken immediately.</li> <li>Additional inspections after each rain event by the Supervisor</li> <li>Maintenance of control measures: <ul style="list-style-type: none"> <li>Repair damaged or blocked sections</li> <li>Remove silt from fencing where built up</li> </ul> </li> <li>Records shall be kept of all ESC device installations, inspections, and maintenance activities.</li> <li>The quality and quantity of water released from site will be recorded</li> </ul>	Ongoing	Supervisor

## 10. Waste & Material Reuse Management

During excavation and building works there are numerous opportunities to reduce, reuse and recycle waste through the implementation of the **Construction Waste Management Plan (CWMP)** prepared in accordance with the requirements of development consent SSD 15882721 condition C28, see attached in **Appendix D**.

The following table outlines potential impacts as well as appropriate waste management measures reduce, reuse, and recycle waste, as well as education and training for staff.

POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
General Site Management	<p><b>Site management</b></p> <ul style="list-style-type: none"> <li>The construction site will be kept free of rubbish, waste material and debris.</li> <li>Waste will be disposed of in accordance with the CWMP at Appendix D.</li> </ul>	Ongoing	Supervisor
Waste storage and removal	<p><b>Waste Management Plan</b></p> <ul style="list-style-type: none"> <li>Chemical waste will be removed from site and disposed of at licenced facilities.</li> <li>Procedures for removal of other hazardous or dangerous materials from the site in accordance with State and Federal legislation including WorkSafe requirements.</li> <li>Waste collection shall only occur during permitted hours.</li> <li>For outside bins, self-closing lids must be installed to ensure waste does not become airborne.</li> <li>Litter and debris 'trapped' against site fencing will be regularly cleaned.</li> <li>Procedures for removal of waste (materials that cannot be reused or recycled) from the site; <ul style="list-style-type: none"> <li>Demolished concrete will be reused on site for construction driveways where possible or sent to a concrete recycling plant.</li> <li>General waste will be stored in the designate bin/skip and removed by the waste contractor on a regular basis.</li> <li>Recyclable waste will be stored in a designated bin/skip and removed by the waste contractor on a regular basis.</li> <li>The waste bins will be stored in the designated materials handling areas, refer to Plans at <b>Appendix A</b>.</li> </ul> </li> </ul>	Ongoing	Supervisor
Excess waste	<p><b>Reduce</b></p> <ul style="list-style-type: none"> <li>Efforts to minimise waste on site by avoiding over-estimation of purchasing requirements, minimizing packaging materials, and buying environmentally approved and recycled content products</li> <li>Minimise use of packaging materials and recycle packaging products where possible</li> <li>Utilise quantity surveyor estimates to order materials, to prevent wasted materials.</li> </ul>	Ongoing	Supervisor

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Not re-using material on-site	<p><b>Reuse</b></p> <ul style="list-style-type: none"> <li>Weeds and contaminated mulch will be disposed of separately.</li> <li>The office will utilise recycle waste paper bins.</li> <li>The re-use of timber, glass and other materials</li> </ul>	Ongoing	Supervisor
	<ul style="list-style-type: none"> <li>The type and quantity of materials that are to be re-used are detailed in the CWMP at <b>Appendix D.</b></li> </ul>		
Not separating recycle material from general waste	<p><b>Recycle</b></p> <ul style="list-style-type: none"> <li>Procedures are to be put in place for the collection and sorting of recyclable construction materials</li> <li>Training will be provided to all staff outlining the appropriate recycling procedures.</li> <li>Recycled waste bins will be appropriately sign posted.</li> <li>The type and quantity of materials that are to be recycled are to be detailed in the CWMP at <b>Appendix D.</b></li> </ul>	Ongoing	Supervisor
Construction staff and contractors waste	<p><b>Staff waste</b></p> <ul style="list-style-type: none"> <li>Provision of containers for recyclable materials including cardboard, glass, metal, and plastic and green waste</li> <li>Provisions for collection of daily rubbish from workers.</li> </ul>	Ongoing	Supervisor
Ongoing supervision	<p><b>Measurement and Monitoring</b></p> <p>Waste monitoring will be recorded on the daily and weekly Inspection report.</p>	Ongoing	Supervisor

## 11. Sydney Metro

All works adjacent to the Sydney Metro rail corridor are to be undertaken in accordance with the requirements of the 'Sydney Metro Underground Corridor Protection Technical Guidelines', dated April 2021. The design and works that potential impact Sydney Metro corridor are to be approved by Sydney Metro.

In this regard development consent (SSD 15882721) conditions A29 to A32 terms of consent, B40 to B59 were approved prior to issue of first construction certificate, D40 to D47 are monitored during construction and E45 to E49 a to be completed prior to occupation or commencement of use.

All protective measure recommendations outlined in the 'Sydney Metro Electrolysis Risk Report' prepared by Corrosion Control Engineering are to be implemented where possible/practical to mitigate against long term stray current corrosion at on ground and in ground metallic structures.

The 'Noise and Vibration Impact Assessment from Sydney Metro City & Southwest Tunnels' prepared by Acoustic Logic concludes that the proposed development will readily satisfy Sydney Metro Underground Corridor Protection Technical Guidelines with no additional vibration isolation required.

The 'Proposed Impact Assessment for Sydney Metro' prepared by Douglas Partners outlines the 3D numerical modelling required to be undertaken by Geotechnical Engineer to meet the requirements of Transport for NSW to assess the potential impact of the proposed development on Sydney Metro tunnels.

The 'Rail Facility Vibration Management Plan' prepared by Acoustic Logic presents the recommended criteria for the regulation of vibration from demolition, piling works, excavation and construction work that potential impacts upon the underground tunnels located near the site. It concludes that provided the methods set out in this report are followed then the structural integrity of the rail facilities nearby the project site will be safe guarded.

### The Sydney Metro Guidelines

The Sydney Metro guidelines state that the following is to be undertaken prior to construction commencing, during construction and after construction has been completed prior to the issue of the Occupation Certificate.

#### **Prior to construction**

The following documents have been submitted prior to construction commencement:

- detailed ground and vibration monitoring plan including trigger levels, action plans and remedial measures, details of the instrumentation and baseline monitoring readings
- construction schedule, construction management plan including sequence plan identifying impacts
- construction layout of equipment relative to metro infrastructure
- final detailed Safe Work Method Statements
- temporary safety plans and measures
- temporary works plan, temporary access, vehicle, plant and equipment such as cranes (including mobile cranes) and stockpiling
- noise, vibration and electrolysis studies and control measures
- a rail related risk assessment and management plan
- list of machinery to be used during excavation/construction
- groundwater control plans, environmental aspects including contamination
- design loadings and certified drawings for construction related works that affect

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*metro infrastructure*

- *agreed interface activities plan with Sydney Metro and*
- *condition and dilapidation survey reports of all metro infrastructure affected by the development.*

### **During construction**

*The following documentation is being submitted to Sydney Metro at agreed intervals, during the development construction phase:*

- *monitoring report at agreed intervals, which includes monitoring results and assessment by the geotechnical or structural consultant*
- *notification of work progress at agreed intervals, which is applicable during excavations, foundations and support installations, superstructure construction up to the ground level*
- *interim dilapidation survey reports as appropriate*
- *any changes to the design and construction methods for approval by Sydney Metro and*
- *rock face mapping, inspection and assessment reports.*

### **After construction completion and prior to issue of occupation certificate**

*Sydney Metro may request the following documentation from the developer, after completion of the construction:*

- *one set of as-built structural and foundation plans signed by a qualified person*
- *one set of as-built drawings for ground anchors and other support details near the affected metro infrastructure*
- *monitoring summary report*
- *copy of the geotechnical mapping report carried out during excavation works*
- *dilapidation survey report conducted after construction completion*
- *structural safety report*
- *operational safety report and*
- *current mitigation verification report, including maintenance base line measurements referenced to measured locations.*

The following table outlines the main potential impacts on the Sydney Metro corridors and the control measures that should be put in place.



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POTENTIAL ISSUE	CONTROL MEASURES	TIMING	OFFICER
Safety and structural integrity of the tunnels	<p><b>Safety and Structural Integrity</b></p> <ul style="list-style-type: none"> <li>Sydney Metro are to provide written approval of the final construction drawings for the Construction Certificate.</li> <li>No work is permitted within the rail corridor, or any easements which benefit Sydney Metro, at any time, unless the prior approval of, or an Agreement with, Sydney Metro.</li> <li>A registered surveyor shall peg-out the common property boundary between the development site and the rail corridor and any Sydney Metro easements to ensure that there is no encroachment by the development.</li> <li>Risk Assessment/Management Plan and detailed Safe Work Method Statements for the proposed works are to be submitted to Sydney Metro for review and endorsement regarding impacts on the rail corridor.</li> </ul>	Ongoing	Supervisor
Safe and effective operation of the network	<p><b>Continued Safe and Effective Operation</b></p> <ul style="list-style-type: none"> <li>All structures must be constructed and maintained to allow for the future operation and demolition of any part of the development without damaging or otherwise interfering with the Sydney Metro rail corridor</li> <li>Persons performing the service search shall use equipment that will not have any impact on rail services and signalling.</li> </ul>	Ongoing	Supervisor
Noise and vibration restrictions	<p><b>Noise and Vibration</b></p> <ul style="list-style-type: none"> <li>The vibration criteria methods and exceeded in project criteria methods are to be implemented in accordance with the recommendations outlined in the 'Rail Facility Vibration Management Plan'</li> <li>Implement the control measures outlined in Section 7 Operating Hours Noise and Vibration Controls of this CEMP.</li> </ul>	Ongoing	Supervisor and Noise and Vibration Consultant
Stray Current and Electrolysis	<p><b>Stray Current and Electrolysis</b></p> <ul style="list-style-type: none"> <li>All works are to be undertaken in accordance with the Sydney Metro and Sydney Trains Electrolysis Risk Reports, including the implementation of a suitable test program to quantify a dc stray current signature for the development site before enabling works. Suitable dc current mitigation strategies shall be integrated into the design of the development. Following construction, dc stray current testing shall be carried out to verify that electrolysis mitigation strategies are proven to be effective including comparison to the pre-development stray current signature. This information shall also be used to establish maintenance baselines for the life of the development.</li> </ul>	Ongoing	Supervisor and Electrolysis Consultant

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<p>Access requirements that may be necessary for inspection and maintenance purposes.</p>	<p><b>Access requirements</b></p> <ul style="list-style-type: none"> <li>• Access for Sydney Metro officers to the Sydney Metro corridor and adjacent demolition, excavation, shoring and construction site is required to be provided at all times, where there is any potential impact on access then Sydney Metro is to be consulted.</li> </ul>	<p>Ongoing</p>	<p>Supervisor</p>
<p>Impact of open excavation, foundations, underground excavations and demolition</p>	<p><b>Impact of excavation, foundations and demolition</b></p> <ul style="list-style-type: none"> <li>• No rock anchors, rock bolts, ground anchors, rock ties, piles, foundations, rock pillars, transfer structures, basement walls, slabs, columns, beams, cut rock faces, are to be installed in the rail corridor, Sydney Metro property.</li> <li>• The building contractor must ensure that all existing and future drainage works on the development site will be directed into the appropriate local council or approved drainage system.</li> <li>• The building contractor must ensure that during works no water collects on or near the railway corridor. Should water be allowed to pond adjacent to rail infrastructure facilities and service is interrupted, the Building Contractor shall be liable for any Sydney Metro expenditure involved with restoring or maintaining alternative services.</li> </ul>	<p>Ongoing</p>	<p>Supervisor and Structural Engineer</p>
<p>Geotechnical Investigations</p>	<p><b>Geotechnical Investigations</b></p> <ul style="list-style-type: none"> <li>• <i>The 3D numerical modelling will be undertaken by Geotechnical Engineer as outlined in the Proposed Impact Assessment for Sydney Metro and Sydney Trains reports.</i></li> <li>• <i>Unless advised by Sydney Metro in writing, all excavation, shoring and piling works within 25m of the rail corridor are to be supervised by a geotechnical engineer experienced with such excavation projects and who holds current professional indemnity insurance.</i></li> <li>• <i>For the safety of the tunnels and rail infrastructure, the tunnel and tunnel structure performance shall be monitored during construction and to verify the predicted displacements, stress levels in structural elements and vibration levels. The developer shall implement a comprehensive monitoring system that incorporates early warning criteria developed in agreement with Sydney Metro. The developer's geotechnical consultant shall assess the monitoring results continually and submit monitoring assessment reports for Sydney Metro review.</i></li> </ul>	<p>Ongoing</p>	<p>Supervisor and Geotech. Engineer</p>
<p>Protection of the environment</p>	<p><b>Protection of the environment</b></p> <ul style="list-style-type: none"> <li>• Implement the control measures outlined in Section 8 Environmental Management and Section 9 Stormwater Management and Sediment Control of this CEMP.</li> </ul>		

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<p>Ongoing supervision</p>	<p><b>Monitoring and communication</b>  <i>The building contractor must ensure that at all times they have a representative (which has been notified to Sydney Metro in writing), who:</i></p> <ul style="list-style-type: none"> <li><i>(a) oversees the carrying out of the Building Contractor's obligations under the conditions of this consent and in accordance with correspondence issued by Sydney Metro</i></li> <li><i>(b) acts as the authorised representative of the Building Contractor</i></li> <li><i>(c) is available (or has a delegate notified in writing to Sydney Metro that is available) on a 7 day a week basis to liaise with the representative of Sydney Metro as notified to the Building Contractor.</i></li> </ul> <p><i>The Building Contractor must, during demolition, excavation, shoring and construction works, consult in good faith with Sydney Metro in relation to the carrying out of the development works and must respond or provide documentation as soon as practicable to any queries raised by Sydney Metro in relation to the works.</i></p> <p><i>Where a condition of the consent requires consultation with Sydney Metro, the building contractor shall forward all requests and/or documentation to the relevant Sydney Metro interface team.</i></p>	<p>Ongoing</p>	<p>Supervisor</p>
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	<p><i>If required by Sydney Metro, the Building Contractor must give Sydney Metro written notice at least 5 business days before any of the following events occur within 25 metres of the rail corridor</i></p> <ul style="list-style-type: none"> <li><i>(a) site investigations</i></li> <li><i>(b) foundation, pile and anchor set out</i></li> <li><i>(c) set out of any other structures below ground surface level or structures which will transfer any load or bearing</i></li> <li><i>(d) foundation, pile and anchor excavation</i></li> <li><i>(e) other excavation</i></li> <li><i>(f) surveying of foundation, pile and anchor excavation and surveying of as built excavations</i></li> <li><i>(g) other concreting; or</i></li> <li><i>(h) any other event that Sydney Metro has notified to the Building Contractor in writing so that Sydney Metro may inspect the carrying out or completion of those works on the development site.</i></li> </ul> <p><i>If required by Sydney Metro, prior to the commencement of works or at any time during the excavation and construction period deemed necessary by Sydney Metro, a joint inspection of the rail infrastructure and property in the vicinity of the development is to be carried out by representatives from Sydney Metro and the Building Contractor and a dilapidation survey prepared. The dilapidation survey(s) will establish the extent of any existing damage and enable any deterioration during construction to be observed and rectified at the Building Contractor's cost. The submission of a detailed dilapidation report by the Building Contractor for review and approval by Sydney Metro will be required within 10 days following the undertaking of any joint inspection, unless otherwise notified by Sydney Metro in writing.</i></p>		
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A detailed Risk Management Plan was prepared in conjunction with Sydney Metro, which identified all potential risks and amelioration measures in conjunction with a schedule for monitoring, and is included in Appendix I.

Regular monitoring (vibration, inclinometer, & survey) has been carried out by Paragon & LTS who have collected data to assess the potential of structural damage to surrounding buildings (Sydney Metro) and assets. For the latest report (PAR-22526-W45A, PAR-22526-R15A, & 51524 009MON-12) **refer to Appendix I.**

## **12. Management Responsibility**

### **12.1. Accountabilities**

#### **12.1.1. Project Manager**

The Project Manager is responsible for construction management and shall establish and maintain the Company's policies for this project and shall be responsible for their effectiveness.

The Project Manager ensures that the Project Team understands and implements the requirements of

the Construction Environmental Management Plan for the course of the project.

### **12.1.2. Site Manager**

The Site Manager is responsible to the Project Manager for the day to day co-ordination and site control of direct labour, plant, subcontractors and suppliers for construction works.

The Site Manager is responsible for the correct implementation of the controls and their on-going monitoring and maintenance and correction of non-conformances.

### **12.1.3. Site Contracts Administrator**

The Site Contracts Administrator reports to the Project Manager and is responsible for the preparation and implementation of the management system for a project. The Site Contracts Administrator shall ensure that all work be carried out in accordance with the Management System procedures.

The Site Contracts Administrator shall establish audit schedules in consultation with the Project Manager and assign personnel to carry out planned audits. Any deviation from the Management System will be reported to the Project Manager for rectification. Trends and cumulative effects from all projects shall be assessed and corrective actions determined.

### **12.1.4. Geotechnical Consultant**

The Geotechnical consultant is engaged by the client to manage Geotechnical Engineering issues onsite. The Geotechnical consultant is to liaise with the site supervisor to ensure that all excavation, stabilisation and shoring is undertaken in accordance with the requirements of the Geotechnical Report.

### **12.1.5. Subcontractors**

The Project Manager shall clearly define the scope of subcontracted work including the subcontractor's duties for:

- Planning, installation and monitoring of the controls outlined in the Construction Environmental Management Plan
- Record keeping

The subcontractor may only enter the site from the designated access points shown on the relevant Construction Pedestrian and Traffic Management Plan.

The subcontractor cannot proceed without the approval of the Project Manager.

#### **12.1.6. Deicorp's Group Responsibility**

Deicorp's Project Manager shall review the proposed controls outlined in the Construction & Environmental Management Plan.

Subcontractor's personnel will be given Deicorp's site induction before starting work.

Deicorp's Site Manager will monitor the subcontractor's compliance with the approved environmental controls and report any deficiency or non-conformance to the Project Manager

### **122 Communication Protocols**

Both formal and informal communication systems are in place on this project to ensure that information regarding the Construction & Environmental Management Plan is circulated effectively to relevant personnel both internal and external to the project. Also, that information is distributed to other Deicorp workplaces that might benefit from information sharing and system improvements.

Subcontractors shall be included in communications to ensure the compatibility and effectiveness of their systems.

Communication with the community shall be done through the Project Manager. The Project Manager is responsible for the timing and effectiveness of all communications. **Refer Appendix Q for further information.**

Deicorp Group promotes the following initiatives for communication and encourages all personnel to participate enthusiastically:

- Induction
- Tool box talk
- Risk assessment
- Pre-start briefing
- Site inspection and reporting
- Incident reporting and corrective action
- Complaint Procedure
- Incident Procedure

### **123. Work Site Monitoring and Inspection**

The contact person with regard to implementation of the Construction Environmental Management Plan on this project is the Site Manager.

The Supervisor shall carry out regular inspections of all work areas to ensure that the following standards and processes are being maintained. All controls of the site shall be monitored at least weekly by the Project Supervisor and the results recorded.

After each rain event site soil erosion and sediment controls shall be inspected by the Supervisor and any necessary maintenance done as soon as practicable. A record of the inspection and maintenance shall be kept on site.

The Site Manager has authority to initiate emergency response procedures. If a potentially environmentally hazardous situation is identified and cannot be rectified immediately, a Non-Conformance Report shall be made and, if needed, work in the area shall cease until the situation is rectified.



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The Project Manager shall determine appropriate corrective action to address the immediate consequences of the non-conformance including containment, clean up and restoration work.

The Project Manager shall regularly review reports to confirm that clean up, restoration and corrective actions have been completed and are effective. The Project Manager shall review all non-conformances and report significant findings to monthly management review meetings.

Any damage to areas outside the work site shall be immediately reported to the Supervisor who may advise on the nature of appropriate corrective action.

### **124. Training**

A Project Management Plan should be prepared to outline the expected qualifications and training requirements for project personnel. It shall be kept current with any additional training that may become necessary during the course of the work. Records of training done on site shall be kept in the project file system including dates, personnel attending and trainer details.

All site staff and workers undergo a site-specific site induction or other training which includes:

- Environmental aspects relevant to their working on site
- Description of control measures used, their construction & maintenance
- The potential impacts from ineffective controls
- Monitoring and reporting procedures
- Emergency and incident response

Any alteration to the CEMP relevant to site personnel shall be immediately communicated via updated inductions and tool box talks.

Subcontractors shall be inducted into the Deicorp system, and if their works require such, they shall be required to submit relevant work method statements with associated environmental protection measures.

### **125. Specific Emergency Responses, Contact Details, Emergency Preparedness**

Any specific Emergency Response procedures required to be implemented are to be outlined by the Project Manager/Site supervisor.

The Contact detailed of the emergency services are to be located on site at a location that is easily accessible to all.