



# Construction Environmental Management Plan

Orica Southlands Warehouse Estate  
28 McPherson Street, Banksmeadow NSW




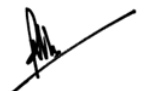

Richard Crookes Constructions

15 February 2023

AU122127

# Quality Management

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This report was prepared in accordance with the scope of services set out in the contract between Geosyntec Consultants Pty Ltd (ABN 23 154 745 525) and the client.



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## List of Abbreviations

|        |  |
|--------|--|
| ACM    | Asbestos Containing Material   |
| AMP    | Asbestos Management Plan   |
| AQMP   | Air Quality Management Plan  |
| ARA    | Appropriate Regulatory Authority                                       |
| ASS    | Acid Sulfate Soils   |
| BC Act | Biodiversity Conservation Act (2016)                                   |
| BOM    | Bureau of Meteorology  |
| CEMP   | Construction Environmental Management Plan                             |
| CHL    | Commonwealth Heritage List   |
| DPE    | Department of Planning and Environment                                 |
| ECM    | Environmental Control Map  |
| EPA    | Environmental Protection Authority                                     |
| EPBC   | Environment Protection and Biodiversity Conservation (EPBC) Act (1999) |
| EPO    | Environmental Protection Order   |
| ESMP   | Erosion and Sediment Management Plan                                   |
| IN     | Infringement Notice  |
| KPI    | Key Performance Indicator  |
| LGA    | Local Government Area  |
| NCRs   | Non-conformance Reports  |
| NEPM   | National Environmental Protection Measure (1999 as amended in 2013)    |
| NVMP   | Noise and Vibration Management Plan                                    |
| MDP    | Major Development Plan   |
| OEH    | Office of Environment and Heritage                                     |
| OSDB   | Onsite Detention Basin   |
| PASS   | Potential Acid Sulfate Soil  |
| RAP    | Remediation Action Plan  |

# 1 Introduction

Geosyntec Consultants Pty Ltd (Geosyntec) has been commissioned by Richard Crookes Constructions (RCC) to prepare a Construction Environmental Management Plan (CEMP) for Stage 1 and 2 construction works at the Orica Southlands Warehouse Estate located at 28 McPherson Street, Banksmeadow NSW (the site). The site location and layout are shown in Figures 1 and 2 of Appendix A, respectively.

Proposed works comprise the construction of a suspended concrete platform above the existing flood detention basin (Stage 1), and construction of two warehouse buildings and associated infrastructure (Stage 2).

An NSW EPA Auditor approved Remediation Action Plan (RAP) has been prepared for the site, which indicates that asbestos contaminated soil is present in areas (bonded and friable), as well as contaminated groundwater (with associated gas and vapour issues). Remediation works will take place at the site during Stage 1 works, as discussed in Section 3.3.3 of this CEMP.

The purpose of this CEMP is to detail how RCC and their subcontractors will manage environmental aspects associated with the proposed works. Implementation of this CEMP will:

- Identify the environmental obligations and hazards/risks associated with the proposed works.
- Help prevent unauthorised environmental harm.
- Ensure RCC and its subcontractors comply with environmental management requirements.
- Ensure RCC and its subcontractors obtain and comply with relevant licences and approvals.
- Comply with all relevant environmental legislation.
- Minimise negative impacts on the community that relate to the environmental impacts of RCC and subcontractors work and development.

RCC and subcontractors will ensure that the requirements of this plan are communicated and implemented by all relevant personnel involved with the development. This plan may be updated as required throughout the project.

Development Consent conditions require the CEMP to be reviewed by the appointed NSW EPA Site Auditor and the Planning Secretary.

The table below presents selected Development Consent conditions relevant to the CEMP and where this document addresses them.

**Table 1.1: Development Consent Conditions and the CEMP References**

| SSD Condition   | Location in the CEMP   |
|---|--|
| C1. Management plans required under the consent must be prepared in accordance with relevant guidelines, and include: | Section 1.10 of the CEMP.                                      |
| a) Details of:  | Section 1.9 of the CEMP.                                       |
| i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);                | Section 5 of the CNVMP (Appendix M)<br>Section 1.8 of the CEMP |
| ii) Any relevant limits or performance measures and criteria; and   |  |
| iii) The specific performance indicators that are proposed to be used to judge the                                    |  |

| SSD Condition   | Location in the CEMP  |
|---|---|
| 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  | Section 1.9 of the CEMP   |
| c) A program to monitor and report on the:  | Section 4 of the CEMP and Appendix C and D of the CEMP                      |
| 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 | Section 8 of the CEMP   |
| e) A program to investigate and implement ways to improve the environmental performance of the development over time  | Section 4 of the CEMP<br>Appendix C and D of the CEMP                       |
| f) A protocol for managing and reporting any  | Section 5 and Section 6.1 of the CEMP                                       |
| i) Incident and any non-compliance (specifically including any exceedance of the impact assessment criteria and performance criteria)   | Appendix E of the CEMP<br>Appendix H of the CEMP<br>Section 4.2 of the CEMP |
| ii) Complaint   | Section 9 - Stakeholder Grievances and Concerns of Appendix I of the CEMP   |
| iii) Failure to comply with statutory requirements; and   |   |
| g) A protocol for periodic review of the plan   | Section 4.3 of the CEMP   |
| 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.           | The entire CEMP document  |
| C3. As part of the CEMP required under Condition C2 of this consent, the Applicant must include the following:  |   |
| a) A procedure for consulting with nearby sensitive receivers (including the adjacent ABP Detector Dog Facility) to schedule high noise generating works and vibration intensive activities         | Appendix M of the CEMP  |
| b) Details of the vibration monitoring which would be undertaken during the Stage 1 works   | Appendix M of the CEMP  |
| c) Erosion and sediment control plans   | Appendix N of the CEMP  |
| d) A copy of the:   | Appendix K of the CEMP  |
| i. Development's Construction Traffic Management Plan (see Condition B1)  | Appendix G of the CEMP<br>Appendix L of the CEMP                            |
| ii. Development's Flood Emergency Response Plan (see Condition B21)   | Section 3.4 of the CEMP<br>Appendix J of the CEMP                           |
| iii. RAP included in the EIS  |   |

| SSD Condition | Location in the CEMP   |
|---------------|--|
| iv.           | Development's Unexpected Finds Protocol (see Condition B32) and      |
| v.            | Development's Construction Waste Management Plan (see Condition B48) |

## 1.1 Project Description

This CEMP covers RCC Stage 1 and 2 construction works at the Orica Southlands Warehouse Estate which comprises the construction of:

### Stage 1

- A suspended concrete platform above the existing flood detention basin.

### Stage 2

- Two warehouse buildings.
- Associated landscaping.
- Hardstand areas.
- Stormwater infrastructure.
- Other onsite infrastructure.

It is noted that RCC intend to strip surface soils as the site at the commencement of Stage 1 works, requirements of which require discussion with the Site Auditor. Air quality considerations are discussed in Section 3.3.10 of this CEMP.

## 1.2 Principal Contractor

RCC is responsible for site management during the construction works including the implementation of the CEMP. RCC is required to assess the site for environmental risks, coordinate the control measures implemented to mitigate identified risks, ensure control measures are fit for purpose, monitor control measures effectiveness and overall site conditions on a daily and weekly basis, and ensuring documentation and reporting procedures are followed. The inspections must be recorded into the site log.

RCC is also responsible for implementing the Site Inductions for new workers. Relevant induction material is included in Appendix B.

## 1.3 Site Setting

The site is located within the Botany industrial area between Nant Street and a railway line. The local topography is relatively flat with a gentle fall towards the south. Botany Bay is located approximately 1km to the south and south-west. The site location and layout plan are shown in Figures 1 and 2 of Appendix A, respectively.

## 1.4 Sensitive Areas

The site is located within an industrial area. The WSP (2018) Biodiversity Development Assessment Report (BDAR) indicates that sensitive habitat does not exist on the site.

The nearest water body is Botany Bay located approximately 1km to the south and south-west. A drainage line exists to the immediate west of site (Springvale Drain).

## **1.5 Indicative Project Schedule**

This CEMP details the environmental management measures, controls and appropriate reporting procedures for construction of the suspended concrete platform, warehouse and associated facilities only. The schedule for the works is not yet available.

## **1.6 Site Facilities and Compound**

The following is to be considered when establishing the site compound, which is to be indicated on site Environmental Control Plans (see Section 3.1):

- Minimise disturbance to natural ground and vegetation.
- Minimise nuisance to neighbours (eg. no loose dirt which could be a source of dust; if noisy equipment is needed, locate work area as far from neighbours as practicable).
- Location for office, amenities and dry storage to be above flood level and away from surface drainage lines.
- Buildings to be securely anchored to the hardstand or ground surface.
- Vehicles to be able to turn off road into compound without impeding through traffic.
- Establish separate storage for chemicals and hazardous goods, inside bunded area.
- No bulk fuels are to be stored on site.
- Minimise potential for work near dry vegetation which could cause unplanned fire (eg. welding).
- Fenced compound must be secure, including locks installed on compound gates by RCC.
- Notice boards to be easily visible on outside of gates with relevant site contact numbers.
- Set out sheds and other facilities neatly, with covered rubbish bins readily available.
- Plan service and park-up area to be clearly delineated, near compound.
- The placement of safety-warning signs as needed.

## **1.7 Operating Hours & Toolbox Talk**

Construction works will be carried out during standard hours.

- Monday to Friday 7:00am to 6:00pm.
- Saturdays 8:00am to 1:00pm.
- No work will be carried out on Sundays or public holidays.

Activities may be undertaken outside the hours above if required, including the following scenarios:

- Non-audible works may be carried out outside the abovementioned hours.
- If approval is given by a public authority for the delivery of oversized plant and equipment.
- In an emergency to avoid the loss of life, damage to property or to minimise environmental harm. An incident report must be provided to the Safety Manager.



These and other scenarios should be assessed in accordance with the Construction Noise and Vibration Management Plan (see Appendix M). For all other proposed out of hours works, relevant approvals must be obtained (potentially requiring community notifications, etc.).

Toolbox talks will be conducted once per week and pre-start meetings are to be conducted prior to work starting each day. Additional toolbox talks will also be conducted if site conditions or processes change.

Daily start-up inspections/shutdown procedures of plant and machinery will be conducted by operators. The site foreman will undertake (at a minimum) twice weekly inspections of plant on site.

## 1.8 Environmental Objectives, Targets and Indicators

The environmental objectives and targets for the project are outlined in Table 1.2.

**Table 1.2: Environmental Objectives, Targets and Indicators**

| Objective   | Target/Indicator   |
|---|--|
| Set in place an Environmental Management System for the Project which will address all relevant environmental planning requirements | <p>Key environmental targets for the Project are:</p> <ul style="list-style-type: none"> <li>• Compliance with applicable legislation.</li> <li>• Compliance with all permits and licences.</li> <li>• Continual improvement through collaboration with Goodman, the NSW Department of Planning and Environment (DPE), and other key stakeholders.</li> </ul>  |
| Predictive measures for assessing environmental compliance  | <p>Environmental and planning lead key performance indicators:</p> <ul style="list-style-type: none"> <li>• Provision of comprehensive environmental training based on environmental risks and the qualifications and experience of RCC workforce.</li> <li>• 100% of scheduled inspections of environmental controls occur.</li> <li>• Regular toolbox talks with an environmental focus to be conducted throughout construction of the project.</li> </ul>   |
| Output measures for assessing environmental compliance & performance  | <p>Environmental and planning key performance indicators for the project:</p> <ul style="list-style-type: none"> <li>• Establish an incident classification and reporting plan and adhere to the timeframes and actions within the plan.</li> <li>• No major incidents (eg. lost time injuries, (environmental) emergencies caused (directly or indirectly) by construction activities).</li> <li>• No DPE stop work orders.</li> <li>• No major non-compliance identified in audits.</li> <li>• All environmental observations and actions raised in inspections and audits are closed out within agreed timeframes.</li> <li>• Zero major environmental incidents, and no breaches of approvals, permits or licences.</li> <li>• All other incidents managed within the incident classification and reporting plan.</li> <li>• No DPE, EPA or Council issued infringement notices.</li> <li>• Major environmental spills (if any) to be reported to RCC Project Manager immediately.</li> <li>• Environmental inspection completed each week and documented using HSE Weekly Inspection Checklist (frequency of documented inspections can increase if required).</li> </ul> |
| Effective site environmental controls   | <p>Achieve alignment with RCC and their subcontractors expectations with regards to best practice control measures, including fulfilling environmental obligations.</p>  |
| Maximise the amount of waste being recycled, & reduce waste cost  | <p>Recycled waste target for the project is 90%.</p>   |

| Objective   | Target/Indicator  |
|---|---|
| Reduce the level of environmental impact RCC and their subcontractors' operations have on the environment | Environmental issues identified and controlled prior to causing negative impacts on the Project or on the environment.  |
| Effective implementation of the environmental system  | <ul style="list-style-type: none"> <li>80% or better internal audit results</li> <li>Full compliance with Planning Approval requirements</li> <li>No major non-compliances identified in audits undertaken by DPE</li> <li>All environmental observations and actions raised in inspections and audits are closed out within agreed timeframes</li> </ul> |
| Community issues managed appropriately  | <ul style="list-style-type: none"> <li>Zero valid complaints</li> <li>All complaints reported to Goodman Project Manager</li> </ul>   |

Targets will be met through the implementation and compliance with this CEMP and sub-plans including applicable legislation, site inductions, daily and weekly site inspections, an incident classification and reporting system, specific environmental controls, and auditing of the CEMP.

## 1.9 Approval, Legal and Licensing Requirements

In general, all activities carried out onsite must comply with the provisions of all legislation relating to the construction and operation of the Project. Table 1.3 lists legislation, licencing and approval requirements that are state or locally relevant and require due consideration under the CEMP.

**Table 1.3: List of Legal and Legislative Requirements**

| Legislation / Policy<br>(Administering<br>Authority) | Summary of Legislation Requirements  | Approvals/Permits or Licences<br>Required   |
|--|--|---|
| Biodiversity Conservation Act (2016) (BC Act)        | The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development (described in Section 6 (2) of the <i>Protection of the Environment Administration Act 1991</i> ).  | No approvals required.  |
| Environmentally Hazardous Chemicals Act 1985 (OEHA)  | Regulates the disposal of wastes issued with a "chemical control order" and designated chemical and chemical wastes (including asbestos).<br><br>Disposal requirements for asbestos are identified under the Protection of the Environment Operations Act 1997 (POEO)<br><br>Other chemical wastes designated under this act are: <ul style="list-style-type: none"> <li>Polychlorinated Biphenyls (PCB)</li> <li>Pesticide wastes including used pesticide containers</li> <li>Copper/chrome/arsenic (CCA) wastes.</li> </ul> | Clearance, transport and disposal of designated chemical wastes must be completed under appropriate licences.<br><br>Chemical wastes designated under this Act to be removed from this site must be transported and disposed of by appropriately licensed waste transport contractors to a facility lawfully able to accept that type of waste. |
| National Parks and Wildlife Act 1974                 | Provides protection for most fauna species and protected flora.<br><br>It is an offence: to harm animal which is part of a threatened species, population or ecological community; to pick any plant which is part of a threatened species, population or ecological community.  | No approvals required.  |

| Legislation / Policy<br>(Administering<br>Authority)                 | Summary of Legislation Requirements   | Approvals/Permits or Licences<br>Required  |
|--|---|--|
|  | It is also an offence if a person knows that an area of land is the habitat of a threatened species, population or ecological community, to do something or fail to do something that causes damage to that habitat.  |  |
| Aboriginal and Torres Strait Islander Heritage Protection Act (1984) | Provides protection for indigenous heritage in NSW.   | Development Consent Conditions (SSD-9691) do not indicate the presence of heritage items at the site.  |
| Biosecurity Act (2015)   | This Act relates to the management of diseases and pests that may cause harm to human, animal or plant health or the environment.   | No approvals required.   |
| Protection of the Environment Operations Act 1997 (OEH)              | Provides for the control of polluting activities in NSW to prevent pollution to the environment.<br>Provides a duty to notify OEH of any off site environmental harm caused from site activities.<br>Waste Classification is required prior to the removal of waste (including fill/soil) from a site to establish the appropriate means of disposal. | Waste classification assessment and waste classification certificates (produced by a qualified environmental assessor) are required prior to disposal and are required to accompany all waste soils materials being transported to waste facilities that are licenced by the NSW EPA to accept the respective class of waste.<br>Transport contractors must be appropriately licensed to transport the class of waste they are carrying. |
| Bayside Local Environmental Plan (2021)                              | Provides detailed implementation of development requirements, including where particular types of development are permitted with or without consent.<br>Identifies items of local heritage value and trees which require preservation.  | No approvals or permits required.  |
| Waste Avoidance and Resource Recovery Act 2001 (OEH)                 | Promotes the waste management hierarchy (avoidance, resource recovery, and disposal).   | No requirement for permit or approval or licence identified.<br>Where possible, excavated material is to be reused onsite.   |

## 1.10 Relevant Guidelines, Measures and Australian Standards

Relevant guidelines and measures applicable to the proposed works include:

- AS/NZS ISO 14001: EMS – Specifications with Guidance for Use.
- AS 1940-2017: The Storage and Handling of Flammable and Combustible Liquids.
- IECA Best Practice Erosion and Sediment Control Guidelines (2008).
- Landcom's Managing Urban Stormwater, Soils and Construction, Volume 1, 4<sup>th</sup> Edition (2004).
- National Environment Protection (Assessment of Site Contamination) Measure (NEPM (1999 as amended in 2013).
- NSW EPA Waste Classification Guidelines (2014) and relevant addendums.

Environmental licenses, permits, and approval pertaining to the works are listed in the Project's Licenses, Permits, and Approvals Register which is to be retained onsite and available for review at all times.

Requirements and conditions of these licenses, permits and approvals are incorporated into the relevant Environmental Management Plans within this CEMP.

### **1.11 Environmental Policy**

The appropriate management of environmental issues is integral to the success of the project. RCC must commit to the protection of the environment and ecologically sustainable practices in all aspects of their operations and provide their environmental policy for addition to this CEMP, which is included in Appendix O of this CEMP.

### **1.12 Consultation**

Consultation with the Goodman Project Manager will be sought throughout the development of the CEMP and when amendments are required. Amended versions of the CEMP must be provided to Goodman and the Site Auditor for review and endorsement prior to implementation.

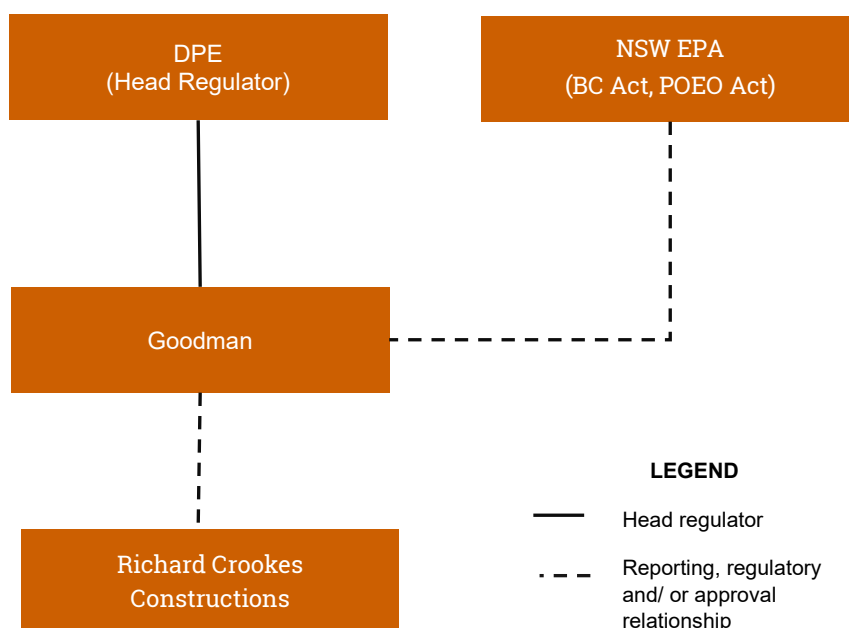
Development Consent conditions require the CEMP to be reviewed by the appointed NSW EPA Site Auditor and the Planning Secretary.

## 2 Construction Management

### 2.1 Collaboration with Key Stakeholders

RCC's relationship with Goodman, DPE and key stakeholders are shown in Chart 2.1.

**Chart 2.1 Key Stakeholders**



### 2.2 Environmental Management Structure and Responsibilities

The organisation chart for the delivery of the works is to be confirmed by RCC. A tentative breakdown of project roles and responsibilities is presented in Table 2.1.

**Table 2.1: Project Roles, Responsible Persons and Responsibilities under the CEMP**

| Role                      | Responsible Person(s) | Responsibility under the CEMP  |
|---------------------------|-----------------------|--|
| Goodman – Project Manager | John Vu               | <ul style="list-style-type: none"> <li>Client Representative - A single point of contact acting as Superintendent representative and assisting the Contractor with liaison with authorities as required for securing Development and Building approvals and Occupation Certificate.</li> <li>Oversees the completion of the works.</li> <li>Responsible for ensuring the Client complies with all statutory and approval requirements.</li> <li>Maintain an active monitoring role in order to ensure that requirements of the CEMP are satisfactorily implemented.</li> <li>Authorised to require all reasonable steps be taken to achieve environmental compliance.</li> </ul> |

| Role   | Responsible Person(s) | Responsibility under the CEMP   |
|--|-----------------------|---|
|  |                       | <ul style="list-style-type: none"> <li>Facilitate a systematic approach to manage HSE including the identification, assessment, control and monitoring of related risks that may arise through both normal and adverse operating conditions.</li> <li>Check that personnel are adequately skilled and trained for the tasks they are required to undertake.</li> <li>Encourage and promote safety within the Company by participating and openly consulting with employees in respect to their health and safety.</li> <li>Support the HSE manager in ensuring Project / Site Managers have develop and implement systems, which will ensure subcontractors and or suppliers engaged by the Company comply with the health and safety management systems and the relevant Workplace Health and Safety legislation.</li> <li>Respond to non-conformance by any member of the Company who fails to discharge their duties as set by the responsibility statement and actively participate in dispute resolution where required.</li> </ul>  |
| Richard Crookes<br>Constructions - Project Manager | Ben Taylor            | <ul style="list-style-type: none"> <li>Monitor construction activities against the conditions of approval to evaluate compliance.</li> <li>Establish or oversee the preparation of the Project Environmental Management Plan prior to commencing work on a project. This includes preparation of an Environmental Risk Assessment, reviewing and incorporating legal requirements, and any other relevant plans such as Environmental Impact Assessments prepared for the development.</li> <li>Identifying, planning and ensuring all environmental training required for personnel is undertaken. This task may be done in liaison with the Corporate HSE Manager.</li> <li>Support the Site Manager in the management of employees, subcontractors, and suppliers' performance in complying with the requirements of this CEMP.</li> <li>Selecting appropriate subcontractors, giving due regard to their ability to comply with legislative and Contractor's environmental requirements.</li> <li>Ensure environmental emergencies are incorporated in the site Emergency Response Procedures.</li> <li>Ensuring incidents are investigated and appropriate action taken as required by Contractor's site environmental plan requirements in consultation with the Corporate HSE Manager.</li> <li>Ensuring compliance with environmental legislation and Contractor's environmental procedures.</li> <li>The Project Manager is required to carry out at least one formal site inspection per month on every site under their control.</li> <li>Ensuring compliance with environmental legislation, regulations and licensing conditions, and authorities' requirements relevant to all construction work.</li> <li>Reporting to RCC's Directors on the environmental performance of the Project.</li> </ul> |
| Richard Crookes<br>Constructions - Site Manager    | Michael French        | <ul style="list-style-type: none"> <li>Unless otherwise nominated, undertaking the role of Site HSE Officer for environmental issues and control of the site. This role is supported by the Project Manager and the Corporate HSE Manager.</li> <li>Ensuring site security and site-specific signage is fixed to key access, internal and perimeter areas including 24</li> </ul>   |



| Role   | Responsible Person(s) | Responsibility under the CEMP   |
|--|-----------------------|---|
|  |                       | <p>hour project contact details, attendance details for visitors, PPE requirements and construction zone signage.</p> <ul style="list-style-type: none"> <li>• Monitor environmental controls for effectiveness and suitability.</li> <li>• Implementing through consultation with the Project Manager, the Construction Environmental Management Plan in accordance with Legislation and Regulations, Codes of Practice (COP), Australian Standards and/or other statutory requirements.</li> <li>• Implementing and undertaking formal and proactive consultation measures between the project team, subcontractors and industrial representatives such as subcontractor meetings, toolbox talks, site HSE committee meetings and inspections.</li> <li>• Monitoring subcontractors compliance with the CEMP in particular to the environmental components of their safe work method statements.</li> <li>• Identifying any hazards and assessing risks onsite and implementing risk control measures.</li> <li>• Liaising with civil or statutory authorities should an onsite emergency situation occur.</li> <li>• Investigating, recording and reporting incidents and initiating corrective and action plans by relevant personnel. Reporting any serious incident immediately to the Project Manager and Corporate HSE Manager.</li> <li>• Ensuring that all plant and equipment used on Contractor sites is safe, correctly maintained and that the operator is correctly licensed or qualified for that equipment.</li> <li>• Ensure that all environmental incidents (including spills, failure of sediment controls, water pollution etc.) are reported in accordance with the Incident Reporting and Investigation Procedure.</li> <li>• Assessing subcontractors Safe Work Method Statements prior to any work commencing, to ensure environmental requirements are met.</li> </ul> |
| Richard Crookes<br>Constructions - HSE Manager | Marcello Di Paolo     | <ul style="list-style-type: none"> <li>• Overseeing the implementation of the integrated HSE management system and the Environmental Management Plans throughout Contractor activities.</li> <li>• Ensuring a CEMP is prepared for each project.</li> <li>• Advise Management and Site teams to any new or revised Act's, Standards, COP or legal requirements associated or required in conducting the works.</li> <li>• Setting and reviewing overall environmental targets and allocating priorities within the framework of the HSE management system.</li> <li>• Planning and facilitating training in environmental management, including arranging for the appropriate internal or external trainers/facilitators to conduct the training.</li> <li>• Manage collection and reporting of environmental performance data from monthly site reporting.</li> <li>• Conducting or delegating internal HSE management system and site audits.</li> <li>• Reviewing internal and external (independent) audit reports, and in consultation with the Directors and the Project Manager - develop appropriate action plans if necessary.</li> </ul>  |

| Role   | Responsible Person(s) | Responsibility under the CEMP   |
|--|-----------------------|---|
|  |                       | <ul style="list-style-type: none"> <li>• Assist Project Managers in preparation of Environmental Risk Assessment and determining appropriate controls.</li> <li>• Communicating relevant environmental information to management, staff and contractors.</li> </ul>   |
| Richard Crookes<br>Constructions - Site HSE<br>Officer | TBA                   | <ul style="list-style-type: none"> <li>• Carry out erosion and sediment control inspections.</li> <li>• Monitor and review Erosion and Sediment Management Plans (ESMP), which must be prepared by a suitably qualified consultant for inclusion in this CEMP.</li> <li>• Maintenance of the project environmental management plans including preparing CEMP minor revisions.</li> <li>• Ensure training/induction of personnel is carried out and that staff operate in an environmentally responsible manner.</li> <li>• Ensure compliance with Environmental Approvals.</li> <li>• Operate as 24-hour contact person for environmental matters.</li> <li>• Report on environmental incidents, liaise with RCC site managers on corrective actions and verify environmental measures.</li> <li>• Manage the register of environmental complaints and the subsequent corrective measures.</li> <li>• Undertake and report on all monitoring and inspections completed, including after flash flooding events and unexpected finds.</li> <li>• Monitor construction activities against the conditions of approval to evaluate compliance with the Environmental Management Systems (EMS), including at a minimum, weekly site inspections.</li> <li>• Maintain a register of all environmental management documents for the Contract.</li> <li>• Ensure that the CEMP is established, implemented and maintained in compliance with all sub-plans, supplementary method statements and DA conditions.</li> <li>• Overall responsibility for on-site establishment, management, monitoring and maintenance of erosion and sediment controls.</li> <li>• Carry out regular inspections and auditing of the works to ensure that environmental safeguards are being followed.</li> <li>• Identifying where environmental measures are not meeting the targets set and where improvement can be achieved.</li> <li>• Facilitating environmental induction and toolbox talks for all site personnel.</li> <li>• Specific authority to stop work on any activity where it is considered necessary to prevent environmental non-conformances.</li> </ul> |
| RCC Project/Site Engineer                              | TBA                   | <ul style="list-style-type: none"> <li>• Liaise closely with the Site HSE Officer to ensure environmental considerations contained within this CEMP are incorporated into construction activities.</li> <li>• Produce SWMS which address environmental requirements.</li> <li>• Conduct regular checks of the site to ensure environmental controls such as sediment controls and dust suppression are functioning effectively.</li> <li>• Where engineers are responsible for managing subcontractors and/or utilities authorities, ensure that any work performed by these external parties meets with</li> </ul>   |

| Role                         | Responsible Person(s) | Responsibility under the CEMP   |
|------------------------------|-----------------------|---|
|                              |                       | <p>the requirements of this CEMP and Sub Plans, including identifying and documenting the environmental risks of the proposed works.</p> <ul style="list-style-type: none"> <li>• Report any non-compliance with Erosion and Sediment Management Plans (ESMP) and/or the CEMP to the Site HSE Officer.</li> <li>• Responsible for engaging and managing environmental specialists (ie. environmental specialists).</li> </ul>   |
| RCC Contracts Administrator  | John Yonan            | <ul style="list-style-type: none"> <li>• Support the Project and Site Management in the management of employee, Subcontractor, and suppliers' performance in complying with RCC's Construction WHS and the site-specific rules for the Project.</li> <li>• Assist the Project / Site Manager to ensure the Site Environmental Plan/s and associated documentation, including standard forms, procedures and templates; remain current and up to date.</li> <li>• Include in subcontract agreement the requirement for subcontractors to carry out their works in accordance with the companies or subcontractors approved Environmental Plans.</li> <li>• At the tender interview stage discuss with the subcontractor's their obligation for managing Environmental requirements by issuing to them relevant section of the tender interview form and ensuring this is completed by Subcontractor prior to commencing on site.</li> <li>• Request and obtain from the subcontractor copies of their Environmental Plans.</li> <li>• Where required, assist the Project / Site Manager in collecting required Environmental documentation from engaged subcontractors, and for conducting initial review ensuring all required documents have been submitted prior to forwarding documentation provided by subcontractors to the Project / Site Manager for review.</li> <li>• Ensure that the latest copies of Project Plans and HSE Risk Assessments are uploaded onto the data control system used, and engaged subcontractors have access to these.</li> <li>• Assist the Project / Site Manager in conducting project audits, to report on safety compliance and in the maintenance of environmental records.</li> <li>• Ensure all external complaint/incidents are recorded and filed in an 'External Complaints' register.</li> <li>• Assist Project / Site Management in the general administration of HSE where requested.</li> </ul> |
| Employees and Subcontractors | TBA                   | <ul style="list-style-type: none"> <li>• Must comply with all site HSE rules and environmental requirements and abiding by the procedures and work practices identified in the CEMP, and / or as directed or informed by the Site Manager / Foreman.</li> <li>• Attending environmental training / inductions as directed by the Site Manager / Foreman.</li> <li>• Complying with all relevant environmental legislation.</li> <li>• Reporting promptly to a Site Manager / Foreman of any spills, leaks, potential pollution and / or poor environmental practices.</li> </ul>  |
| DPE Environment Officer      | TBA                   | <ul style="list-style-type: none"> <li>• Responsible for regulatory oversight of the in order to ensure that the requirements of the CEMP are satisfactorily implemented.</li> </ul>  |

| Role                     | Responsible Person(s) | Responsibility under the CEMP  |
|--------------------------|-----------------------|--|
|                          |                       | <ul style="list-style-type: none"> <li>The Client remains responsible for ensuring compliance with the agreed final CEMP.</li> </ul>   |
| Acoustic Consultant      | SLR                   | <ul style="list-style-type: none"> <li>The acoustic consultant is responsible for ensuring that the Project construction works are completed in accordance with relevant guidelines, conditions and requirements.</li> </ul> |
| Environmental Consultant | Geosyntec             | <ul style="list-style-type: none"> <li>Responsible for preparation of the CEMP and any subsequent auditing of the CEMP.</li> </ul>   |

## 2.3 CEMP Requirements

The CEMP must clearly articulate the Environmental Management System to be implemented during the works. The Principal Contractor is to provide details on the following, and store relevant documents in the site office for the duration of works:

- This CEMP – This document details processes and procedures to be implemented during the day to day operations of the Project including documentation development, review and approval, environmental monitoring and inspections, and auditing and review and continual improvement.
- Environment Controls, which apply during the day-to-day operations and documents roles and responsibilities and relevant checklists and forms including internal hold points and required environmental permits. These procedures are a key site management tool.
- RCC Specific Controls, which apply across the Project and document management requirements specific to environmental aspects.
- RCC Specific Controls, which apply across the Project and document processes, roles and responsibilities and relevant checklists and forms, including internal hold points and required environmental permits.
- Site Control Maps, which are site specific illustrating key environmental controls and tables documenting key requirements and will inform and fully integrate with detailed planning for implementation.
- Erosion and Sediment Controls, which are specific drawings illustrating key erosion and sediment controls for each key stage of the project.

### 2.3.1 Resourcing

The contractor must provide adequate resources to ensure environmental management requirements are fulfilled during construction of the Project.

### 2.3.2 Subcontractors

All subcontractors must agree to abide by this CEMP, and all staff must be inducted by RCC prior to commencing work on site.

## **2.4 Training and Site Induction**

All employees and subcontractors will undergo environmental awareness training as part of the Project orientation, site induction, toolbox talks and pre-start meetings to ensure they understand their obligations and responsibilities under this CEMP. Timing and content of such meetings will be aligned with the Project works programme.

Records of all site inductions will be kept and maintained by the Site Manager. The site induction will include:

- Purpose and objectives of the CEMP.
- General environmental duty.
- Environmental emergency/response and incident reporting procedures.
- Familiarisation with site environmental controls, including restricted, sensitive or protected areas and legislation/permit/approval/licence conditions applicable to the project.
- Community considerations.
- Hours of operation.
- An overview of the site environmental guidelines, emphasising that environmental protection is everyone's business, and an encouragement of a proactive attitude to environmental control measures.
- Noise and vibration avoidance and management.
- Air quality management.
- Asbestos Management.
- Traffic access, including parking arrangements.
- Washing requirements for construction plant and equipment.
- Storage and handling of fuels, oils and other chemicals.
- Waste management – recycling, disposal and litter.
- Soil and water issues, including erosion issues – controls, tracking of mud offsite.
- Concrete washout requirements.
- Management of flora and fauna.
- Emergency response.
- Spills.
- Flood risk.
- Incidence procedures and reporting.

### **2.4.1 Project Organisation**

All new site workers must be made aware of key site contacts.

### **2.4.2 Environmental Awareness**

Where there are significant environmental issues identified for the Project, these must be incorporated into the site-specific induction, which is included in Appendix B. There may include, but shall not be limited to contaminated soils, environmental controls and management, sensitive environmental receptors, noise emissions and plant emissions.

## **3 Environmental Management Activities and Controls**

This section details environmental management activities and controls required for the duration of the Project. Specific requirements for environmental control maps, impact identification procedures, control measures, and unexpected finds protocol are detailed in the following sections.

### **3.1 Environmental Control Maps**

RCC has provided Environmental Control Maps (ECMs) for inclusion in the CEMP (Appendix N). The ECMs must be updated progressively to provide clear and practical mitigation and management measures for each phase of the construction worksite. The following detail must be included on the ECMs, as relevant:

- Site features.
- Stormwater drains, including outfall point.
- Contours.
- Site facilities.
- Buildings (existing and proposed).
- Drains.
- Services.
- Access.
- Work compounds.
- Environmental control measures.
- Sediment and erosion controls.
- Plant and equipment wash down areas.
- Concrete wash outs.
- Hazardous substances & chemical storage areas.
- Waste storage.
- Stockpile locations.
- Spill kits.

The ECMs must also reference relevant procedures that provide the comprehensive details into certain management controls/measures in a clear step-by-step process.

### **3.2 Impact Identification**

A list of Environmental Issues and Impacts must be prepared for the construction works and be incorporated into an updated version of this CEMP. The list must include the major environmental aspects associated with the proposed works, which have the potential to impact the surrounding environment, as well as mitigation and management measures.

The General Environmental Issues and Impacts List is presented in Appendix C, while more site-specific measures to improve impact identification are included in the various plans discussed in Section 3.3 below.



### **3.3 Control Measures**

Control measures to be implemented to address identified potential effects must be included in the Project's Environmental Issues and Impacts list and Environmental Weekly Checklist. Relevant procedures will be followed by implementing the required control measures, with RCC's Weekly Environmental Checklist included in Appendix D.

Specific requirements and all reasonable practical steps to reduce impacts regarding erosion and sediment, stockpiles, contamination, waste, traffic, noise and vibration, flora and fauna, air quality and asbestos are addressed in the following sections.

#### **3.3.1 General**

General housekeeping measures are required on site to keep working conditions clean, safe, and reputable. Basic housekeeping practices to be implemented include:

- Construction hoarding and/or shade cloth to be erected around the site as necessary and be both well-presented and maintained to minimise visual impacts during construction.
- Graffiti and posters are to be removed within 24 hours.
- The site and its immediate surrounds are to be kept free from rubbish. This will require the provision of easily accessible, frequently maintained bins around the site, including for different types of waste (eg. recyclable). Storage of construction waste should be in designated areas.
- Fence lines are to be included as part of daily checks to ensure the site is secure and safe.
- General visual amenity is to be maintained on site, including the appropriate temporary storage of both "household" and construction waste on site.
- Hoardings and site fencing are to be removed upon construction completion.

Housekeeping checks are to be undertaken at the start and end of the week, and immediately prior to and after any shutdown periods.

#### **3.3.2 Erosion and Sediment Control**

RCC and subcontractors shall plan and carry out works to avoid erosion and prevent sediment leaving the site to the surrounding land, watercourses, water bodies, and stormwater drainage systems. This includes the installation of erosion and sedimentation controls prior to commencing works. Where possible, works must be staged to reduce the areas cleared at any time to minimise soil disturbance.

All erosion and sediment controls must be carried out in line with Landcom's "Blue Book" (2004). Erosion and sediment controls (ESC) to be implemented at the site are detailed on the Erosion and Sediment Control Plan (ERSCP) provided in Appendix N. The ERSCP must be available at the site at all times and will be communicated to all Project staff during induction processes. The Project Manager must also note the sediment controls detailed in Appendices C (Environmental Inspection Checklist) and implement them on site.

The role of the ERSCP is to identify control measures to manage surface water and reduce the potential for soil erosion, land degradation, and impacts on water quality. The objective is therefore to prevent any surface water from leaving the site during works. Necessary maintenance of associated control measures must be completed during the weekly site inspections (Appendix D).

The ERSCP must provide detail regarding the construction/implementation of typical controls including kerb inlet controls, grated inlet pit filter, silt fence open drain and silt fence, stabilised construction entrance 'truck shaker', stockpiles, diversion drains, sediment storage marker, silt fence with straw bale, sediment control pond and sediment control basin.

The controls must be inspected and approved by the Site HSE Officer prior to the commencement of works. The controls must be maintained in good working order and inspected regularly to ensure they are effective in controlling erosion and sedimentation. Accumulated sediment shall be removed and disposed of regularly (ie. weekly and after rain events). Erosion and sediment control checks are to be undertaken at the start and end of the week, and immediately prior to and after any shutdown periods.

In the event that surface water requires offsite disposal, this water must undergo assessment by an Environmental Consultant to identify appropriate management options.

### **3.3.3 Soil Contamination**

An NSW EPA accredited Contaminated Land Auditor (Auditor) approved RAP has been prepared for the site, which indicates that contamination is present relating to asbestos in soil (bonded and friable) and contaminated groundwater (with associated gas and vapour issues).

The JBSG (2019) RAP proposes that site contamination will be remediated with implementation of:

- On-site containment of fill materials impacted by bonded (i.e. ACM) and friable (asbestos fines) asbestos using marker and barrier layers across the site, with the exception of an existing vegetation buffer along the eastern portion of the site that will be retained in its current state and secured with a fence to minimise access.
- Management of potential soil vapour intrusion into buildings by construction of any buildings on a suspended slab with a large open void beneath, which will provide a passive venting system for gas mitigation into buildings.

All remediation procedures must be completed in accordance with the RAP. Relevant documentation on remediation progress must be provided for inclusion in the CEMP auditing program (Section 4.1.2) for record keeping purposes. It is noted that such documentation will not be reviewed as a component of the CEMP audit program.

The RAP is included in Appendix L of this CEMP. Figure 3 of Appendix A contains an extract of the RAP detailing site remedial areas.

### **3.3.4 Soil Management**

General soil management procedures are to be in place during all site works as discussed in the various sub plans relevant to the site, including but not limited to:

- Responsibilities, awareness and training requirements.
- Hazard identification.
- Personal Protective Equipment.
- Management controls for asbestos finds.
- Stockpile management and temporary storage of asbestos containing material (ACM).
- Decontamination.
- Offsite disposal requirements.
- Air monitoring.
- Unexpected Finds Protocol.
- Approvals and licensing.
- Communication and records.

Management of unexpected finds is further discussed in Section 3.4 of this CEMP.

Any material to be disposed of offsite, including soil, must be classified and managed in accordance with the JBSG (2019) RAP and NSW EPA (2014) Waste Classification Guidelines. Waste classification assessment works are proposed at the commencement of Stage 1 works, to facilitate the offsite disposal of topsoils.

Although not anticipated, any spoil generated during piling works will be assessed in accordance with NSW EPA (2022) Sampling Design: Part 1 – Application. Such soil will be stockpiled appropriately pending assessment and offsite disposal.

### **3.3.5 Stockpile Management**

Should stockpiling of soil be required for any excavation works, stockpiles must be kept to a maximum of 2 m in height and be situated in areas of the site of relatively level ground with no intercepting surface water flow paths. Stockpiles are to be 25 m clear of drainage lines, natural water courses and established trees. Stockpiles are to have temporary silt fences in place around the stockpiles to create an enclosure. When not in use, stockpiles will be covered with a shade cloth or tarpaulin to retain the materials on the stockpile and stop the generation of dust. Soil and stockpile management is to be completed in accordance with Landcom's Blue Book (2004).

Other dust minimisation techniques must be employed, including:

- Planning work to minimise the amount of disturbed ground at any one point.
- Water sprayed over areas to prevent wind-generated dust.
- Minimise truck movements wherever possible.
- Halt construction that generates dust in high winds (>10 m/second).

Should stockpiling of potentially contaminated material be required, soil management procedures detailed in the JBSG (2019) RAP are to be implemented.

Any material moved around the site is to be tracked, with the register noting the location (including lot) of the material's source and destination. All material imported or exported from the site (to be completed in accordance with relevant legislation) will also be tracked and validated (where possible) by the Environmental Consultant.

### **3.3.6 Contamination Management & Emergency Response to Spills**

RCC contamination management and emergency response to spills will be in line with the Environmental Checklist and Environmental Controls provided in Appendices C and D, respectively. To prevent the possible contamination of the site with hydrocarbons during construction, several measures are to be implemented to reduce the risk of an oil / fuel spill:

- Dangerous goods (such as petrol, diesel, oxy-acetylene, oils, etc.) will be stored in a lockable compound with a containment bund and sufficient ventilation in accordance with the relevant codes of practice and standards. The bund must be of sufficient volume to capture 110% of the largest container within the bunded area.
- Safety Data Sheets on all flammable and potentially harmful liquids will be provided by RCC.
- A register is to be kept of all chemicals stored onsite.
- A Spill Response Procedure is included in RCC's Incident and Accident Reporting protocol (refer to Appendix E).

Bulk fuels will not be stored on site. All plant and machinery will be filled offsite wherever possible, or from a mobile tanker. Each tanker will carry emergency spill kits and the driver inducted on how to use these. All servicing will be carried out in the designated areas of the site compounds.

The following actions will be included in the site-specific induction for all workers on site:

- Location of spill response kits will be explained.
- Stop flow of the spillage/discharge from source, if possible.
- Set up traffic controls and direct passers-by around spillage, if needed.
- Construct bunds of spill kit pillows to stop fuel, oil or chemical spreading out. Especially, prevent discharge into stormwater drainage, natural watercourses or onto private property.
- For a large spill, use grader or excavator to construct earth bunds around spill and use sandbags. Spread sand on ground to soak up fuel, oil or chemicals. For a small spill, spread absorbent material from spill kit to absorb fuel, oil or chemicals.
- Report incident to Superintendent ASAP.
- To clean up after small spills, load used material into watertight container for disposal at appropriate waste site.
- To clean up large spills, load sand/earth/sandbags into watertight container on utility (small quantities) or truck lined with plastic (large quantities) for disposal at appropriate waste site. Sweep site with broom to collect all sand or earth for disposal, as appropriate.
- If an emergency is declared, all site personnel will report to designated Emergency Evacuation Points as indicated in the site safety induction.

### **3.3.7 Acid Sulfate Soils (ASS)**

As proposed site excavation will not extend below the water table, and piling procedures will not generate spoil, acid sulfate soils are not anticipated to require management during site works. If spoil is generated during works, sampling of these soils will be required to facilitate offsite disposal.

If excavation occurs and uncovers the following, a suitably qualified Environmental Consultant must be engaged, in accordance with the Unexpected Finds Protocol, to assess for ASS:

- Sulfurous smell.
- Presence of shells in soil.
- Yellowish/rust coloured staining in soil.
- Unusually clear or milky blue-green drain water.
- Erosion of concrete or steel.

If ASS or potential acid sulfate soils (PASS) are identified, the material requires management. ASS is required to be neutralised onsite by the waste generator in accordance with the neutralising techniques outlined in the NSW 1998 ASSMAC guidelines. Following neutralisation, the generator of the waste must chemically assess the soil in accordance with Part 1 of the NSW EPA Waste Classification Guidelines. The resulting material can be taken to landfill, which is to be advised that material has been treated for ASS.

If the material is PASS, the material is to be kept wet at all times. The material must be received by the disposal point within 16 hours of excavation. The disposal point must be informed that the material is PASS to ensure appropriate landfill storage.

### **3.3.8 Water Quality and Storm Water Control**

The following control measures will be in place to manage surface water:

- Potentially hazardous activities, including washing out of concrete delivery vehicles, washing down of construction plant are not permitted on site except in specially constructed bays that retain high pH water.

- Washing out of concrete delivery vehicles offsite is only permitted at locations approved for that purpose by the appropriate authority, to be indicated on the site ECP. New onsite drains are to be labelled to reduce likelihood of misuse. The location of the washouts will vary depending on works to be done. Regardless of location, the concrete washout locations will be installed in areas away from the stormwater system.
- All liquids and materials that could cause water pollution must be stored in areas with secondary containment such as bunding sufficient to contain 110% of the largest stored container (NB: no fuel is to be stored on site). Any drainage lines are to be protected with a bund, in the event of spills or leaks from moving plant or machinery.

In general, stormwater will be managed onsite via the approved ERSCP and the Landcom (2004) Managing Urban Stormwater, Soils & Construction Guide, referred to as the 'Blue Book'. In the event of stormwater collecting in erosion and sediment controls and the stormwater is required to be pumped out, the pump intake is to be located no more than one metre below the surface of the collected water to reduce the amount of settled silt being pumped out for further treatment. All surface water requiring offsite disposal is to be assessed by the Environmental Consultant to identify management options.

Water collected in onsite detention (OSD) will also be recycled onsite and used as dust suppression during the project. Use of collected water shall be in accordance with the approved ESC plan and Landcom (2004) 'Blue Book'.

Pre-treatment of site stormwater may be required prior to discharge. For site stormwater treatment there are two options, flocculation and / or filtration, for each option the applicable procedures in their entirety are to be followed. If stormwater cannot be treated suitable to regulations (as mentioned above), chemical and water quality testing must be completed and an appropriately licenced liquid waste contractor must be engaged and the stormwater collected and disposed of at a location lawfully able to receive that type of waste and receipt documentation must be recorded.

It is not anticipated that groundwater will be encountered during site works. As a result, no groundwater dewatering practices are expected to be necessary as part of the works. In the event that groundwater is encountered, appropriate groundwater management procedures, approvals, and potentially licenses, will be required.

A number of water quality and stormwater control measures should be checked as part of the shut-down process (Appendix P). The shutdown checks should be completed both immediately before the shut-down begins (ie. at COB on the final day of works), and immediately after the shut-down period ends.

### **3.3.9 Flooding**

The BMT (2019) Flood Impact Assessment indicates that the site is affected by flooding (the site is located on a flood detention basin). A Flood Management Plan (FMP - Appendix G) has subsequently been prepared for the works, which includes a Flood Emergency Response Plan (FERP).

#### **Flood Management Plan**

The CRC (2022) FMP/FERP details the site responses to flooding including predicted flood levels, flood warnings and flood notifications, evacuation and refuge protocols and awareness training for employees and contractors, to be implemented during construction and operational phases of the development. The FERP must therefore be implemented for all works completed under this CEMP.

Associated signage will be placed in site sheds and around the site detailing the site emergency plan (noting that the primary recommendation of the FERP is to remain on-site), and workers will be adequately trained on the plan. The plan will include:

- Conditions that will activate the plan.
- Chain of command.
- Contact details for local emergency services.
- Extreme weather warnings.
- Emergency functions and who they are assigned to.
- Mechanisms for alerting people at the workplace to an emergency (eg. siren or alarm).
- Emergency procedures including arrangements for assisting any hearing, vision or mobility-impaired people.
- Procedures for accounting for personnel, customers and visitors.
- A map of the designated “safe place”.
- Reliable communications equipment for personnel.
- The location of emergency supply kits to be made available.

Site Managers should also monitor emergency broadcast services for flood warnings and be prepared to move to higher ground. RCC's Incident/Injury Record sheet is presented in Appendix H. The Incident/Injury Record sheet has sufficient flexibility to allow for incidents relating to flash flooding.

### **3.3.10 Air Quality**

Due to the known presence of friable asbestos in site soils, asbestos and dust air monitoring will be required during any topsoil stripping works within impacted areas and up to the completion of the laying of the marker and capping layers. The specific requirements required for air monitoring have not yet been agreed to and require discussion with the Site Auditor.

#### **Asbestos Management**

All site works with potential to disturb asbestos impacted soils must be completed under an Asbestos Management Plan (AMP). The draft AMP has been included in Appendix Q. The objective of the AMP is to provide guidance and strategies for the handling, management and treatment of asbestos for the removal, transport and disposal of asbestos-impacted soils from the site, in order to protect the health of onsite workers, visitors and potential offsite receptors and prevent the potential spread of asbestos contamination offsite.

The AMP must include a site asbestos register (i.e. all site soils), relevant roles and responsibilities, the task specific management plans for asbestos in soil, and air monitoring requirements. Specific requirements for the AMP should be discussed with the Site Auditor, noting proposed topsoil stripping across the site.

All site works with potential to disturb site soils must be completed under the supervision of a Class A asbestos contractor due to the identified presence of friable asbestos within site soils (JBSG 2018).

#### **Dust Management**

The following activities exhibit potential for dust generation:

- loading/unloading of soil and other raw materials.
- Stockpiling.
- Movement of any soils and stockpiles.
- Trucking.



RCC and its subcontractors must employ construction methods that will keep the air pollution to a minimum and apply measures as those listed below to ensure that airborne pollutants do not cause air pollution and nuisance in the vicinity of the works:

- The spraying of disturbed soil and roads with water whilst under construction as required.
- Minimising exposed and disturbed soil areas, including stockpiles.
- The removal of mud from the wheels and bodies of plant and vehicles before it enters public roads or other sealed pavements. This could be rumble grids, dry brushing, wheel wash etc. depending on the nature and conditions of the site.
- The removal of mud or dirt spilt by construction equipment on to public roads or other sealed pavements is to be completed immediately after becoming aware of the incident, or in the case of rain events, at the end of the shift.
- The provision of coverings or stabilisation of soil stockpiles, and the minimising of their height.
- Covering all loads leaving the site.
- Stabilisation of ground likely to be exposed for significant periods (e.g. – using sterile seed).
- Fitting power tools with dust collection devices where practical.
- Keeping all plant and equipment well maintained and not leaving them idling while not being used.
- Reporting excess air emissions from plant and arranging for a service to fix the problem.
- Use of water trucks for dust suppression as required.

Exhaust emissions from vehicles must also be monitored, and all vehicles on site must be scheduled for regular maintenance. All site workers are to be aware of dust minimisation requirements. Where an issue is raised, solutions must be proposed as soon as possible, and any incidents must be recorded in the incidents register.

### **Hazardous Ground Gas (HGG) and Soil Vapour**

JBSG (2018) reports that HGG impact at the site was identified to be limited to carbon dioxide (maximum recorded concentration of 13% v/v). Section 5.2 of the JBSG (2019) RAP identifies the site as a low-risk characteristic gas situation (CS2) with a gas screening value (GSV) of 0.2.

Vapour exceedances have been reported at the site, and proximate areas, associated with volatile chlorinated hydrocarbons (VCH) impacted groundwater. JBSG (2018) reported vapour exceedances at the site to be limited to 1,1-dichloroethane in SV03 (19 mg/m<sup>3</sup>). As vapour migration at the site has been identified to be diffusion driven, Section 5.3.1 of the RAP states that proposed piling works will not affect vapour migration. No other site works with potential to impact vapour migration are apparent.

Based on the proposed construction works (shallow excavation only), and the site details discussed above, HGG and vapour risk to site workers is considered low. Specific requirements for management of HGG and vapour during site works are to be discussed with the Site Auditor. This CEMP is to be revised if monitoring for HGG and soil vapour is required during site works or if design changes require the installation of underground services or other intrusive works.

### **3.3.11 Noise and Vibration Management**

A Construction Noise and Vibration Management Plan (CNVMP) has been included in Appendix M, prepared by SLR (2022) to address Conditions C3(a) and C3(b). The plan provides construction noise and vibration mitigation and management measures (Section 7), including monitoring requirements.

Section 7.3 of the sub plan provides procedures for consulting with nearby sensitive receptors (including the adjacent ABP Detector Dog Facility (ABPDF)) to schedule high noise generating works and vibration intensive activities and is reproduced below:

- Project representatives should meet individually with the management of the ABPDF to determine their specific requirements at the earliest possible opportunity, and at least seven days prior to the commencement of works. Any specific requirements should be incorporated into the NVMP as far as reasonably practicable.
- For the other commercial receptors, specific notifications in the form of a personalised letter should be provided to them at least seven days prior to the commencement of works. In addition to providing the likely noise/vibration impacts and proposed hours (including respite periods), the letter should provide an opportunity to comment on the project as well as a point of contact for complaints.
- The construction contractor should continue to provide notifications to the above receptors in the form of a letterbox drop at monthly intervals, and when new activities are likely to commence. The letterbox drop should indicate the likely noise/vibration impacts and proposed hours (including respite periods) for the upcoming works.

Section 7.4.2 of the sub plan provides details of the vibrations monitoring which would be undertaken during the Stage 1 works and should be referred to for this information.

### **3.3.12 Construction Traffic Management**

Ason Group has developed a site-specific Construction Traffic Management Plan (CTMP) for the site on behalf of RCC. This is provided in Appendix K.

Section 2 of the CTMP details project specific details for Stages 1 and 2, including timelines, key activities, estimated vehicle movements and pedestrian/footpath considerations.

The CTMP presents a number of mitigation measures for managing construction traffic impacts, including:

- Providing route options for both approaching and departing traffic.
- Providing site access points.
- Implementing specific procedures to for vehicles exiting the site and queuing to enter the site.
- Specific areas designated as site parking for workers.
- Monitoring requirements.

The associated Traffic Control Plan (TCP) is provided in Appendix B of the document.

### **3.3.13 Waste Management Plan**

RCC and subcontractors shall adopt the hierarchy of waste - avoid, reduce, recycle/reprocess and dispose, to maximise resource recovery and minimise disposal wherever possible and practical. The Project's target recyclable percentage is 80%. The importance of appropriate waste management practices is to be included in the site induction.

A Construction Waste Management Plan (CWMP) for the management of construction waste and general site office and worker waste has been prepared for the Precinct (presented in Appendix J).

Adequate waste and recycling storage facilities will be positioned within the proposed extent of hardstand on the project. The waste and recycling collection vessels will be provided and located

according to the required specific waste categories and types. The storage areas will be located in order to contain and prevent the risk of pollution to the soil, groundwater and air on site.

All waste removed from the site must be classified in accordance with NSW EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste. Once classified, waste designated for offsite disposal must be taken to an appropriately licenced facility lawfully able to receive that type of waste. Waste receipts must be kept for legal and site audit requirements and details of waste separated and disposed is to be documented in a Waste and Recycling Register.

#### **3.3.14 Flora and Fauna Management**

The WSP (2018) BDAR indicates that sensitive habitat does not exist on the site, with no threatened species present. Noting that a drainage line exists to the immediate west of site (Springvale drain), controls must be in place to prevent potential harm to ecological communities proximate and downgradient to the site. Such controls include:

- Establishing site access routes in locations that will minimise loss of vegetation, erosion, etc.
- Prevent impacts to vegetation surrounding the site.
- Prevent surface water and sediment runoff from the site.
- Work methods that minimise the spread of weeds must be used, and any noxious weeds within the work area must be managed appropriately.
- Revegetation of proposed landscaped areas must be encouraged, where present.

#### **3.3.15 Importation & Management of Engineering Fill**

RCC must undertake appropriate management for the importation of engineering fill. Actions to this end must include:

- Retain records of all engineering fill brought onto the project site.
- Retain on record statements from suppliers of engineering fill that the material is free from contamination.
- Imported soil must be either Virgin Excavated Natural Material (VENM) or Excavated Natural Material (ENM) as defined under the NSW EPA (2014) Waste Classification Guidelines and NSW EPA Excavated Natural Material Order (2014) respectively. The material must be validated by an environmental consultant prior to acceptance on site and confirmed with the Auditor. The related dockets detailing the source, type and quantity of material imported to the site are to be provided for CEMP auditing purposes.
- No recycled materials are to be imported to the site, unless approved by the RCC Environmental Consultant and Auditor. Examples of recycled materials that may be considered include road base, sands and aggregates for engineering purposes if they meet the requirements of the relevant NSW EPA resource recovery exemptions. Any such material imported to site must have written proof that resource recovery exemption conditions have been met. All documentation associated with importation of material must be maintained by the contractor.
- All engineering fill imported to the site will be accompanied by certification ensuring only suitably tested material compliant with commercial / industrial land use criteria in NEPM (2013) is imported to the site.

#### **3.3.16 Heritage**

Development Consent Conditions (SSD-9691) do not indicate the presence of heritage items at the site.

### 3.4 Unexpected Finds

Site soils are known to contain friable and bonded asbestos. Additional hazards may also be present, potentially including:

- Unexpected materials/liquids/substances.
- Objects of possible cultural significance, including aboriginal and non-aboriginal heritage.
- Unexpected active or redundant services (ie. power, water, gas).

RCC is to maintain communication with the Environmental Consultant to ensure the appropriate procedures are implemented. Awareness training must be conducted with all site personnel at the time of site induction.

The procedure to be followed in the event of an unexpected find in relation to contamination is as follows:

- In the event of an unexpected finds, all work in the immediate vicinity must cease and the RCC Site Foreman/Manager and Site Safety Coordinator notified.
- Project Manager is to inspect the area of the find and determine actions to be taken to WHS or Environmental issues.
- Temporary barricades must be erected to isolate the area from access to the workers and machinery. This will include the establishment of a 10 m exclusion zone with the placement of bollards with hazard tape.
- Assess whether the unexpected find presents any hazard to work in the surrounding area.
- Contact the Project Manager, who will make contact with offsite resources to properly identify the nature and risk of the unexpected find.
- The Project Manager will check the exclusion perimeter has been established, and appropriate resources have been implemented to mitigate any risks posed by the unexpected find.
- In the event that potential asbestos is encountered, an occupational hygienist or licenced asbestos assessor must be contacted immediately.
- An environmental consultant must be contacted and attend the site to assess the extent of additional remediation that may be required and/or adequately characterise the contamination.
- A validation report must be prepared documenting remediation and validation works and make comment on the suitability of the land to the proposed use on the basis of the validation results.
- The Project Manager will determine whether any requirement exists to notify relevant government agencies, and the OHS Manager for the project.

Any material identified as contaminated must be disposed offsite in accordance with the relevant regulations, with the disposal location and results of testing documented and made available to the Goodman Project Manager and Environmental Consultant for CEMP auditing purposes. Any sampling and results undertaken must be documented in accordance with the reporting procedures.

The details of the Unexpected Find will be recorded initially in the site project diary.

An appropriate heritage consultant is to be contacted in the case of an unexpected find relating to items of possible cultural significance, although it is understood that no such items are known to exist at the site.

## 4 Monitoring and Review

### 4.1 Environmental Monitoring Program

An Environmental Monitoring Program is required to ensure compliance with relevant legislation. Requirements for environmental monitoring for the project are included in the sub-plans provided in this CEMP. The monitoring program consists of:

- Daily site inspections by the person responsible for manager day-to-day environmental management on site.
- Weekly inspections by the Site Supervisor/HSE Officer, which are formally documented each week by using the Weekly Environmental Checklist (Appendix D).
- Fortnightly inspections to be completed by the Goodman Project Manager.
- Specific monitoring carried out at monthly intervals and following major events, such as outlined in the sub-plans found in the Appendices, carried out by the HSE Officer.

The environmental monitoring program will be the responsibility of RCC's Site HSE Officer (or RCC's Project Manager Nominee), and will include monthly review and management of the following:

- Sufficient training of personnel.
- Arranging specialist consultants when required.
- Coordination of monitoring equipment and materials.
- Coordination of sample collection, documentation and delivery.
- Ensuring frequency and methodology is in accordance with all licences, permits, approvals, Australian Standards and any other industry standards.
- Data management and representation of results.
- Reporting non-conformances and implementing corrective actions.
- Providing a summary of monitoring records to the Goodman Project Manager on a monthly basis.

Field data such as weather, air quality, wind direction, noise (including noise verification monitoring) and water quality will be recorded electronically where possible and transferred into monitoring results spreadsheets. In addition to measured parameter readings, the following information will be recorded on Field Data sheets:

- Date
- Time
- Sampling point/location
- Name of sampler

Site observations and inspection notes are to be recorded in the daily checklist and have been developed by RCC. Laboratory analysis results will be filed electronically onsite.

Any complaints are also to be noted and recorded.

#### **4.1.1 Site Inspections**

Site Environmental Inspections are to be undertaken by RCC weekly using the Weekly Environmental Checklist (Appendix D) to ensure that environmental hazards are recognised and can be promptly rectified. Additional environmental issues may be added to the Site HSE Inspection form as required.

Site inspections will be conducted by an Geosyntec:

- A minimum of once per week during remediation (i.e. works required under the RAP).
- Once per month following the remediation phase.
- At the completion of Stage 1 works.
- At the completion of Stage 2 works.

Geosyntec site inspections will assess the adequacy and effectiveness of environmental controls. These inspections will address the following as a minimum:

- High risk activities and processes.
- Work in environmentally sensitive areas.
- Site preparation for adverse weather conditions.

Responsibilities for environmental inspections on the project are summarised below:

- Site staff will conduct daily inspections of areas under their supervision, including assessment of environmental controls and issues.
- RCC's Senior Site Manager / Site HSE Officer (or nominated person) will conduct weekly inspections completing the Weekly Environmental Checklist. Environmental issues arising will be immediately reported to the Site HSE Officer and Site Manager for rectification. Where required, issues may be entered into the Corrective Action Database.
- Any site personnel and / or visitors may raise an environmental issue through toolbox talks or to any managing personnel.
- Safety, Environment and Quality Audits will be performed by RCC's HSE staff on a monthly basis.
- RCC will engage Geosyntec to complete necessary audits with monthly reports provided detailing the outcomes of the audit. The audit will be provided to RCC and made available to Goodman within one week of the CEMP audit.
- Any non-conformance and actions taken to rectify the non-conformance will also be provided to Goodman in the monthly report.

#### **4.1.2 Auditing of CEMP**

Daily and weekly CEMP compliance checks are required by the person responsible for day-to-day environmental management on site, as presented in Appendix C. Geosyntec will review the collated data on a monthly basis. The audit reports will also be submitted to the project manager for forwarding to Goodman and the Site Auditor on a monthly basis.

Projects with high-risk activities or that performed poorly at the initial audit may be audited at a higher frequency. The RCC HSE Manager is responsible for coordinating project audits. The RCC Senior Project Manager is responsible for distribution of the audit reports and implementation of any required feedback/management measures required to address the issues identified.

A concluding environmental compliance audit will be undertaken at completion of the work under this project. It shall include the following:

- Site surveillance/inspection.
- Full review of environmental records.
- Identification of any environmental protection measures and operational controls that have not yet been implemented to the levels identified in the associated plans.
- Recording of the condition of existing environmental protection controls.
- Identification of any environmental protection measures which require rectification and ongoing management.

## **4.2 Monitoring of Project Environmental Activities**

Objectives and Targets for the project are specified in Section 1.8. Data relating to these targets are to be documented daily using site diaries which are to be reviewed by RCC's Senior Site Manager on a monthly basis, to ensure that the diaries are uploaded to RCC's online management platform which can be viewed at any time by RCC's Corporate HSE Manager for reporting to senior management.

The Key Performance Indicator (KPI) Monthly Report captures information on lag and lead indicators. The current lag indicators are:

- Number of environmental incidents.
- Number of Penalty Infringement Notices (PINs) or clean-up notices.
- Number of community complaints.

The current lead indicators are:

- Number of toolbox talks (combined with WHS & include environmental issues)
- Number of environmental inspections undertaken.
- Waste and recycling volumes (initially to set benchmark then track improvement).

## **4.3 Review of CEMP**

Development Consent conditions require the CEMP to be reviewed by the appointed Auditor and the Planning Secretary.

This CEMP must be revised whenever any changes occur on the site that may have an impact on the environment or have the potential to migrate offsite. Any changes made to the plan must be reviewed by the Auditor and Planning Secretary. These changes are also to be communicated as appropriate with Goodman, construction personnel, etc.



## 5 Environmental Incidents, Non-Conformance and Complaints

### 5.1 Environmental Incidents

An environmental incident may, amongst other things, include a fuel spillage, a major leak, failure of a pollution control device such as sediment controls, undertaking works out of hours without approval, major noise and/or vibration affecting neighbours.

For all fuel, oil or chemical spills, the Incident and Accident Reporting procedure (Appendix E) is to be followed.

An incident classification and reporting mechanism must be established to inform responses to incidents. RCC must maintain the incident classification and reporting system (as per Appendix H) which details the classification of site incidents as well as the reporting, immediate action procedures, and investigations to take place following an incident as well as the responsible persons.

All environmental incidents and emergencies that meet the criteria listed below must be verbally reported to the HSE Manager immediately and written notification provided within 24 hours. Goodman will direct the emergency response and / or provide assistance as required and will investigate all environmental incidents and emergencies to confirm they have been appropriately resolved. Goodman will notify the appropriate regulatory authorities in accordance with State requirements.

An incident will be reported if any of the following scenarios occur or have the potential to occur:

- Serious environmental harm.
- Material environmental harm.
- Prosecution by a regulatory authority.
- Environmental approval condition breach.
- Environmental monitoring parameter breach.

Incidents shall be reported both verbally and in writing within 24hrs of occurrence. Additionally, this information shall be forwarded to the Goodman Project Manager. All incidents and accidents shall be recorded in an appropriate Incident and Accident Database.

All environmental incidents that cause, or could potentially cause, environmental harm are to be investigated, and corrective actions implemented following the investigation. Depending on the seriousness of the incident, key site personnel, RCC's Site HSE Officer / Project Manager, witnesses etc. shall be consulted on the investigation and in determining appropriate corrective or preventive actions.

Where there is a risk of material harm to the environment, incidents must be reported/notified to the appropriate regulatory authority (ARA) without delay, under section 147 of the POEO Act.

### 5.2 Preparedness

The key to effective prevention of incidents is risk assessment, procedure development, monitoring and training. During construction activities, RCC's inspections and preventive actions will include:

- Activity specific and daily risk assessments.



- Development of work procedures and safe work method statements in consultation with relevant RCC staff such as work teams, environment team members and senior management.
- Daily inspections of active work sites.
- Completion of routine environmental checklists.
- Issue and quick close-out of non-compliance notices.
- On-going environmental training.
- Environmental audits of work sites, subcontractors and compliance issues.

Environmental and safety information on hazardous substances (eg. Safety Data Sheets - SDS) will be available at the main site office and where such substances are stored. Environmental response procedures may be tested in areas where a pollution risk is present, such as those adjacent to waterways.

All personnel should be familiar with the Emergency Procedures detailed in Appendix E. Personnel involved in emergency response activities will be provided with specific training. An up-to-date list of emergency response personnel and organisations will be maintained at the site office and compounds.

### 5.3 Reporting

Site environmental incidents must be reported on an Incident/Injury Record Sheet (Appendix H). The first priority is to ensure safety precautions are observed and then the situation is controlled as soon as possible, and to avoid further pollution or other adverse environmental consequences. Reporting of the incident must not delay any immediate responses to the incident.

Environmental incidents that cause or threaten to cause material environmental harm must be reported to the ARA (EPA, Council, SafeWork etc) as soon as practicable following the incident. This would include any spillage or leak of substances that cause water or land pollution. Material environmental harm generally means harm that is not trivial and / or costs more than \$10,000 to clean up.

If the RCC Site Manager believes the incident may be reportable to the ARA, contact the WHS Manager for further advice prior to making an Investigation Report.

Incident reports must be completed and forwarded to the RCC's HSE Manager within 24 hours and must be kept for a minimum of 5 years.

**In the event of an environmental emergency, the following persons can be contacted 24 hours per day, seven days per week:**

Name(s): **Michael French**

Position/Responsibility: **Richard Crookes Site Manager**

Contact Number: **0437 637 649**

Emergency services contact details are as follows:

- Emergency Hotline: 000
- Ambulance: 000
- NSW Fire Service: 000
- NSW Police (Maroubra): (02) 9349 9299
- State Emergency Service (SES): 13 2500

- WIRES (injured wildlife): 1300 094 737

For offsite pollution events as a result of site activities, the HSE is to be notified who will notify OEH. The HSE contact details are provided in Section 9 below.

All onsite information relating to hazardous materials, including Safety Data Sheets and spill containment materials will be kept at the site office.

## 5.4 Non-Conformance Reports (NCRs)

RCC is required to implement a non-conformance and corrective action process to address all environmental non-conformities regardless of the source. Typically, environmental non-conformances would result from audits and inspections, from observations by the Site Manager of poor environmental practices including incorrect waste disposal/recycling including liquid waste, poor storage of hazardous substances, oils, chemicals and damage to existing environmental controls such as sediments fencing. Non-conformances may be issued for serious breaches, or repeated minor breaches.

Should a non-conformance be identified in site procedures/controls, a notice is raised. Notices shall be registered in the document management system. Non-conforming product or materials will be quarantined and either returned to the supplier or disposed of. Significant non-conformances will be brought to the attention of the Senior Project Manager who will ensure that the issue is investigated and corrective action taken. Records of any action taken must be maintained including, emails, meeting minutes, memos, etc.

At a project level, the Project Manager is responsible for identifying potential improvements to the Management System including improvements to procedures, forms, processes, etc. Significant non-conformances will be reported by the Senior Project Manager to enable preventive action to be taken.

## 6 Environmental Control Documentation

### 6.1 Records

Where applicable, RCC will maintain the following records for the project, in legible format, in order to demonstrate compliance with the CEMP:

- The CEMP (all versions), supplementary plans and procedures.
- Internal and external Construction Environmental Management Systems and CEMP audit reports approvals, regulatory licences and permits.
- Regulatory authority inspection reports.
- Correspondence with regulatory authorities and other key stakeholders.
- Employee induction and training records.
- Environmental monitoring records.
- Monthly KPI reports
- Sediment control works checklist and release records.
- Environmental accidents/incidents/emergency reports.
- Non-conformance reports.
- Reports to regulatory bodies.
- Complaint records (see Section 7).
- Community involvement information.
- Waste records.
- Checklists and field sheets.
- Any relevant reports submitted to regulatory bodies.
- Management review minutes and action taken.

Records will be held for at least five years after the date of completion of the Project. All incident reports, should they occur, will also be issued as part of the RCC handover procedures.

### 6.2 Inspections and Checklists

Weekly Environmental Inspections are to be completed and documented in line with the Weekly Environmental Checklist provided in Appendix D. The Environmental Weekly Checklist will be updated from time to time to include additional identified environmental considerations that require inspection to ensure effectiveness.

## 7 Communication

A Community Consultation and Management Plan has been provided as Appendix I, which provides site contact details and responsibilities, and procedures for consultation (Section 6) and stakeholders engagement (Section 7).

## 8 Emergency Plan and Response

Emergency planning and response will be implemented in accordance with RCC's Emergency Response Plan and Safety Response Plan which have been developed for emergency situations that may impact upon the environment. The Incident and Accident Reporting Procedure is presented in Appendix E. A Safety Response Plan will be developed for the following table of potential major incidents/emergencies:

| Incident /<br>Emergency  | Potential Impact   | Contingency Response Measures  |
|--|--|--|
| Major Oil or Fuel or Chemical Spill<br>Major spills defined as a spill that is likely to have direct environmental consequences.   | <ul style="list-style-type: none"> <li>Contamination of land or stormwater system.</li> <li>Contamination of soil.</li> <li>Prosecution.</li> </ul>  | <ul style="list-style-type: none"> <li>Immediately call the fire brigade and notify superintendent.</li> <li>All work to stop immediately in vicinity.</li> <li>Identify the source of the spill.</li> <li>Refer to the Material / Safety Data Sheet, MSDS / SDS and evaluate the hazards of the material.</li> <li>Spill response kits and equipment deployed if it is safe to do so.</li> <li>Use all available resources to contain and clean up spill.</li> <li>Contact additional consultants or Subcontractors if required.</li> <li>Notify relevant authorities and persons (RCC HSE Manager, Site Manager &amp; Project Manager, EPA,).</li> <li>Implement incident reporting procedures.</li> </ul> |
| Minor Site Spills<br>Minor spills defined as spills which can be contained and rectified correctly without the need of external services.  | <ul style="list-style-type: none"> <li>Contamination of land or stormwater system.</li> <li>Contamination of soil.</li> <li>Prosecution.</li> </ul>  | <ul style="list-style-type: none"> <li>Stop work in the vicinity.</li> <li>If the material is dangerous, evacuate the site immediately and notify neighbours.</li> <li>If it is safe, halt the source of the spill immediately.</li> <li>Contain the spill with spill kits and control the flow.</li> <li>Block stormwater drains downstream of the spill.</li> <li>EPA and local Council must be notified about any spills that are likely to threaten the environment.</li> <li>Minor spills shall be contained and rectified with the site spill kit and disposed of correctly. Superintendent to be notified via incident report.</li> <li>Reported to the Site Manager.</li> </ul>                      |
| Major Sediment Discharge<br>This could result from heavy rainstorm and flooding beyond the capacity of the sediment and erosion controls or a failure in the sedimentation control measures. | <ul style="list-style-type: none"> <li>Contamination of stormwater system.</li> <li>Risk to aquatic flora/fauna.</li> <li>Prosecution.</li> </ul>  | <ul style="list-style-type: none"> <li>All work to stop immediately in the vicinity.</li> <li>Reinstate controls if required.</li> <li>Install new controls if required.</li> <li>Apply flocculants if required.</li> <li>Commence clean-up activities.</li> <li>Contact additional consultants or Subcontractors if required.</li> <li>Notify relevant authorities (ie. Council)</li> <li>Implement incident reporting procedures.</li> </ul>   |
| Major dust migration event   | <ul style="list-style-type: none"> <li>Catastrophic impact on aviation activities with the potential to cause loss of life</li> <li>Significant financial loss</li> <li>Prosecution</li> </ul> | <ul style="list-style-type: none"> <li>Stop works immediately</li> <li>Reinstate controls if required</li> <li>Install new controls if required</li> <li>Immediately call relevant emergency contact line.</li> </ul>  |

At practical completion, RCC will ensure the site and surrounds, or any area which may have been used or impacted upon as a result of project-related works, will be rehabilitated to a state equivalent or better in comparison to the pre-construction state.

## 9 Contacts

Relevant contact details are as follows.

**Table 9.1: Internal Contact Details**

| Internal Contacts Position   | Name              | Contact Number |
|------------------------------|-------------------|----------------|
| General Manager – Industrial | Claude Concha     | (02) 9902 4700 |
| Project Manager              | Ben Taylor        | 0409 127 322   |
| HSE Manager                  | Marcello Di Paolo | (02) 9902 4700 |
| Site Manager                 | Michael French    | 0437 637 649   |
| Site HSE Officer             | TBA               | TBA            |
| Site Engineer                | TBA               | (02) 9902 4700 |
| Site Supervisor              | TBA               | TBA            |
| Site Foreman                 | TBA               | TBA            |
| Contract Administrators      | John Yonan        | (02) 9902 4700 |

**Table 9.1: External Contact Details**

| External Contacts Position | Name                  | Contact Number |
|----------------------------|-----------------------|----------------|
| Emergency Services         | Police/Fire/Ambulance | 000            |
| NSW Police (Maroubra)      |                       | (02) 9349 9299 |
| Bayside Council            |                       | (02) 9562 1666 |
| Poisons Info Line          |                       | 13 11 26       |
| EPA Hotline                |                       | 131 555        |

## 10 Limitations

This report has been prepared by Geosyntec Consultants Pty Ltd (“Geosyntec”) for use by the Client who commissioned the works in accordance with the project brief only and has been based in part on information obtained from the Client and other parties. The findings of this report are based on the scope of work outlined in Section 1. The report has been prepared specifically for the Client for the purposes of the commission and use by any explicitly nominated third party in the agreement between Geosyntec and the Client. No warranties, express or implied, are offered to any third parties and no liability will be accepted for use or interpretation of this report by any third party (other than where specifically nominated in an agreement with the Client).

This report relates to only this project and all results, conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose. This report should not be reproduced without prior approval by the Client or amended in any way without prior written approval by Geosyntec.

Geosyntec’s assessment was limited strictly to identifying environmental conditions associated with the subject property area as identified in the scope of work and does not include evaluation of any other issues.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigation.

This report does not comment on any regulatory obligations based on the findings. This report relates only to the objectives stated and does not relate to any other work conducted for the Client.

The absence of any identified hazardous or toxic materials on the site should not be interpreted as a guarantee that such materials do not exist on the site.

All conclusions regarding the site are the professional opinions of the Geosyntec personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Geosyntec has not independently verified and assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Geosyntec, or developments resulting from situations outside the scope of this project.

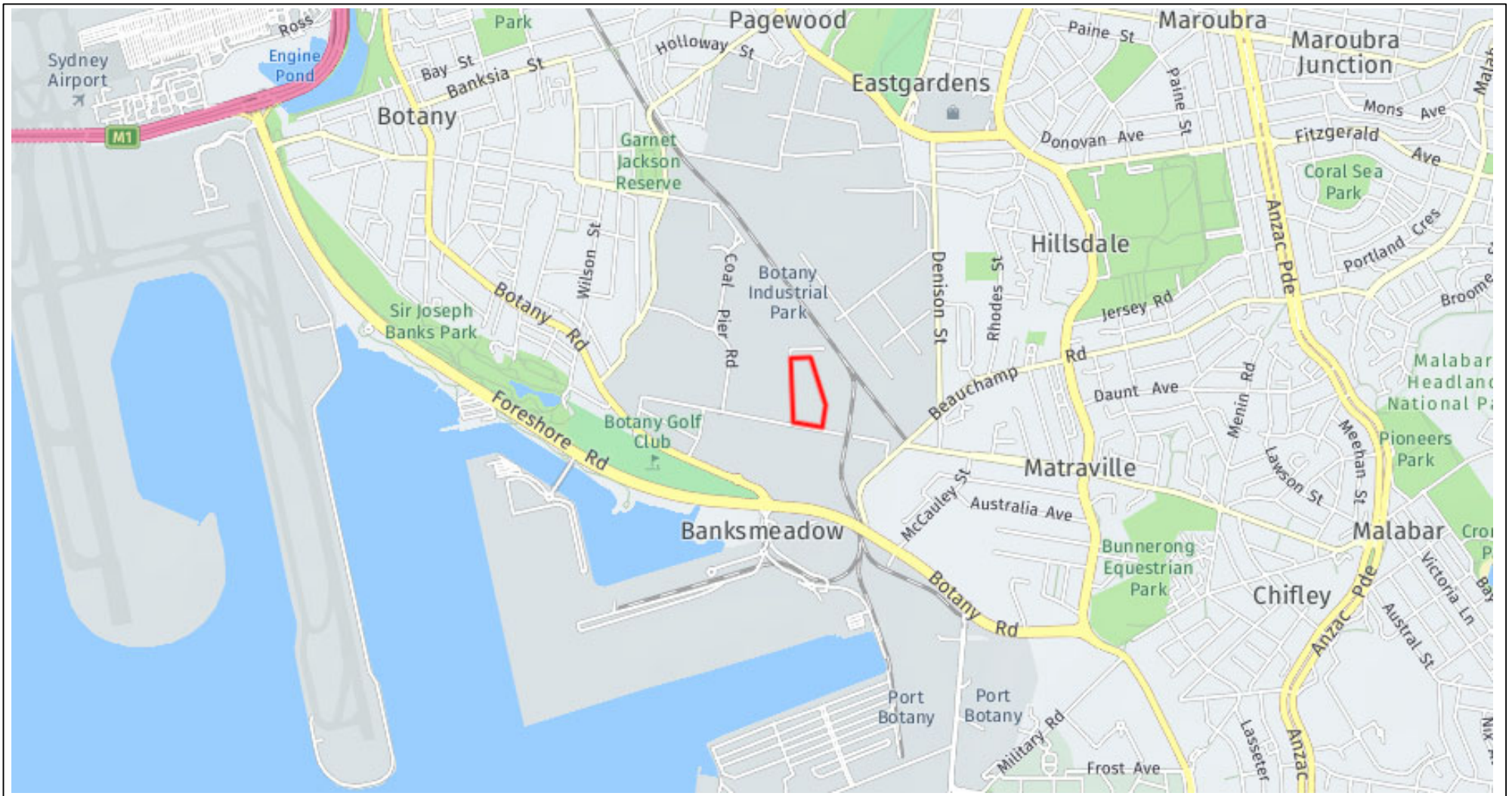
Geosyntec is not engaged in environmental assessment and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes. The Client acknowledges that this report is for its exclusive use.



## 11 References

- AS/NZS ISO 14001: Environmental Management Systems – Specifications with Guidance for Use
- AS 3480.4: Methods for Sampling and Analysis of Ambient Air
- AS 1940-2017 The Storage and Handling of Flammable and Combustible Liquids
- Ason Group (2022) Traffic Management Plan 28 McPherson Street, Banksmeadow NSW.
- Bayside Local Environmental Plan 2021
- Contaminated Land Management Act 1997
- CRC (2022) Flood Management Plan, 28 McPherson Street, Banksmeadow NSW.
- Environmental Planning and Assessment Act 1979
- Environmentally Hazardous Chemicals Act 1985 (OEH)
- Heritage Act 1977 (OEH)
- IECA Best Practice Erosion and Sediment Control Guidelines 2008.
- JBSG (2018) Asbestos and Vapour Assessment, 28 McPherson Street, Banksmeadow NSW.
- JBSG (2019) Remediation Action Plan (RAP), 28 McPherson Street, Banksmeadow NSW.
- Landcom, 2008, The Blue Book – Managing Urban Stormwater: Soils and Construction.
- Local Government Act 1993.
- NEPM (2013) National Environment Protection (Assessment of Site Contamination) Measure, Schedule A and Schedules B(1)-B(9). National Environment Protection Council, Adelaide.
- NSW EPA (2017) Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3<sup>rd</sup> edition). NSW EPA, Sydney.
- NSW EPA (2022) Sampling Design Part A - Application. NSW EPA, Sydney.
- NSW EPA (2014) Waste Classification Guidelines, Part 1: Classifying Waste
- NSW EPA (2014) Waste Classification Guidelines, Part 4: Acid Sulfate Soils
- Acid Sulfate Soil Management Advisory Committee (ASSMAC) (1998), Acid Sulfate Soil Manual.
- NSW EPA (2015) Contaminated Sites: Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997. NSW DECC, Sydney.
- NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land. NSW EPA.
- Protection of the Environment Operations Act 1997 (OEH).
- SLR (2022) Construction Noise and Vibration Management Plan, 28 McPherson Street, Banksmeadow NSW.
- Soil Conservation Act 1938 (OEH).
- Waste Avoidance and Resource Recovery Act 2001 (OEH).
- Waste Management Act 2000 (NSW Office of Water).

## Appendix A Figures



## LEGEND

Site Location

This product has been created to support the main report and is not suitable for other purposes. Image obtained from Nearmap (2022).



100 m

Datum: GDA 1994 MGA Zone 56 - AHD

Figure 1: Site Location

Site Address: 28 McPherson Street, Banksmeadow NSW

Client: RCC

Job Number: AU122127

Date: December 2022





## LEGEND

Approximate Site Boundary

This product has been created to support the main report and is not suitable for other purposes. Image obtained from Nearmap (2022).



15 m

Datum: GDA 1994 MGA Zone 56 - AHD

Figure 2: Site Layout

Site Address: 28 McPherson Street, Banksmeadow NSW

Client: Jackson Environment

Job Number: AU122280

Date: December 2022





## LEGEND

- █ Approximate Site Boundary
- █ 0.1m Hardstand Barrier Layer
- █ 0.1m Sealed Hardstand Barrier Layer
- █ No Marker / Barrier Layer
- Surface Water Entry Points

This product has been created to support the main report and is not suitable for other purposes. Image extracted from the JBSG (2019) RAP.



15 m

Datum: GDA 1994 MGA Zone 56 - AHD

Figure 3: Site Remedial Areas  
(JBSG 2019 RAP)

Site Address: 28 McPherson Street, Banksmeadow NSW

Client: Jackson Environment

Job Number: AU122280

Date: December 2022

## **Appendix B Site Induction**

## 23.1 Site Induction Record

**PROJECT Goodman Banksmeadow**

**Project No. 1296**

**EMPLOYEES DETAILS**

Site Induction No:

|  |   |  |  |
|--|---|--|--|
| Name of Inductee:                          |   |  |  |
| Mobile Phone:                              |   | Date of Birth:   |  |
| Principal Employer:<br>(Contract with RCC) |   | ABN (if self employed)                                   |  |
| Direct Employer                            |   | Trade/Occupation   |  |
| Address:                                   |   |  |  |
| Industry Induction No:                     |   |  |  |
| Emergency Contact Person                   |   | Phone No:  |  |
| Australian Citizen                         | <input type="checkbox"/> Yes <input type="checkbox"/> No  | If No, Work Visa Type:                                   | <b>VEVO Search</b> Visa Entitlement Verification on line |
| Aboriginal/                                | <input type="checkbox"/> Yes <input type="checkbox"/> No  | Sighted personal docs: Passport                          | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Torres Strait Islander                     |   | Certificate of citizenship + photo ID                    | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Preferred Language                         |   | Certificate of evidence of residential status + photo ID | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Qualifications/Tickets etc:                | Translator/Assistance Required : <input type="checkbox"/> N <input type="checkbox"/> Y If Yes use Form 23.3 |  |  |

**COPIES OF ALL TICKETS AND CERTIFICATES ARE TO BE ATTACHED TO THIS FORM AS A RECORD**

|  |   |   |   |
|--|---|---|---|
| <b>Risk Assessment and Training:</b>   |   |   |   |
| 1. I understand and have signed my company's Safe Work Method Statements, (Company to provide to RCC prior to starting work).  | <input type="checkbox"/> Yes                | <input type="checkbox"/> No             |   |
| 2. If operating plant on this project, have you received training? (provide certificates/records/licenses)   | <input type="checkbox"/> Yes                | <input type="checkbox"/> No             |   |
| 3. I will only work with correctly tagged electrical equipment.  | <input type="checkbox"/> Yes                | <input type="checkbox"/> No             |   |
| 4. Have you received safety training in the duties you are required to undertake?  | <input type="checkbox"/> Yes                | <input type="checkbox"/> No             |   |
| 5. Have you received safety equipment & tools to carry out your work in a safe manner?   | <input type="checkbox"/> Yes                | <input type="checkbox"/> No             |   |
| 6. a) Have you completed the General Construction Induction Training (white card or have interim ticket) or more than 2 years previously? b). or carried out construction work in the preceding 2 years. | <input type="checkbox"/> Yes                | <input type="checkbox"/> No             |   |
| 7. Have you been issued with ALL protective clothing & equipment to undertake the task and site requirements? Including safety glasses   | <input type="checkbox"/> Yes                | <input type="checkbox"/> No             |   |
| 8. Have watched the RCC Generic Induction and understand the site-specific induction.  | <input type="checkbox"/> Yes                | <input type="checkbox"/> No             |   |
| 9. I understand that I may be tested for Drug and Alcohol on this project on a random basis.   | <input type="checkbox"/> Yes                | <input type="checkbox"/> No             |   |
| <b>THE FOLLOWING QUESTIONS REQUIRE RESPONSE</b>  |   |   |   |
| <b>Conditions to be considered when providing first aid or emergency treatment</b>   |   |   |   |
| <b>I Suffer From</b>   | <input type="checkbox"/> Asthma             | <input type="checkbox"/> Blood Pressure | <input type="checkbox"/> Diabetic             |
|  | <input type="checkbox"/> Heart Disease      | <input type="checkbox"/> Epilepsy       | <input type="checkbox"/> Strokes              |
|  | Other: <input type="checkbox"/> No Ailments |   |   |
| <b>Allergies</b>   | Specify:                                    |   |   |
| <b>Do You Wear?</b>  | <input type="checkbox"/> Contact Lenses     | <input type="checkbox"/> Hearing Aid    | <input type="checkbox"/> Prescription Glasses |
|  | Other:                                      |   |   |

## 23.1 Site Induction Record

### Site Specific Rules

1. At all times, inductees must be aware of the potential of flooding while on site and abide by RCC warnings and directions
2. At no times is the perimeter frog control fencing be tampered with or removed.
3. Report any environmental incidents including any fuel or chemical spills to RCC

I have been inducted into Richard Crookes Construction's Project and made aware and have access to the RCC WHS Management Plan for this project.

By signing this document, I acknowledge and understand the project requirements

|                               |  |       |
|-------------------------------|--|-------|
| Inductee:                     | Sign:  | Date: |
| RCC Representative            | Sign:  | Date: |
| RCC Induction Sticker Issued? | <input type="checkbox"/> Yes <input type="checkbox"/> No |       |

The request for information is made in the course of Richard Crookes Constructions Pty Ltd everyday business. Under the Privacy Act it is important that you understand that the information you provide will be utilised by Richard Crookes staff for analysis purposes, and is likely to be held on a database.

### INFORMATION TO ASSIST WITH INDUCTION TRAINING:

**Project Overview:** Brief explanation of the Project and surrounds

**RCC Safety Policy:** Explain the concept of the policy and what the policy intends to achieve when fully implemented.

**Site Layout:** Use a site layout plan to explain where each building and site services are located, including amenities.

**RCC and Site-Specific Rules:** Ensure all persons are aware of the site rules. Hand out copies or discuss.

**Toilets/Washroom, Lunchroom:** Location of amenities, all food must be consumed in the lunchrooms provided.

**Housekeeping:** Explain where rubbish bins are located and what is expected regarding the cleaning up of rubbish.

**Nurse Call - Evacuation Alarm:** Show them how to operate the nurse call system, and the evacuation alarm.

**Emergency Procedures, Access: & Egress etc Ensure** that all persons know how to get on or off the site on a normal day and during an emergency, include how emergency service vehicles are to get on site, site procedures.

**First Aid Officer and First Aid Kits:** Inform them who are the designated First Aid Officers and the location of kits.

**Location of Fire Extinguishers:** Show them where the extinguisher/s is/are located.

**Accident Reporting:** All accidents/incidents must be reported to the RCC Management or First Aid Officer.

**Work at Heights:** Discuss what preventative actions are to be used on site to ensure safety of everyone working at heights. All fall arrest devices must be well maintained and inspected by a competent person.

**Location of Underground Services:** The locations of underground services are shown on the site plan.

**Excavation/Trenches:** All trenches deeper than 1.5 metres must be either shored, battered or benched. Proper access/egress must be provided, eg: ladders. All excavations must be adequately barricaded.

**Location of Temporary Electrical Supply:** Show them where the electrical supplies are located and explain how power is to be accessed.

**Hazardous Substances:** SDS's are required for all chemicals brought onto site and employees must comply with the requirements of the SDS. Give location of SDS and hazardous substances register.

**WHS Consultation:** Explain WHS Consultation procedure, i.e. Committee, Rep. or direct to Supervisor.

**Tool Box Meetings:** Copies of toolbox meetings must be submitted to the foreman. Minimum weekly

**Building Code Compliance:** RCC is a Code complying contractor show the RoE poster. Explain subcontractor's responsibilities. Right of entry by unions, Freedom of association, Grievance management, Reporting breaches to RCC supervisor to report to NSW CCU and ABCC in the allotted time frame

**Safe Work Method Statements:** Safe Work Method Statements are required for all work being carried out and should be supplied before commencing work. All work must be carried out in the manner described in the SWMS.

**High Visibility Clothing:** High visibility vests or shirts must be worn

**Personal Protective Equipment:** PPE must be worn wherever appropriate to the job being undertaken.



**Noise:** Hearing Protection must be worn in noisy areas. If you have to raise your voice, you need hearing protection

**UV Protection:** Over exposure to ultraviolet light can cause skin cancer. Explain that sun screen is available. Wear shirts.

**Codes of Practice or other statutory requirements:** All work must be conducted within any statutory requirements and Codes of Practice.

**Drug & Alcohol:** Testing may be conducted on a random basis, if selected for testing you will follow instructions

**Environmental Management:**

Environmental Policy displayed

Explain site environmental issues and risks, Dust, Water runoff, Silt fences, Noise, Waste , Location of spill kit, Wash out facilities for wet trades, reporting. We don't want fines or notices.

**Reporting Hazards:** All hazards identified must be reported to the Supervisor or Safety Representative.

**Building Codes, ACTs and Regulations:** Site specific displayed in induction room, "on-line" access available on request through RCC

**List site specific hazards covered in this session:** Explain any hazards that have been identified during hazard assessments. Include any corrective measures that are to be included during work. Reference hazards / requirements that are critical to the project e.g. dress rules, traffic/parking: Ref to the Site Notice board

## Appendix C Environmental Inspection Sheet

## 18.3 Environmental Inspection

**Project:** Goodman Banksmeadow

**Project No. 1296**

Inspection Date

Weather Conditions: \_\_\_\_\_ After Rain ☐

RCC Inspection Team: Include attendees Name and Signature:  
PM to attend 1 per month

|  |  |  |
|--|--|--|
|  |  |  |
|  |  |  |

| Environmental Safeguard   | Comments  | Actioned<br>(Date/Initial) |
|---|---|----------------------------|
| Have RCC staff been briefed in the requirements and responsibility of ENV of the PMP (EMP)?                     | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |
| Have key subcontractors been briefed on project environmental issues and their responsibilities?                | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |
| Have you held/distributed any environmental based tool box talks?   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |
| Have you received complaints, have they been recorded ( <b>F 18.5</b> ) and a response provided to complainant? | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |
| Are retained trees fenced, and the drip zone free of stored materials, parked cars etc                          | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |
| Are stockpiles battered and contained by a silt fence, away from waterways?                                     | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |
| Have you checked the silt fences, other sediment control measures?  | <input type="checkbox"/> Yes Do they require maintenance?<br><input type="checkbox"/> No            |                            |
| Have silt fences been installed around constructed drainage pits / or are they covered with geofabric?          | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |
| Has refuelling been undertaken by mobile refuelling providers?  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |
| Has there been any dust management issues? How were they rectified?   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |
| Has work been undertaken within approved operating hours?   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |
| Excessive noise or vibration levels from equipment?   | <input type="checkbox"/> Yes Consider heritage structures, residents<br><input type="checkbox"/> No |                            |
| Have trucks leaving site carting spoil, demolition wastes, general wastes etc been tarped?                      | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |
| Project entries/exits adequate ballast or grid in working order   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No   |                            |

## 18.3 Environmental Inspection

| Environmental Safeguard  | Comments  | Actioned<br>(Date/Initial) |
|--|---|----------------------------|
| Roads /Gutters clean socks in good order   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |
| Are chemicals / fuels stored in a bunded, roofed and secure area? – not a shipping container   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |
| Are concrete wastes/washouts contained?  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |
| Is a paint wash up system established?   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |
| Are there enough bins onsite? Does litter require tidying up inside/outside the site   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |
| Have you or the subcontractor tracked waste off site ( <b>F 18.4</b> )?  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |
| Do you have all the waste dockets, completed the waste register ( <b>F 18.1</b> ) and the monthly waste reports from the contractor? | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |
| Do you have records for any imported fill?   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |
| Do weeds need spraying grass cutting? Do you need a licenced contractor?   | <input type="checkbox"/> Yes What type of herbicide did you use?<br><input type="checkbox"/> No |                            |
| Spill kit onsite and fully stocked?  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |
| Have heritage requirements been complied with?   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |
| Did you have to stop any works due to rain, high winds, noise or vibration, traffic issues?  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |
| Is perimeter frog fence in good order?   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No                                     |                            |

Comments:

Inspection Completed By:

Attach any photo evidence as required to this report

## **Appendix D Weekly Environmental Checklist**

**Appendix 4b - Environmental Actions and Monitoring Table**  
**28 McPherson Street, Banksmeadow**

| Environmental Aspect<br>(to be read in conjunction with, Environmental Risk Matrix) | Environmental Actions, Controls and Criteria   | Operational Controls     |     |                           |                 | Effectiveness of Controls |  |                           | Checking, Corrective & Preventative Action     |                            | Resp |
|---|--|--------------------------|-----|---------------------------|-----------------|---------------------------|--|---------------------------|--|----------------------------|------|
|   |  | Induction and/or toolbox | RCC | Subcont. SWMS & contracts | Consult reports | Visual                    | Form 18.3 Environmental Inspection Checklist | Form 40.2 SWMS Compliance | Form 31.1 NCR/ Site Notice Refer PMP Section 4 | Check records during audit |      |
| 1 Dust Generation Particulate Emissions (General)                                   | <ul style="list-style-type: none"> <li>Install shade cloth on perimeter fencing</li> <li>Vehicle corridors will be clearly identified and restricted to control vehicle access onsite.</li> <li>Limit vehicle speed onsite to 10km/hr</li> <li>Fixed and mobile (water tanker) water sprays</li> <li>Reduce work activities /stop work during moderate to high wind velocity periods.</li> <li>Maintain equipment. Smokey plant to be stopped until repair works completed.</li> <li>Turn off vehicle engines whilst not in use (no long periods of idling)</li> </ul> | ✓                        | ✓   | ✓                         |                 | Daily                     | Weekly                                       |                           | As required                                    |                            | SS   |
| 1 Dust Generation (Construction)  | <ul style="list-style-type: none"> <li>Minimise areas of site disturbed, and stage works where possible.</li> <li>Dust suppression strategies to be used, i.e. water sprays, soil binders, hydro mulching, controlled speed onsite, roadbase + shaker grids.</li> <li>Stockpiled topsoils and rubble will be restricted to 4m high. Stabilise if insitu for &gt;4-6months.</li> <li>On site drilling or coring operations will be undertaken by equipment fitted with air filtration equipment.</li> </ul>   | ✓                        | ✓   | ✓                         |                 | Daily                     | Weekly                                       |                           | As required                                    |                            | SS   |

# APPENDIX 4B - ENVIRONMENTAL ACTIONS AND MONITORING TABLE

| Environmental Aspect<br>(to be read in conjunction with<br>Appendix 4a, Environmental Risk<br>Matrix) |   | Environmental Actions, Controls and Criteria   | Operational Controls |        |   |   | Effectiveness of Controls |        |  | Checking, Corrective &<br>Preventative Action |   | Resp.    |
|---|---|--|----------------------|--------|---|---|---------------------------|--------|--|---|---|----------|
| 2   | Odour   | <ul style="list-style-type: none"> <li>If odorous materials uncovered, recover immediately.</li> <li>Seek advice from consultant regarding soil /materials management.</li> </ul>  |                      | ✓      |   | ✓ | Daily                     | Weekly |  | As required                                   |   | SS       |
| 3   | Greenhouse  | <ul style="list-style-type: none"> <li>Ensure purchased electrical products/whitegoods products comply with specification for CFCS &amp; energy ratings</li> <li>Low solvent paints to be used as a priority</li> <li>Building to conform to AGBR or GreenStar performance criteria</li> <li>Deliveries / transport from site effectively planned to limit inefficient transport, assist back loading etc</li> </ul> |                      | ✓      |   |   |                           |        |  | As required                                   | ✓ | CA<br>SS |
| 4   | Stormwater<br>(Discharge from sedimentation basins, flooding) | <ul style="list-style-type: none"> <li>All water is to be managed within the confines of the site with no pumping of stormwater / ground water off site.</li> <li>Water will be moved out of required work areas by pumping to different areas of the site where is will be reabsorbed into the flood basin</li> </ul>   | ✓                    | EP-001 | ✓ | ✓ | Daily                     | Weekly |  | As required                                   | ✓ | SS       |
| 5   | Adjoining waterways<br>(dewatering, soil erosion & runoff)    | <ul style="list-style-type: none"> <li>Temporary drainage systems will be established to divert clean waters around the land development areas as appropriate.</li> <li>Erect silt fences, bunds and construct swale drains.</li> <li>Inspect at least weekly &amp; after rainfall.</li> </ul>   |                      | EP-001 |   | ✓ | Daily during discharge    | Weekly |  | As required                                   | ✓ | SS       |
| 5   | Adjoining waterways<br>(dewatering, soil erosion & runoff)    | <ul style="list-style-type: none"> <li>Maintain and/or replace as required.</li> <li>Refer NSW Department of Housing's Managing Urban Stormwater (2004).</li> <li>Street sweepers will be employed on regular basis.</li> </ul>  |                      |        |   |   |                           |        |  |   |   |          |

# APPENDIX 4B - ENVIRONMENTAL ACTIONS AND MONITORING TABLE

| Environmental Aspect<br>(to be read in conjunction with<br>Appendix 4a, Environmental Risk<br>Matrix) |  | Environmental Actions, Controls and Criteria   | Operational Controls |        |   |   | Effectiveness of Controls |        |   | Checking, Corrective &<br>Preventative Action |   | Resp. |
|---|--|--|----------------------|--------|---|---|---------------------------|--------|---|---|---|-------|
| 6   | Sewer<br>(Trade waste)   | <ul style="list-style-type: none"> <li>No paints or other chemical to be poured down drains.</li> <li>If required, obtain trade waste licence for discharge or local council approval.</li> </ul>  |                      | EP-001 |   | ✓ |                           |        |   | As required                                   | ✓ | SS    |
| 7   | Land<br>(Acid sulphate soils, contaminated soils, imported fill) | <ul style="list-style-type: none"> <li>Stop work if unexpected potentially contaminated soils are encountered.</li> <li>Obtain waste classification from consultant in accordance with EPA guidelines Environmental Guidelines: Assessment, Classification &amp; Management of Liquid &amp; Non-Liquid Wastes (June 2004)<br/><a href="http://www.environment.nsw.gov.au/waste/envguidlns/index.htm">www.environment.nsw.gov.au/waste/envguidlns/index.htm</a>.</li> </ul> | ✓                    |        | ✓ | ✓ | Daily                     | Weekly | ✓ | As required                                   | ✓ | SS    |
|   |  | <ul style="list-style-type: none"> <li>Where required a Remediation Action Plan will be developed and implemented.</li> <li>Sign off by Site Auditor may be required to validate cleanup.</li> <li>Check geotech requirements. Ensure soil classification suitable for land use ie. Schools, residential, commercial etc.</li> </ul>   | ✓                    | EP-002 | ✓ | ✓ | Daily                     | Weekly | ✓ | As required                                   | ✓ | SS    |



# APPENDIX 4B - ENVIRONMENTAL ACTIONS AND MONITORING TABLE

| Environmental Aspect<br>(to be read in conjunction with<br>Appendix 4a, Environmental Risk<br>Matrix) |                                      | Environmental Actions, Controls and Criteria  | Operational Controls |   |  |   | Effectiveness of Controls |  |  | Checking, Corrective &<br>Preventative Action |   | Resp. |
|---|--------------------------------------|---|----------------------|---|--|---|---------------------------|--|--|---|---|-------|
| 7   | Land                                 | <ul style="list-style-type: none"><li>• Potential for acid sulphate soils will be assessed based on the sites proximity to low-lying coastal areas eg. coastal plains, wetlands and mangroves where the surface elevation is less than five metres above mean sea level.</li><li>• If odorous soils (rotten egg gas) or grey/yellowed mottled soils encountered, stop work.</li><li>• If suspected, consultant to prepare Acid Sulphate Soil management Plan (ASSMP).</li><li>• Excavation and neutralisation to be supervised by consultants as per ASSMP.</li><li>• The requirements to import fill will be minimised by utilising on site cut material wherever possible.</li><li>• All analysis certificates shall be handed over as part of the completion documents to the client.</li><li>• Record all imported fill on Form 25.08 - Product Identification &amp; Traceability.</li><li>• Mark up locations where fill compacted in site plan. Survey if required.</li></ul> |                      |   |  |   |                           |  |  |   |   |       |
| 8   | Resources - water, materials, energy | <ul style="list-style-type: none"><li>• For design and construct jobs, refer to the design specification for ESD requirements and product choices.</li><li>• Buy local wherever possible to reduce impacts of transport on environment.</li></ul>   |                      | ✓ |  | ✓ |                           |  |  |   | ✓ | PM    |

# APPENDIX 4B - ENVIRONMENTAL ACTIONS AND MONITORING TABLE

| Environmental Aspect<br>(to be read in conjunction with<br>Appendix 4a, Environmental Risk<br>Matrix) |                    | Environmental Actions, Controls and Criteria  | Operational Controls |   |   |   | Effectiveness of Controls |        |   | Checking, Corrective &<br>Preventative Action |   | Resp.    |
|---|--------------------|---|----------------------|---|---|---|---------------------------|--------|---|---|---|----------|
| 9   | Noise              | <ul style="list-style-type: none"> <li>Refer to DA for noise restrictions and working hours.</li> <li>Use hoarding or acoustic mats as required.</li> <li>Situate generators and plant away from sensitive receivers.</li> <li>Turn off machinery. Maintain equipment and stop noisy plant until repaired.</li> <li>No early deliveries.</li> </ul>   | ✓                    |   | ✓ | ✓ | Daily                     | Weekly | ✓ | As required                                   | ✓ | SS       |
| 10  | Vibration          | <ul style="list-style-type: none"> <li>Conduct dilapidation report prior to work starting.</li> <li>Limit the use of vibratory rollers, rock breakers, impact piling etc adjacent to buildings (&gt;7m) and inground service</li> <li>Regenerated noise may also transfer through bedrock and building structures.</li> <li>Obtain advice if required.</li> </ul>   | ✓                    |   | ✓ | ✓ | Daily                     | Weekly | ✓ | As required                                   | ✓ | SS       |
| 11  | Community Concerns | <ul style="list-style-type: none"> <li>Provide information (eg. Signage, letterbox drops) to community on programmed works</li> <li>Provide contact name for inquiries.</li> <li>Advice locals of “noisy” work.</li> <li>If required in noise sensitive areas and/or in response to complaints, engage consultants to undertake monitoring at nominated receivers.</li> <li>Vehicles will not be permitted to queue outside the site or in residential areas unless a defined area is established which does not adversely impact on neighbours.</li> </ul> | ✓                    | ✓ |   |   | Daily                     | Weekly |   | As required                                   |   | PE<br>SS |

# APPENDIX 4B - ENVIRONMENTAL ACTIONS AND MONITORING TABLE

| Environmental Aspect<br>(to be read in conjunction with<br>Appendix 4a, Environmental Risk<br>Matrix) |       | Environmental Actions, Controls and Criteria  | Operational Controls |   |  |   | Effectiveness of Controls |        |   | Checking, Corrective &<br>Preventative Action |   | Resp. |
|---|-------|---|----------------------|---|--|---|---------------------------|--------|---|---|---|-------|
| 12  | Flora | <ul style="list-style-type: none"> <li>Review planning documentation to determine the presence of any protected, threatened or significant flora. Obtain approvals as required.</li> <li>Engage aborist to develop tree management plan or refer DA and aborist reports.</li> <li>Education and training at site toolbox meetings and induction.</li> <li>Report all sightings to the site manager.</li> <li>Fence or barricade protected flora at the drip zone. Erect Keep Out signage.</li> <li>Do not stack materials under/against trees.</li> <li>The potential for reuse of vegetative wastes by mulching, chipping or on-site placement of trunks or limbs shall be reviewed for each project.</li> </ul> | ✓                    | ✓ |  | ✓ | Daily                     | Weekly |   | As required                                   | ✓ | SS    |
| 13  | Fauna | <ul style="list-style-type: none"> <li>All native animals protected.</li> <li>Review planning documentation to determine the presence of any protected, threatened or significant fauna. Obtain approvals as required.</li> <li>Site rules/induction to include information regarding of the</li> <li>For injured animals, to relocate call WIRES</li> </ul>  | ✓                    | ✓ |  | ✓ | Daily                     | Weekly | ✓ | As required                                   | ✓ | SS    |

# APPENDIX 4B - ENVIRONMENTAL ACTIONS AND MONITORING TABLE

| Environmental Aspect<br>(to be read in conjunction with<br>Appendix 4a, Environmental Risk<br>Matrix) |             | Environmental Actions, Controls and Criteria   | Operational Controls |        |   |   | Effectiveness of Controls |        |   | Checking, Corrective &<br>Preventative Action |   | Resp. |
|---|-------------|--|----------------------|--------|---|---|---------------------------|--------|---|---|---|-------|
| 14  | Waste       | <ul style="list-style-type: none"> <li>Hazardous materials surveys to be completed.</li> <li>Materials to be removed prior to demolition</li> <li>Registers and waste disposal requirements as per WorkCover and EPA requirements for removal, storage, transport and disposal.</li> <li>General site wastes –use one bin system and sort in contractor’s yard to produce quantities of material for recycling, reuse, disposal etc.</li> <li>Empty drums are to be taken off-site for disposal.</li> <li>Empty drums shall be crushed prior to recycling/disposal.</li> <li>Do not overfill skip bins. Provide plenty for use. Cover where potential for windblown litter.</li> </ul> | ✓                    | EP-002 | ✓ | ✓ | Daily                     | Weekly | ✓ | As required                                   | ✓ | SS    |
| 15  | Litter      |  |                      |        |   |   |                           |        |   |   |   |       |
| 16  | Landfilling | <ul style="list-style-type: none"> <li>Reduce, reuse and then dispose</li> <li>Landfill space scare leading to increased tipping costs</li> <li>Dispose of hard construction wastes for recycled gravels and sands</li> <li>Do not send soil to landfill until alternatives for beneficial reuse have been explored as per consultants’ advice.</li> <li>Consideration should be given to chipping of the vegetation and reuse</li> <li>Reuse packaging to protect works</li> </ul>  |                      | EP-002 |   |   | Daily                     | Weekly |   | As required                                   | ✓ | SS    |

# APPENDIX 4B - ENVIRONMENTAL ACTIONS AND MONITORING TABLE

| Environmental Aspect<br>(to be read in conjunction with<br>Appendix 4a, Environmental Risk<br>Matrix) |           | Environmental Actions, Controls and Criteria   | Operational Controls |        |   |  | Effectiveness of Controls |        |   | Checking, Corrective &<br>Preventative Action |  | Resp. |
|---|-----------|--|----------------------|--------|---|--|---------------------------|--------|---|---|--|-------|
| 17  | Chemicals | <ul style="list-style-type: none"> <li>Chemicals to be stored in bunded areas (impervious + 110% of largest container) away from stormwater drains &amp; pits.</li> <li>Refer Workcover Code of Practice for Storage &amp; Handling of Dangerous Goods, EPA Guidelines for Bunding &amp; Spill Management. Appropriate chemicals storage is in conformance with: <ul style="list-style-type: none"> <li>→ AS 1940 The Storage and Handling of Flammable and Combustible Liquids</li> <li>→ Storage and Handling of Dangerous Goods WorkCover Code of Practice 2005— refer p. 86</li> </ul> </li> <li>EPA requirements<br/><a href="http://www.environment.nsw.gov.au/mao/bunding_spill.htm">http://www.environment.nsw.gov.au/mao/bunding_spill.htm</a></li> <li>Ponded water within bunds will not be discharged to stormwater.</li> <li>Fuel and hydraulic leaks to be cleaned up immediately.</li> <li>Drilling muds to be contained within bunds and reused.</li> <li>Liquid paints NOT to be poured down drains. Spread on waste cardboard or similar and leave to dry. Paint brushes to be rinsed and paint solids allowed to settle. Container of paint solids to be disposed to liquid waste facility.</li> <li>Construct concrete washout pit for washout, away from stormwater drains. Send back to batch plant where possible.</li> </ul> | ✓                    | EP-002 | ✓ |  | Daily                     | Weekly | ✓ | As required                                   |  | SS    |
|   |           |  |                      | EP-005 |   |  |                           |        |   |   |  |       |
|   |           |  |                      | EP-006 |   |  |                           |        |   |   |  |       |

# APPENDIX 4B - ENVIRONMENTAL ACTIONS AND MONITORING TABLE

| Environmental Aspect<br>(to be read in conjunction with<br>Appendix 4a, Environmental Risk<br>Matrix) |           | Environmental Actions, Controls and Criteria  | Operational Controls |                            |   |   | Effectiveness of Controls |        |   | Checking, Corrective &<br>Preventative Action |  | Resp. |
|---|-----------|---|----------------------|----------------------------|---|---|---------------------------|--------|---|---|--|-------|
|   | Chemicals | <ul style="list-style-type: none"> <li>Concrete cuttings to be contained and wet vac to prevent runoff into stormwater drains.</li> <li>Storage of bulk fuels (&gt;200L) on site is prohibited. All refuelling shall be undertaken by a mobile facility with appropriate spill control and containment control equipment.</li> <li>MSDS's must be provided to the Site supervisor prior to a chemical being received on site and by subcontractors using chemicals/products.</li> </ul> | ✓                    | EP-002<br>EP-005<br>EP-006 | ✓ |   | Daily                     | Weekly | ✓ | As required                                   |  | SS    |
| 18  | Traffic   | <ul style="list-style-type: none"> <li>Develop and implement traffic management plans. Submit to local council as required.</li> <li>Signage and notices regarding disruptions.</li> <li>Install shakers and wheel wash as required.</li> <li>Organise regular street sweeping.</li> <li>Haulage routes and rules will be provided to subcontractors prior to commencing on site.</li> <li>All loads of soil, demolition wastes, general wastes etc are to be tarped.</li> </ul>        | ✓                    | TMPs                       |   | ✓ | Daily                     | Weekly |   | As required                                   |  | SS    |

# APPENDIX 4B - ENVIRONMENTAL ACTIONS AND MONITORING TABLE

| Environmental Aspect<br>(to be read in conjunction with<br>Appendix 4a, Environmental Risk<br>Matrix) |                     | Environmental Actions, Controls and Criteria   | Operational Controls |   |  |   | Effectiveness of Controls |        |  | Checking, Corrective &<br>Preventative Action |   | Resp. |
|---|---------------------|--|----------------------|---|--|---|---------------------------|--------|--|---|---|-------|
| 19  | Aboriginal heritage | <ul style="list-style-type: none"> <li>Any evidence of Aboriginal relics discovered during construction shall be reported to the National Parks and Wildlife Service.</li> <li>Education and training at site toolbox meetings and induction.</li> <li>It is illegal to destroy heritage items.</li> <li>Review local or regional environmental plans, or on the State Heritage Register is to be consulted prior to work starting onsite.</li> <li>Obtain excavation permit issued by the Heritage Council of NSW if required.</li> <li>Any heritage relics or sites discovered during construction shall be reported to the NSW Heritage Office.</li> <li>Work in the subject area to cease until specialist advice is obtained.</li> <li>The area will be fenced, and signs erected to restrict access.</li> <li>Heritage consultants may be required to provide advice on demolition/construction processes and finishes.</li> </ul> | ✓                    | ✓ |  | ✓ | Daily                     | Weekly |  | As required                                   | ✓ | SS    |
| 20  | European heritage   | <ul style="list-style-type: none"> <li>Education and training at site toolbox meetings and induction.</li> <li>It is illegal to destroy heritage items.</li> <li>Check the Aboriginal Heritage Information Management System (AHIMS).</li> <li>Also check the register of the National Estate.</li> <li>Obtain approval from NPWS (Section 90 consent).</li> </ul>   | ✓                    | ✓ |  | ✓ | Daily                     | Weekly |  | As required                                   | ✓ | SS    |

# APPENDIX 4B - ENVIRONMENTAL ACTIONS AND MONITORING TABLE

| Environmental Aspect<br>(to be read in conjunction with<br>Appendix 4a, Environmental Risk<br>Matrix) |                         | Environmental Actions, Controls and Criteria   | Operational Controls |   |  |   | Effectiveness of Controls |        |  | Checking, Corrective &<br>Preventative Action |   | Resp. |
|---|-------------------------|--|----------------------|---|--|---|---------------------------|--------|--|---|---|-------|
| 21  | European heritage       | <ul style="list-style-type: none"> <li>Local land Council representatives may be required to monitor stripping/excavation.</li> <li>Work in the subject area to cease until specialist advice is obtained.</li> <li>The area will be fenced, and signs erected to restrict access.</li> </ul>  | ✓                    | ✓ |  | ✓ | Daily                     | Weekly |  | As required                                   | ✓ | SS    |
|   | Emergency Preparedness: | <ul style="list-style-type: none"> <li>Spill kit onsite.</li> <li>Refer to the MSDS for advice and procedures.</li> <li>All spills must be reported to the FM &amp; cleaned up. Complete RCC Accident /Incident report.</li> <li>Sed pond pumped out regularly to maintain capacity in case of emergency</li> <li>Ensure you know where stormwater drains are and have materials to block them in case of a fire.</li> </ul> | ✓                    | ✓ |  |   | Daily                     | Weekly |  | As required                                   |   | SS    |



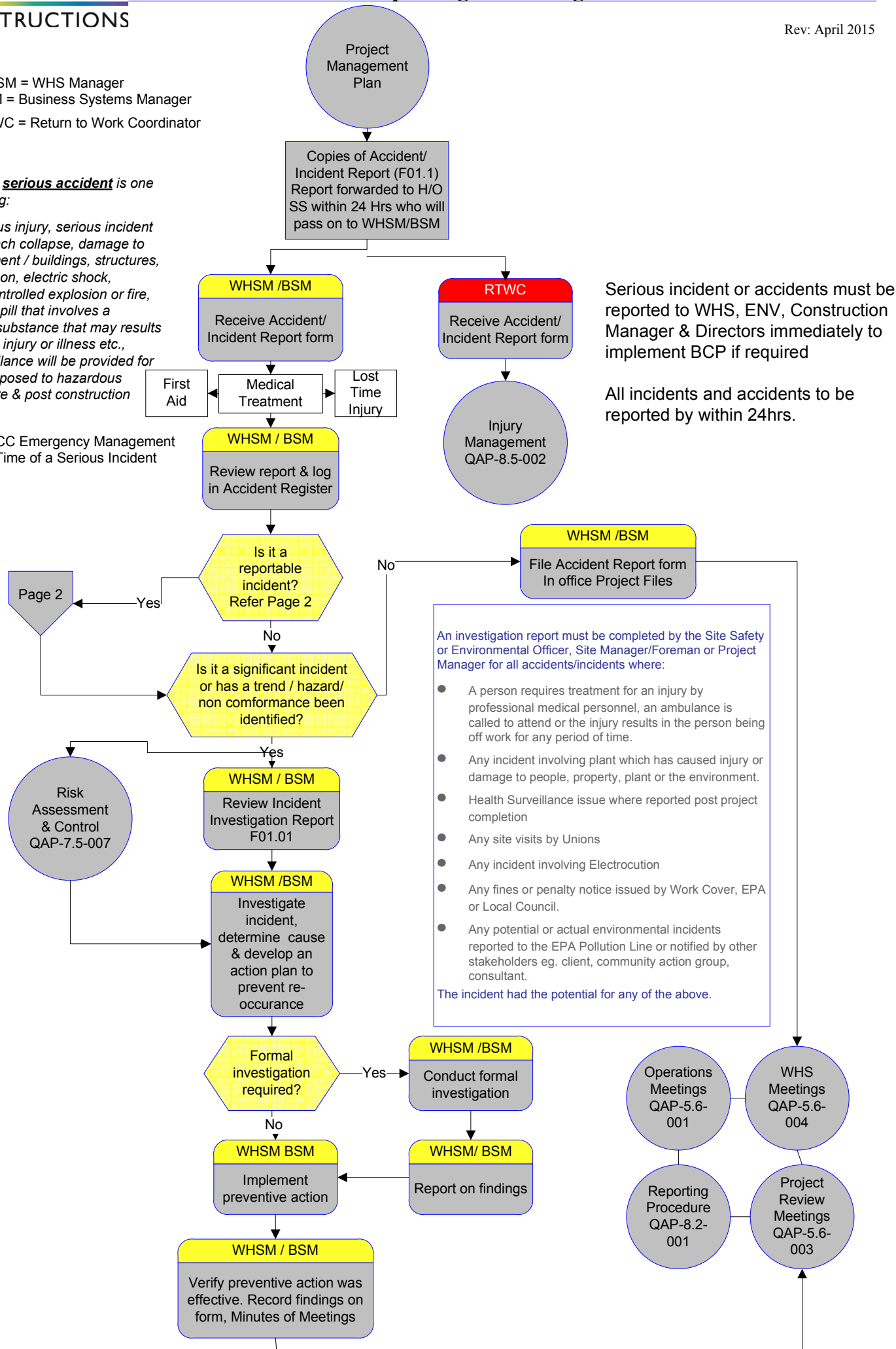
## **Appendix E   Emergency & Spill Response Procedure**

WHSM = WHS Manager  
 BSM = Business Systems Manager  
 RTWC = Return to Work Coordinator

Definition of a **serious accident** is one of the following:

*Fatality, serious injury, serious incident such as a trench collapse, damage to plant / equipment / buildings, structures, use of a weapon, electric shock, robbery, uncontrolled explosion or fire, gas release, spill that involves a carcinogenic substance that may results risk of serious injury or illness etc., Health Surveillance will be provided for all persons exposed to hazardous substances pre & post construction*

Also refer to RCC Emergency Management Plan at the Time of a Serious Incident



Serious incident or accidents must be reported to WHS, ENV, Construction Manager & Directors immediately to implement BCP if required

All incidents and accidents to be reported by within 24hrs.

## For WHS Incidents:

### In consultation with the WHS manager

#### The Work Health and Safety Act 2011

Part 3 of the WHS Act requires the regulator to be notified of serious workplace incidents and for the site of these incidents to be preserved until an inspector arrives or directs otherwise (subject to some exceptions). Failing to notify is a criminal offence and penalties apply.

on summary part 3 of the **WHS Act requires:**

- immediate notification of a 'notifiable incident' to the regulator after becoming aware of it
- if the regulator asks – written notification within 48 hours of the request
- preservation of the incident site until an inspector arrives or directs otherwise.

#### What is a 'notifiable incident'

A 'notifiable incident' as outlined in the WHS Act is: **(A)** the death of a person **(B)** a 'serious injury or illness', or **(C)** a 'dangerous incident' arising out of work carried out by a business or undertaking or a workplace.

'Notifiable incidents' may relate to any person – whether an employee, contractor or member of the public.

Only the most serious safety incidents are intended to be notifiable, and they trigger requirements to preserve the incident site pending further direction from the regulator.

#### Reporting notifiable incidents

Where a notifiable incident occurs in your workplace:

- ☐ call WorkCover immediately on 13 10 50 as an urgent investigation may be needed and
- ☐ notify your Scheme Agent or insurer within 48 hours.
- ☐ written notice can be given by facsimile, email or other electronic means.

#### Sec 39 Duty to preserve incident sites

(1) The person with management or control of a workplace at which a notifiable incident has occurred must ensure so far as is reasonably practicable, that the site where the incident occurred

is not disturbed until an inspector arrives at the site or any earlier time that an inspector directs.

(2) In subsection (1) a reference to a site includes any plant, substance, structure or thing associated with the notifiable incident.

(3) Subsection (1) does not prevent any action:

- (a) to assist an injured person, or
- (b) to remove a deceased person, or
- (c) that is essential to make the site safe or to minimise the risk of a further notifiable incident, or
- (d) that is associated with a police investigation, or
- (e) for which an inspector or the regulator has given permission.

## For Environmental Incidents:

### In consultation with the Environmental Manager (BSM)

- Duty to notify pollution incidents**

-There is a duty to report pollution incidents under section 148 of the Protection of the Environment Operations Act 1997 (POEO Act).

- if the **actual or potential harm** to the health or safety of human beings or ecosystems is not trivial,

- if actual or potential loss or property damage (including clean-up costs) associated with a pollution incident **may exceed \$10,000**.

- Definition of 'pollution incident'**

Pollution incident means an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.

- RCC must notify**

- the EPA Pollution Line on telephone 131 555 in the following circumstances:
- appropriate regulatory authority (ARA)
- Environment Protection Authority (EPA) if they are not the ARA
- Ministry of Health
- WorkCover NSW
- local authority, if they are not the ARA
- Fire and Rescue NSW.

| Record Name                             | Location                            | Indexing Method | Access         | Maintenance Responsibility | Period |
|---|-------------------------------------|-----------------|----------------|----------------------------|--------|
| Accident - Incident Report              | Office Project files, Project files | Date            | All            | WHSM, PM                   | 30 yrs |
| RCC Employee Accident - Incident Report | Personnel File                      | Date            | HRM,WHSM, RTWC | RTWC                       | 30 yrs |

## **Appendix F Internal Environmental Audit**

# Audit Report Quality & Environmental

**PROJECT:**

**AUDIT NUMBER:**

**DATE:**        /        /

**WEATHER CONDITIONS**

SUNNY ☐

OVERCAST ☐

RAINING ☐

WINDY ☐

**AUDIT TEAM MEMBERS:**

RCC MEMBERS:

SUB-CONTRACTORS:

**AUDIT SCOPE:**

TO AUDIT COMPLIANCE WITH THE RCC MANAGEMENT SYSTEM AND THE RELEVANT ACTS CODES AND REGULATIONS IDENTIFIED AND TO ASSESS SITE MANAGER'S LEVEL OF COMPLIANCE.

**SUMMARY OF AUDIT:**

Review current works on site, app    %,

App    men on site

Main works activity on site to be reviewed

-  
-  
-

Site walk conducted

**FINDINGS:**

General-

Project presentation

Attachments to this report: Nil

Auditor's signature

Project Manager's Signature

Date:

/ /

Date:

/ /

Close out meeting with Project Manager/Site Manager

Notes: All items discussed

---

**Note: All non-conformances and improvements noted for this audit must be actioned, closed out and returned to the Systems Manager within 7 days of receipt of the audit report.**

**NON CONFORMANCES**

| Item number(s) in audit notes | Details (summarised) | What happened to cause the non conformance? – consider the root cause of the issue | Who | Action to be taken | Objective evidence sighted when reviewing action taken to fix problem | Date closed out |
|-------------------------------|----------------------|--|-----|--------------------|---|-----------------|
|                               |                      |  |     |                    |   |                 |
|                               |                      |  |     |                    |   |                 |
|                               |                      |  |     |                    |   |                 |

**IMPROVEMENTS/OBSERVATIONS**

| Item number(s) in audit notes | Details (summarised) | Who | Action to be taken |
|-------------------------------|----------------------|-----|--------------------|
| 1                             |                      |     |                    |
| 2                             |                      |     |                    |
| 3                             |                      |     |                    |
| 4                             |                      |     |                    |
| 5                             |                      |     |                    |
|                               |                      |     |                    |

Next Audit :

System Improvements:



## 5.5b Audit Report Quality & Environmental

| Audit Task  |  |
|---|--|
| <b>Planning:</b>  |  |
| Project Workshop Risk Assessment – Controls in Place & Effective  |  |
| Project Management Plan <i>Planning of the project management system i.e. project management plan meets contract and RCC requirements</i>   |  |
| Roles, Responsibilities etc   |  |
| WHS Management Plan   |  |
| Environmental Management Plan   |  |
| Traffic Management Plan   |  |
| Industrial Relations Management Plan  |  |
| Training Management Plan  |  |
| Aboriginal Participation Management Plan  |  |
| Design Plan (D&C)   |  |
| Planning of quality aspects – i.e. ITP schedule, reading contract contracts, planning through inspection and test plans to check incoming materials, complete inspections for work in progress and final inspection of completed work and/programming of work |  |
| Subcontract letting – communication of project Quality, WHS, Env other issues   |  |
| <b>Implementation &amp; operation/product realisation:</b>  |  |
| Environmental Risks identification  |  |
| Training  |  |
| Communication – inductions & toolbox etc  |  |
| Meetings – client, subbies, team  |  |
| Documentation   |  |
| Site Diary  |  |
| RFIs and change management processes  |  |
| Operational Controls ITPs <i>ITPs for all trades are generally up to date</i>   |  |
| Operational Controls Environmental method statements  |  |
| Emergency Preparedness & Response   |  |
| Drawings and document control<br>Design management  |  |
| Record management – <i>Records easy to retrieve &amp; complete, filing system good Hard/Soft</i>  |  |

## 5.5b Audit Report Quality & Environmental

| Assessment Summary   |  | Compliance with<br>Overall evaluation – Poor, Good, Excellent |  |
|--|--|---|--|
| Control of precision equipment/calibration   |  |   |  |
| Purchasing – records & verification  |  |   |  |
| Site Management – controls in place and effective  |  |   |  |
| <b>Measurement &amp; Evaluation / Checking</b>   |  |   |  |
| Monitoring – Environmental, safety, waste  |  |   |  |
| Non conformances/Builder's Notices   |  |   |  |
| Identification and rectification of defects/ corrective action – <i>register in place, closed out properly</i> |  |   |  |
| Preventative actions – construction alerts, inspections, root cause analysis                                   |  |   |  |
| Monthly report, CPRs, client meetings  |  |   |  |
| Audits   |  |   |  |
| Code Compliance  |  |   |  |
| <b>Environmental</b>   |  |   |  |
| Project Workshop Risk Assessment – Controls in Place & Effective   |  |   |  |
| ENV Records  |  |   |  |
| Waste records maintained   |  |   |  |
| Incident reporting   |  |   |  |
| Contract specific reports  |  |   |  |
|  |  |   |  |
|  |  |   |  |
|  |  |   |  |
| Attachments to this report   |  |   |  |
|  |  |   |  |
| Auditor's signature:   |  | Project Manager's signature:                                  |  |
| Date:  |  | Date:   |  |

## 5.5b Audit Report Quality & Environmental

| <b>Legal Compliance: refer RCC Procedure QAP – 4.2-006</b>  |  |   |                             |  |          |    |
|---|--|---|-----------------------------|--|----------|----|
| Environment Legislation   |  | How does this apply to RCC? Environmental Aspect  | Applicable at time of audit | Compliant based on audit findings & inspection |          |    |
|   |  |   |                             | Yes  | Marginal | No |
| Environmental Planning and Assessment Act 1979  | Environmental Planning and Assessment Regulation 2010                        | Development control and Council planning requirements, Das  |                             |  |          |    |
| Protection of the Environment Operations Act 1997 (POEO Act)                                      | Protection of the Environment Operations (General) Regulation Summaries 2009 | Activities requiring licenses<br>Contaminated soil, liquid & other waste disposal<br>Land pollution & offenses<br>Water pollution<br>Water pollution and "harm" |                             |  |          |    |
| Protection of the Environment Amendment Act 2005  | Protection of the Environment Operations (Clean Air) Regulation 2010         | Air pollution – emission of air impurities, including excessive smoke from motor vehicles;  | Yes, visual only            |  |          |    |
|   | Protection of the Environment Operations (Noise Control) Regulation 2008     | Noise & community complaints  |                             |  |          |    |
|   | Protection of the Environment Operations (Waste) Regulation 2014             | Waste tracking and reporting  |                             |  |          |    |
| NSW Heritage Act 1977<br>NSW Heritage Act Amendment 2009  |  | Heritage items<br>Aboriginal sites<br>European  |                             |  |          |    |
| National Parks and Wildlife Act 1974  | National Parks and Wildlife Regulation 2009                                  | Aboriginal places and objects in NSW.   |                             |  |          |    |
| Threatened Species Conservation Act 1995<br>The Threatened Species Legislation Amendment Act 2004 |  | Flora & Fauna   |                             |  |          |    |
| Native Vegetation Conservation Act 2003<br>Regulation 2013  |  | Clearing vegetation esp. for rural projects   |                             |  |          |    |
| Noxious Weeds Act, 1993   |  | Weeds – particularly rural projects   |                             |  |          |    |
| Contaminated Land Management Act 1997   | Contaminated Land Management Regulation 2013                                 | Contamination<br>Duty to report land contamination  |                             |  |          |    |
| Environmentally Hazardous Chemicals Act 1985  | Environmentally Hazardous Chemicals Regulation 2008                          | Waste management – PCBS, some pesticides  |                             |  |          |    |
| Waste Avoidance and Resource Recovery Act 2007  |  | Waste and recycling   |                             |  |          |    |
| Building Code of Australia  | List relevant to work at time of audit:<br>Energy Efficiency                 |   |                             |  |          |    |

## **Appendix G Flood Management Plan and Flood Emergency Response Plan**

**CRC**

**COSTIN ROE  
CONSULTING**

**CIVIL &  
STRUCTURAL  
ENGINEERS**



## FLOOD MANAGEMENT PLAN

### INCORPORATING FLOOD EMERGENCY RESPONSE PLAN

# PROPOSED INDUSTRIAL FACILITY 28 MCPHERSON STREET BANKSMEADOW 2019, NSW

Prepared for:

Richard Crookes Constructions

Level 3, 4 Broadcast Way

ARTARMON NSW 2064

Prepared by:

Costin Roe Consulting

Level 4, 8 Windmill Street

MILLERS POINT NSW 2000

Rev: C

| DOCUMENT VERIFICATION |   |
|-----------------------|---|
| Project Title         | 28 McPherson Street, Banksmeadow                    |
| Document Title        | Flood Management Plan                               |
| Project No.           | CO9349.17   |
| Description           | Flood Management Plan for Proposed Warehouse        |
| Client Contact        | Mr Maruthi Dhurjati – Richard Crookes Constructions |

|             | Name              | Signature |
|-------------|-------------------|-----------|
| Prepared by | Ivan Zhao         |           |
| Checked by  | Xavier Cure       |           |
| Issued by   | Xavier Cure       |           |
| File Name   | Co9349.17-04c.rpt |           |

#### Document History

| Date        | Revision | Issued to                 | No. Copies |
|-------------|----------|---------------------------|------------|
| 5 Dec 2022  | A        | Mr Maruthi Dhurjati – RCC | PDF        |
| 23 Jan 2023 | B        | Mr Maruthi Dhurjati – RCC | PDF        |
| 8 Feb 2023  | C        | Mr Maruthi Dhurjati – RCC | PDF        |

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## 1 INTRODUCTION

Costin Roe Consulting Pty Ltd has been commissioned by Richard Crookes Constructions to prepare this *Flood Management Plan (FMP)* for the industrial development located at 28 McPherson Street, Banksmeadow, NSW.

This *Flood Management Plan (FMP)* addressed the flooding present on the proposed 28 McPherson Street warehouse and incorporates a *Flood Emergency Response Plan (FERP)* for the 28 McPherson Street development.

This plan details the site responses to flooding including predicted flood levels, flood warnings and flood notifications, evacuation and refuge protocols and awareness training for employees and contractors.

The requirements outlined in this report are consistent with the provisions of the *Floodplain Risk Management Guideline (OEH 2007)* and the *NSW Floodplain Development Manual (2005)*.

The subject area of this FMP/FERP comprises emergency responses for the operational phases of the development. For information regarding procedures for the management of the flood detention basin and evacuation procedures during the construction phases of the development, refer to the FDBMP prepared by Costin Roe Consulting (**Co9349.17-02c.rpt**).

This plan addresses the requirements of the Department of Planning, Industry and Environment Development Approval SSD-9691 dated 21 April 2021 and subsequent MOD1, Condition B21 as included in **Table 1** below.

**Table 1.**

| SSD-9691   | Consent Condition   | How It Is Addressed  |
|------------|---|--|
| <b>B21</b> | <p>Prior to the commencement of construction of Stage 1 works, the Applicant must update the Flood Emergency Response Plan contained within the Flood Impact Assessment report, prepared by BMT Eastern Australia Pty Ltd and dated January 2019, to the satisfaction of the Planning Secretary. The Plan must:</p> <p>(a) address the provisions of the NSW Government's Floodplain Development Manual and the associated Floodplain Risk Management Guidelines;</p> <p>(b) include details of the flood emergency responses for both construction and operation phases of the development; and</p> <p>(c) include details of a flood education, awareness and preparedness program for staff and visitors accessing the site.</p> | <p>Refer to this report for the Flood Emergency Response Plan.</p> <p>a) refer to <b>Section 3</b> of this report for guidelines adopted for the FERP.</p> <p>b) refer to <b>Section 7</b> of this report for the flood emergency responses.</p> <p>c) refer to <b>Section 6.3</b> of this report for the flood education, awareness and preparedness program.</p> |

## 2 DEVELOPMENT SITE

### 2.1 Site Description

The proposed development is located on Lot 9, DP 1205673, 28 McPherson Street in the suburb of Banksmeadow, as shown in **Figure 2.1**.

The site forms part of a larger site, formerly known as the Southlands Industrial Development. The site is bounded by the Australian Government Detector Dog Facility to the north and an 8-unit industrial development (under construction), the Botany goods railway line corridor to the east, McPherson Street to the south, and Nant Street and the Springvale Drain to the west.



Figure 2.1 Locality Plan (SIX Maps, 2022)

### 2.2 Topography & Description

The land forms part of the former Orica Australia “Southlands Industrial Development” Land and is approximately 4.13 Ha. The site has undergone previous remedial and flood storage works during 2015 as documented by Cardno Engineers and completed by Orica.

The site is currently undeveloped land which is currently utilised as an above ground offline flood storage basin. Existing levels through the site varies between RL 2.7m AHD and RL 5.0m AHD.

Surrounding levels on McPherson Street are approximately RL 3.5m AHD.

The existing basin drains into Springvale Drain across the unformed Nant Street. There is no proposed change to this drainage regime as part of the development.



## 2.4 Climate and Meteorology

The Banksmeadow area experiences relatively mild temperatures and moderate rainfall, with a yearly average rainfall of about 1080 mm, based on records from Sydney Airport AMO (Station 066037 since 1929) which is 5km to the east of the development site.

Typically, the wettest month (mean rainfall) is March, and driest usually September.

The annual mean minimum temperature is 13.6°C and the mean maximum temperature is 22.4°C. The hottest month is usually January (mean maximum of 26.7°C) and the coldest month is usually July (mean minimum of 7.4°C).

Climate statistics and average annual rainfall data and rainfall patterns relevant to this site (as sourced from Australian Bureau of Meteorology (BOM)) are included for reference in **Appendix B** of this **FMP**.

### 3 GENERAL REQUIREMENTS

#### 3.1 General Requirements Introduction

This FMP has been prepared with the purpose of providing an understanding of flood behaviour to the facility owners, management, and contractors during construction of the development.

This document has been completed with consideration to the guidelines *NSW Floodplain Management Manual 2005*, the *Flood Impact Statement* completed by BMT (Ref: R.S20352.001.docx), and other reference documents noted in **Section 3.3**.

The following sections of this FMP provide confirmation of roles and responsibilities, statutory requirements, measures to monitor and report on impacts and performance of the measures implemented, contingency planning and protocols for review and improvement.

#### 3.2 Roles and Responsibilities

1. The builder during construction and the warehouse owners/ management during operations are the key persons responsible for the implementation of this FMP and have the responsibility action measures if there is potential for a safety or environmental incident to occur.
2. The key roles and responsibilities for the responsible personnel in relation to flood risk management are outlined below in **Table 3.1**.

**Table 3.1 Roles and Responsibilities**

| Role                              | Responsibilities  |
|-----------------------------------|---|
| Development Owners and Management | <p>Provide for training in stormwater management for personnel directly involved with the implementation of this plan, as required.</p> <p>Identify and allocate Project resources to implement the requirements of this plan.</p> <p>Oversee the implementation and maintenance of this plan.</p> <p>Ensure all measures are performing adequately throughout the operation of the centre in perpetuity.</p> |
| Construction Contractor's EM      | <p>Ensure maintenance and monitoring of the stormwater management measures are undertaken in accordance with <b>Section 7</b>.</p>  |
| Construction Contractors          | <p>Ensure flood behaviour local to the development is understood.</p> <p>Ensure personnel are educated in the overall <b>FERP</b>.</p>  |

### 3.3 Reference Documents

Guidelines and standards considered in relation to the preparation of the FEP include:

- NSW Floodplain Management Manual 2005
- OEH 2007, Floodplain Risk Management Guidelines
- BMT (2019), Flood Impact Assessment for Lot 9, 28 McPherson Street Banksmeadow
- BMT (2014), Springvale Drain and Floodvale Drain Flood Study
- SES (2018). Provision of and Requirements for Flood Warning
- Bureau of Meteorology (2013). Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 2.0"

### 3.4 General FMP/FERP Requirements

1. This document and associated drawings are subject to further periodic review throughout the operational period to ensure the requirements and measures set out in this **FMP/FERP** are fit for purpose and allow for any changes which might occur not envisaged during the initial preparation of the **FMP/FERP**.
2. All flood management and response measures will conform to the standards and information contained in:
  - (i) This **FMP/FERP**;
  - (ii) Conditions of Consent;
  - (iii) BMT, Flood Impact Assessment (R.S20352.001.docx), Jan 2019
  - (iv) the latest version of SES or Bayside Council flood emergency response plans or other emergency response plans relating to flood management.

### 3.5 Review and Improvement

During operation, effectiveness of the flood detention basin & flood emergency response management measures will be confirmed through regular review of the **FERP**. It is recommended that this **FERP** be reviewed every 3 to 5 years once operations commence. Further additional reviews are to be undertaken following major flood event to confirm real life conditions against baseline conditions, and make any necessary adjustments.

Adjustments as required will be made based on confirmed site conditions and effectiveness of the implemented measures. These will need to be made in conjunction with a suitably qualified engineer, or other professional, who specialises in stormwater management and flood management.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure. Construction will be undertaken in accordance with the most recent, approved version of this **FMP/FERP**.



## 4 FLOOD BEHAVIOUR

### 4.1 Flood Behaviour Introduction

The site is located adjacent to an open channel section of the Springvale Drain. The site is affected by mainstream flooding and overland flow from McPherson Street and Nant Street and provides flood storage in the flood detention basin on site.

Flooding over the land is caused by two contributing mechanisms. The first is related to the overtopping of Springvale Drain into Nant Street and then the site, and the second mechanism is relating to overland flow from McPherson Street into the flood storage basin.

Comprehensive flood assessments have been completed by BMT on behalf of council and presented in a separate report included in the development submission (as noted in **Section 3.3**). The BMT study was completed with consultation with Bayside Council and with use of the TUFLOW model of the Springvale and Floodvale catchment also completed by BMT as part of their regional flood study.

The flood assessments show that the flood detention basin is within the Springvale Drain floodplain and is subject to flooding in storms from the 5% AEP to the Probable Maximum Flood (PMF) event.

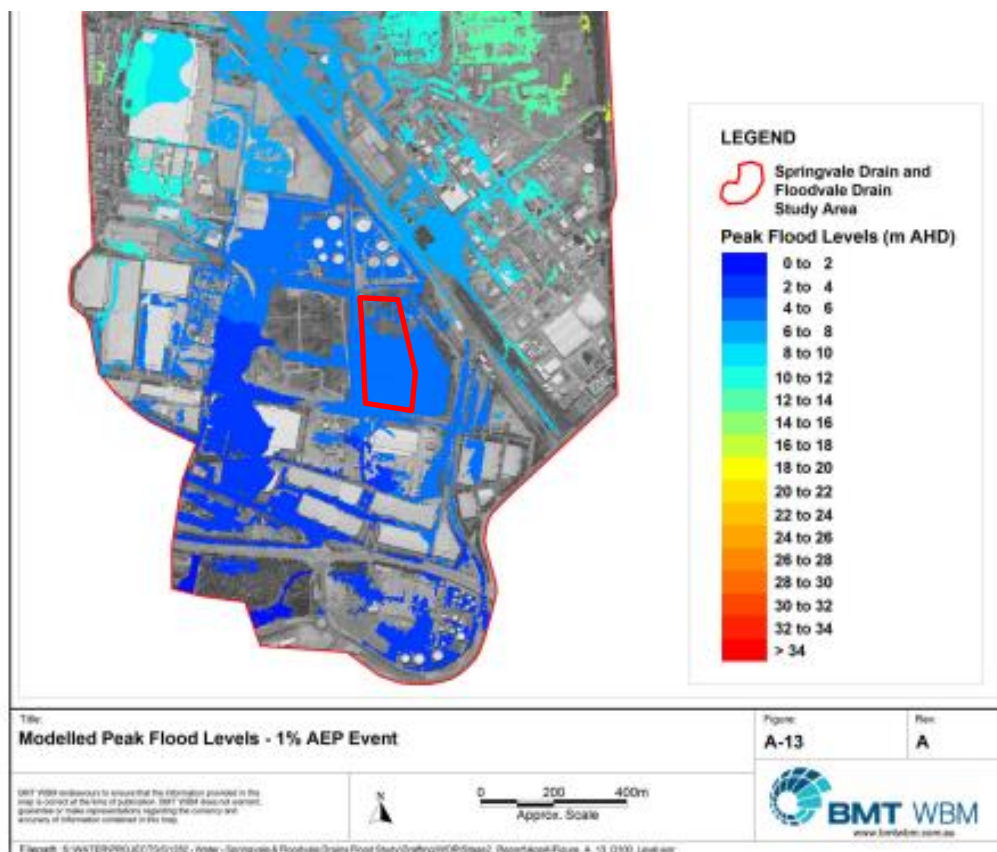
**Section 2.4** discusses climate and rainfall. The wettest month is noted to be in March, however we note that the meteorologic conditions in which overtopping of the Springvale Drain across Nant Street could be expected would be when either an East Coast Low, or similar low pressure conditions are present. These conditions are more predominant during February through June, however occurrences outside of these months could also be expected.

### 4.2 Flood Extent

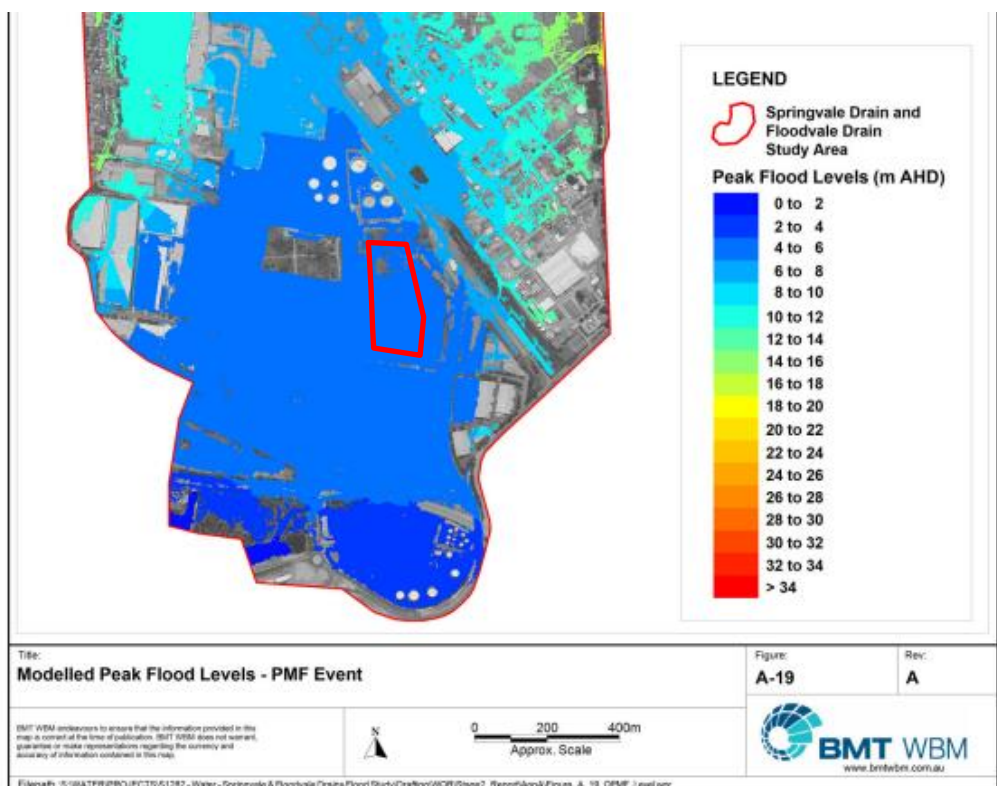
The flood surface extent and level for the 1% AEP storm event, presented at the peak flow, can be seen to be around RL 4.1m AHD across the basin. Allowing for the council required freeboard of 500mm, the corresponding flood planning level for habitable areas of the development is above 4.6m AHD. It is noted that the underside of the planned development is set at 6.4m AHD and therefore the development footprint approved is clear of and does not impact the 1% AEP event, and that the approved design sets for the development above the PMF flood water level of 5.0m AHD without reducing capacity of the flood basin.

The critical duration for peak flows for the 1% AEP storm occurs at 9 hours. A shorter critical duration of 2 hours is applicable for the PMF storm.

Reference to **Figures 4.1** through **Figure 4.4** below should be made for the pre-development flood levels and depths for the 1% AEP and PMF.



**Figure 4.1 1% AEP Flood Levels (Pre-Development)**



**Figure 4.2 PMF Flood Levels (Pre-Development)**



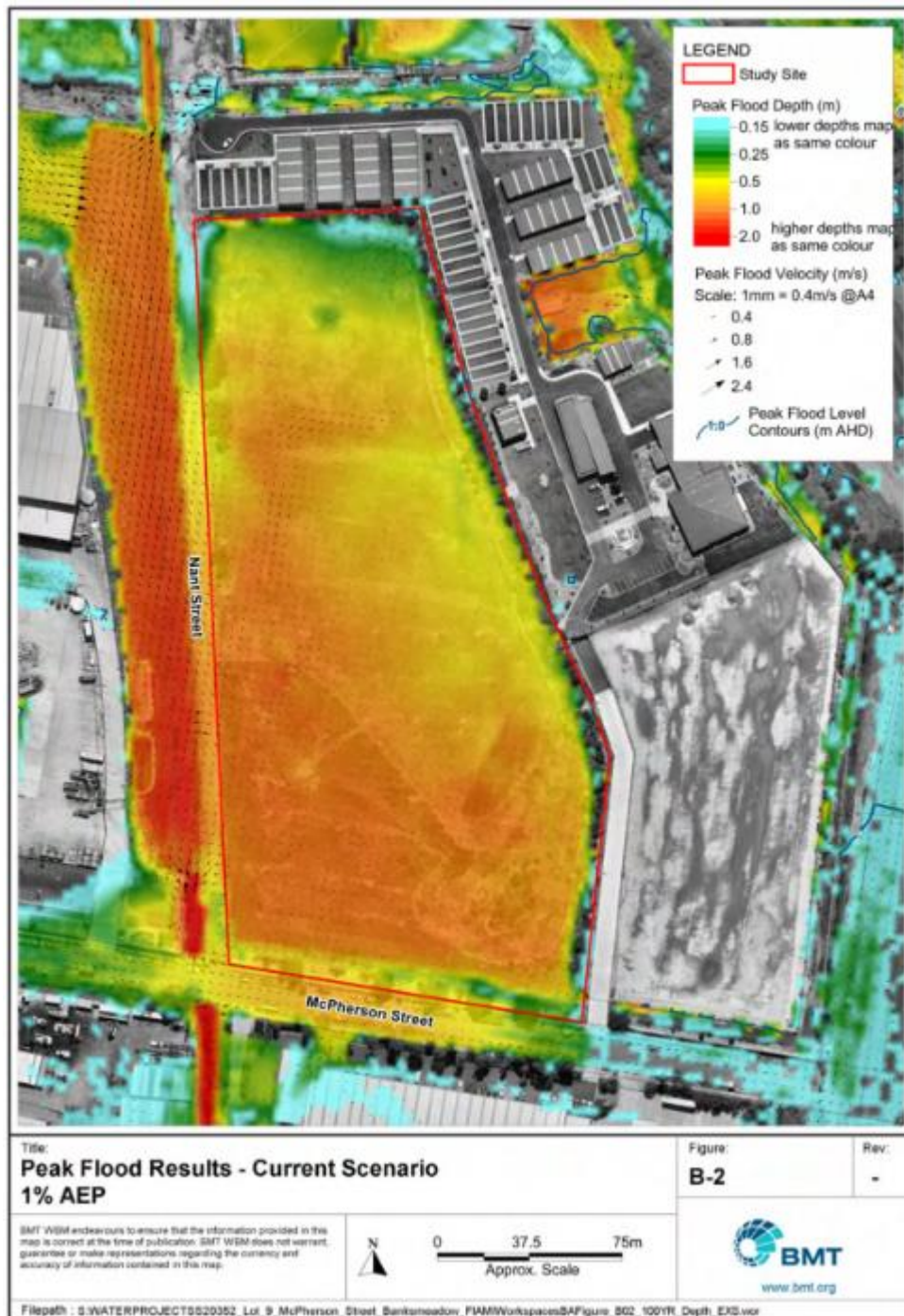
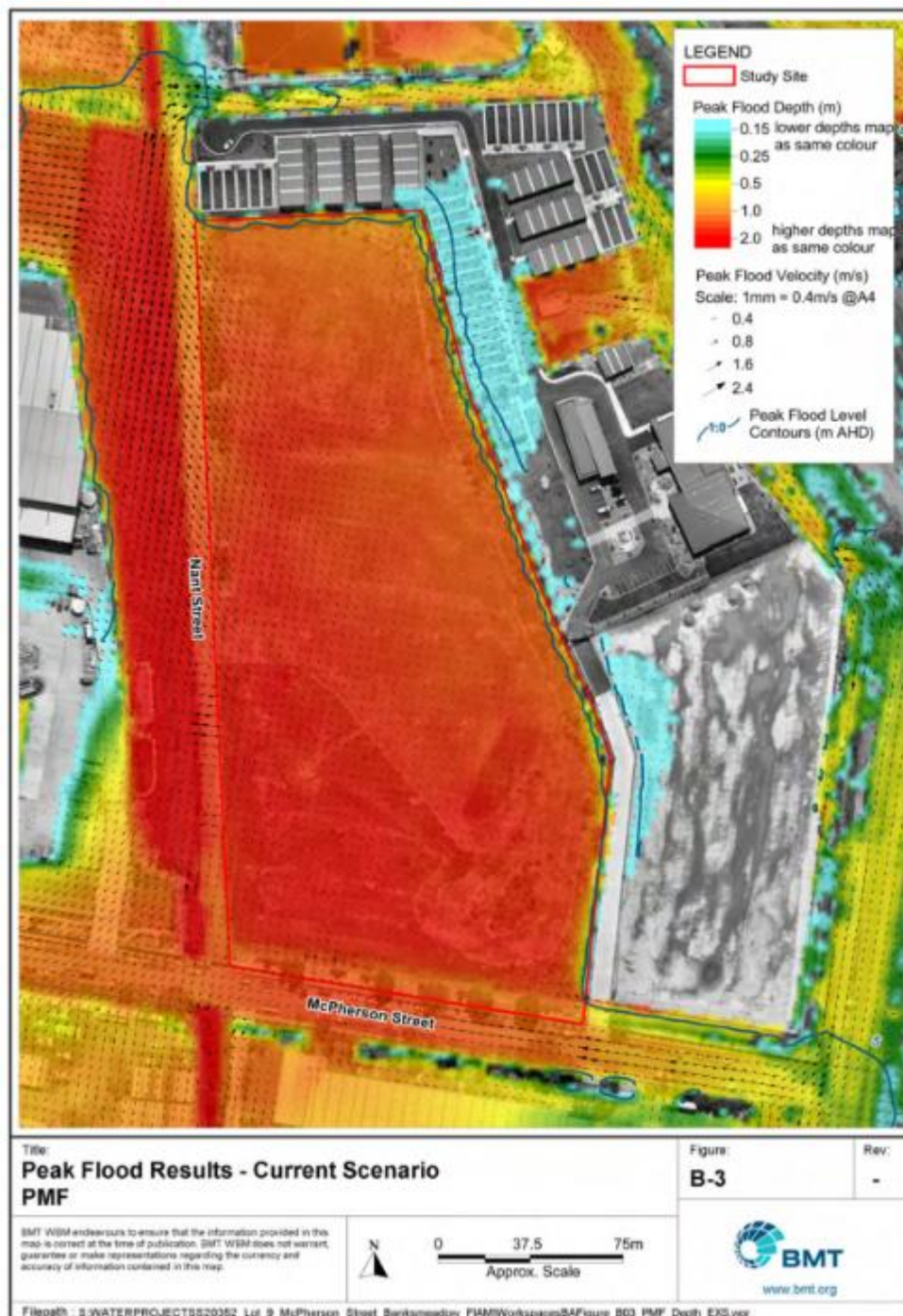


Figure 4.3 1% AEP Flood Depths (Pre-Development)



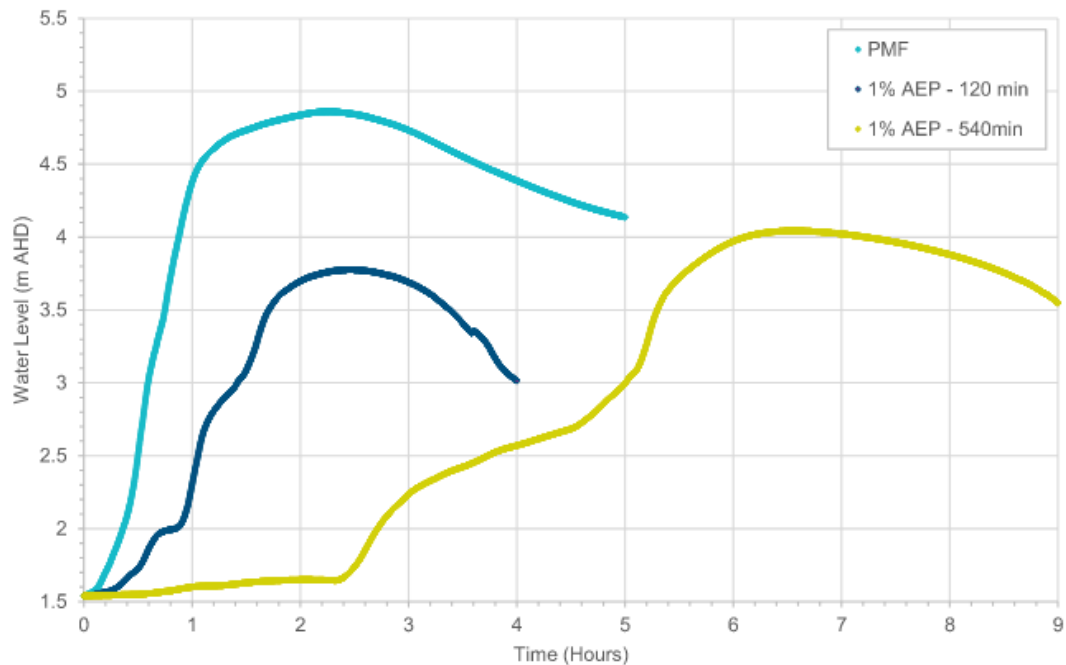
**Figure 4.4 PMF Flood Depths (Pre-Development)**

#### 4.3 Rate of Rise and Flood Timing

The recommended flood measures and triggers to be adopted on site will be dependent on the rate of rise of flood waters within McPherson Street and Nant Street and how they relate to levels within the development site.

With reference to **Section 7.3** of the BMT flood study, the approximate warning times from the start of a storm event to inundation of the Site and adjacent streets ranges from 1.5-5 hours during a 1% AEP event, and 35min for the PMF.

The duration of inundation varies based on the duration and intensity of the storm event. For the 1% AEP 2-hour event, Nant Street would be inundated for approximately 2.5 hours. During the 1% AEP 9-hour and PMF events, Nant Street and McPherson Street would be inundated for a minimum of 4 hours. Refer to **Figure 4.5** for a graph by BMT showing floodwater levels with respect to time.



**Figure 4.5. Floodwater Levels vs Time for 1% AEP and PMF storms**

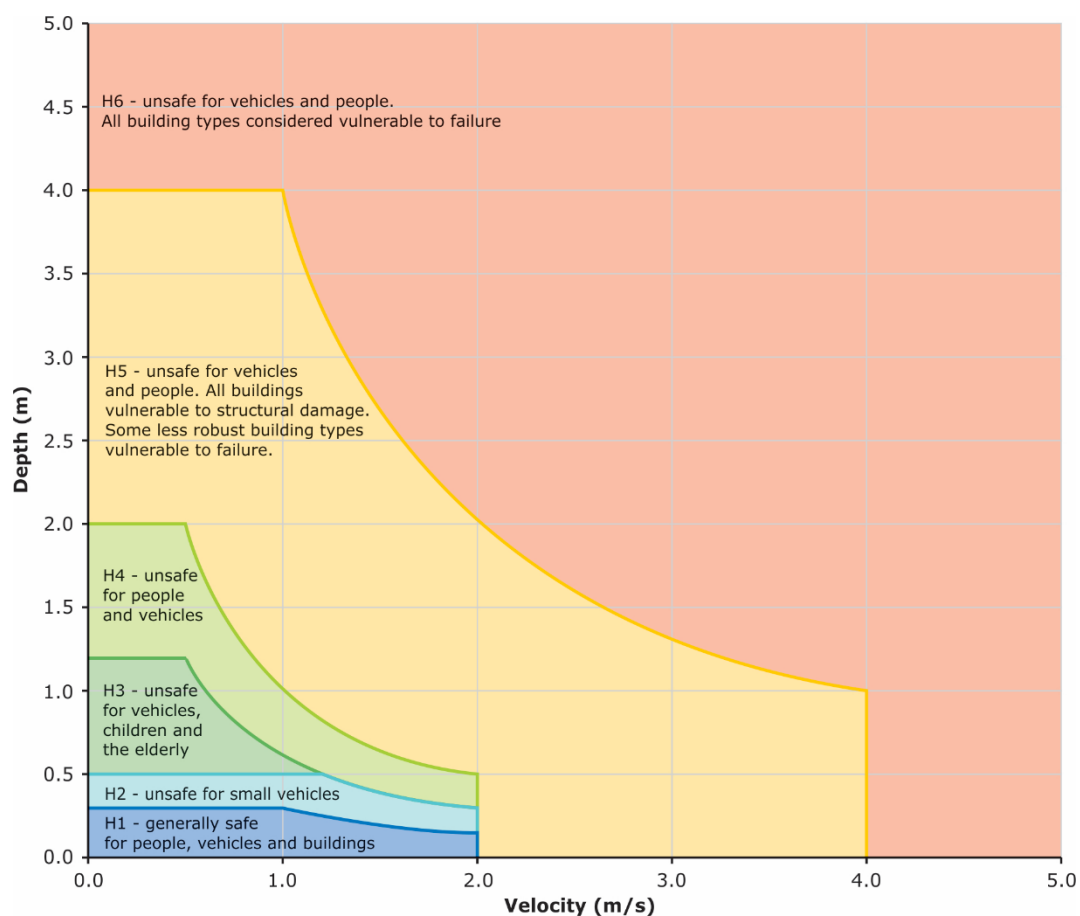
## 5 HAZARD CATERGORIES & MAPPING

### 5.1 Introduction

Flood hazard categories are broken down into H1 to H6 categories depending on depth and velocity, and their interaction with each other as set out in **Figures 5.1a** and **5.1b**.

Flood hazard criteria and mapping has been completed for the 1% AEP and PMF post development conditions as per criteria set out in the *Australian Rainfall and Runoff (2019), A Guide to Flood Estimation – Book 6 – Flood Hydraulics* and Figure 6.7.9 as included as **Figure 5.1** below.

Refer **Section 5.2** for hazard mapping.



**Figure 5.1a. Provisional Flood Hazard Chart (AR&R 2019)**



Table 6.7.3. Combined Hazard Curves - Vulnerability Thresholds (Smith et al., 2014)

| Hazard Vulnerability Classification | Description   |
|-------------------------------------|---|
| H1                                  | Generally safe for vehicles, people and buildings.  |
| H2                                  | Unsafe for small vehicles.  |
| H3                                  | Unsafe for vehicles, children and the elderly.  |
| H4                                  | Unsafe for vehicles and people.   |
| H5                                  | Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust buildings subject to failure. |
| H6                                  | Unsafe for vehicles and people. All building types considered vulnerable to failure.  |

Table 6.7.4. Combined Hazard Curves - Vulnerability Thresholds Classification Limits (Smith et al., 2014)

| Hazard Vulnerability Classification | Classification Limit (D and V in combination) | Limiting Still Water Depth (D) | Limiting Velocity (V) |
|-------------------------------------|---|--------------------------------|-----------------------|
| H1                                  | $D \cdot V \leq 0.3$                          | 0.3                            | 2.0                   |
| H2                                  | $D \cdot V \leq 0.6$                          | 0.5                            | 2.0                   |
| H3                                  | $D \cdot V \leq 0.6$                          | 1.2                            | 2.0                   |
| H4                                  | $D \cdot V \leq 1.0$                          | 2.0                            | 2.0                   |
| H5                                  | $D \cdot V \leq 4.0$                          | 4.0                            | 4.0                   |
| H6                                  | $D \cdot V > 4.0$                             | -                              | -                     |

**Figure 5.1b. Adopted Hazard Criteria (AR&R 2019)**

## 5.2 Hazard Mapping

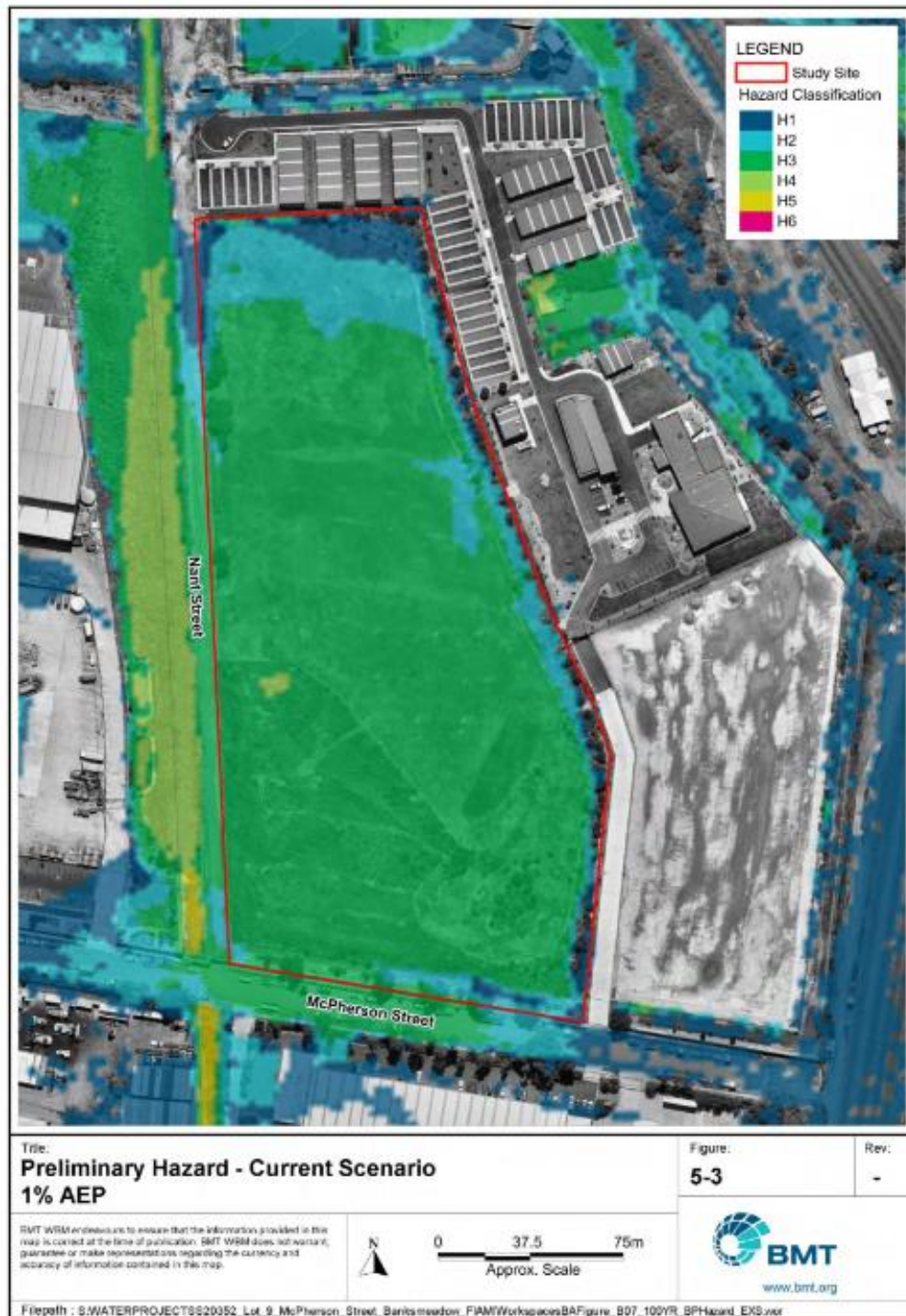
Flood hazard criteria and mapping has been included in Figures 5.2 and 5.3.

Flood hazard criteria has been reviewed by BMT in their *Flood Impact Assessment*. The assessment and hazard categorisation has been completed based on criteria set out in the *Australian Rainfall and Runoff (2019), A Guide to Flood Estimation – Book 6 – Flood Hydraulics* and Figure 6.7.9.

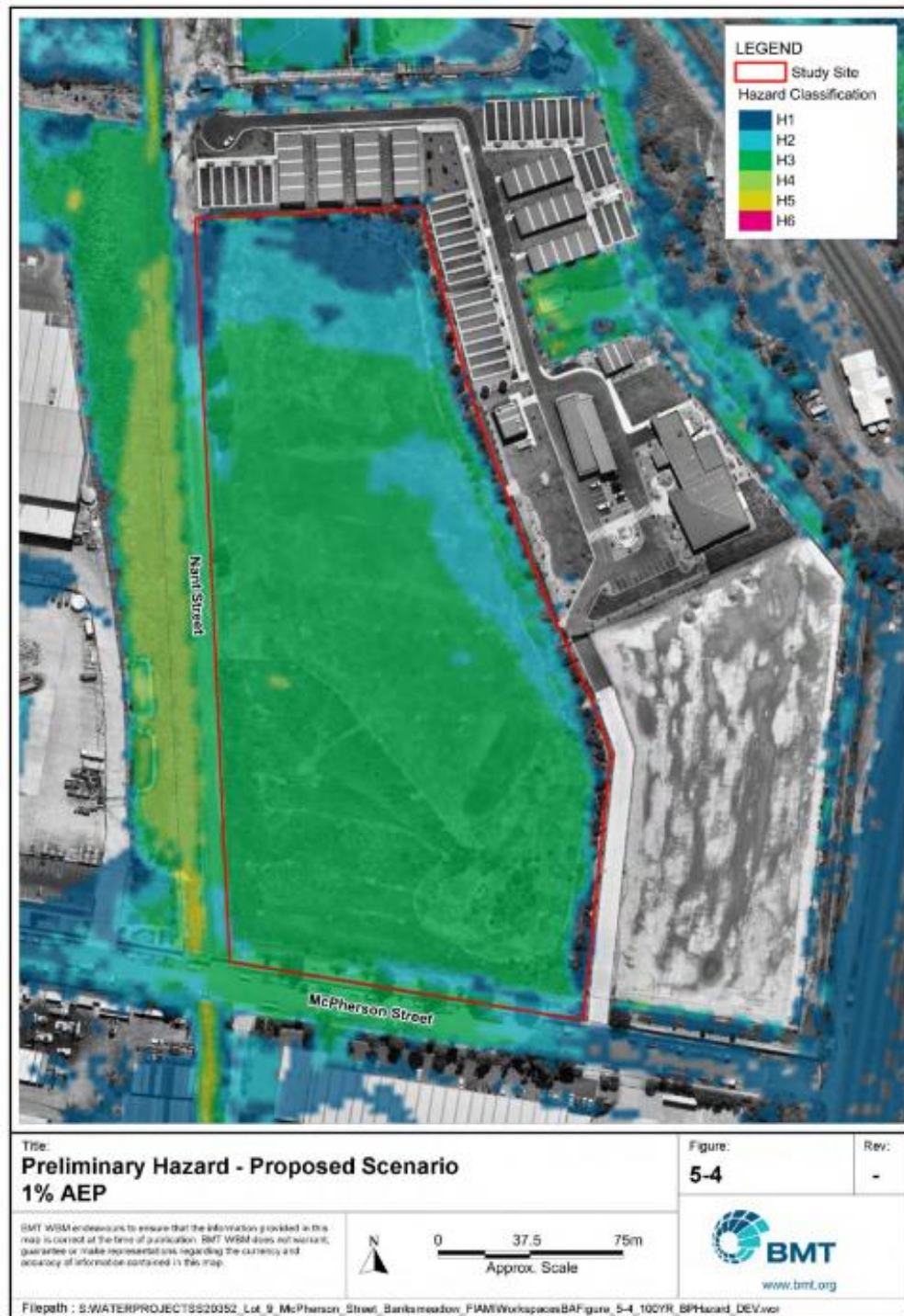
The site in its pre-developed condition, being a flood detention basin, is identified in BMT's flood mapping as being largely comprised of the H3 classification, as shown in **Figure 5.2**.

As described in **Section 4.3** the site (other than the flood basin) is flood free, hence not subject to flood hazard categorisation.

In its post-development condition, the flood basin would still be mostly designated as H3 categorisation and would not be safe for vehicles, children, or the elderly, as shown in **Figure 5.3**. Additionally, the modelling demonstrates that in the 1% AEP event, the floodwaters reach H4 and H5 categories in Nant Street and McPherson Street, making these areas unsafe for vehicles and people.



**Figure 5.2 Pre-development Flood Hazard Map**



**Figure 5.3 Post-development Flood Hazard Map**

## 6 FLOOD SAFETY AND EVACUATION

### 6.1 Introduction

This section of the report presents the relevant information in relation to egress and evacuation during the approach of a significant flood event. The information in this report can be used as a framework for the overall precinct and for more detailed emergency response plans for individual tenants.

This framework has been completed with consideration to the State Emergency and Rescue Management Act 1989 (NSW), the State Emergency Service Act 1989 (NSW), and the Bayside Council Local Flood Plan 2021 (refer **Appendix C**).

### 6.2 Flood Extent

The flood behaviour, including flood levels and extents (refer **Figure 4.5**), during various storm events are included in **Section 4** of this plan.

As discussed in earlier sections of the report, the site serves as an active flood storage basin. Noting that construction work is to occur within the flood basin as part of the proposed development, there are specific requirements required for flood evacuation.

Given the flood storage basin will be inundated to a flood depth of up to 1m in the 1% AEP, evacuation and/ or access restrictions are required pertaining to the flood basin.

Further discussion on site specific effective warning measures and triggers are included in the following sections.

Affectation of surrounding roads and areas does not form part of this plan. Consultation with SES or Local Council would be necessary to confirm egress from the site to other areas surrounding the site.

### 6.3 Flood Education, Awareness and Preparedness

#### Development of Warning Systems

In addition to preparing an emergency evacuation procedure, it is recommended that a flood education, awareness, and preparedness program is implemented on site. The purpose of this program is to ensure that tenants and staff members on the development site are aware of the site flood risk and measures to be taken for the safety of staff and visitors in the event of an emergency. Each tenant should have a tenant specific plan which sets out flood warden, evacuation zones and responsible persons. This flood plan should:

- Provide an overview / summary of the flood risk on site including inundation rate of rise times as detailed in **Section 4.3**;
- Explain and demonstrate emergency evacuation procedures;
- Outline that the site should not be exited by foot or vehicle once McPherson Street is flooded.

This flood awareness program should be incorporated into the induction process for new and existing staff members of tenants on the development site and is to be repeated annually as part of any “refresher” training. The program is to be reviewed when new tenants move into the building. Management should consider installing signage in around the site which outlines the flood evacuation procedure.



Visitors are to be briefed on the basics of the flood evacuation procedure upon arrival to the site. This training may include identification of the Flood Warden on site during the duration of their stay and showing visitors the designated refuge areas and evacuation pathways.

As noted, the advice in this report can be used as a framework for these site-specific plans, in conjunction with Bayside Council and SES sub plans as required. During construction, the warehouse site should have a responsible person (EM or site manager) who understands the flood behaviour of this area, is familiar with this report and flood management responses set out in the FERP.

The NSW SES Bayside Local Controller is responsible for monitoring the flood risk over the area and for issuing flood warnings to the community. Any person or group occupying the precinct at the time of flood danger should adhere to any warnings issued. The warning message will normally be issued via SMS (phone text) by the SES, and flood alerts would also be provided by the BOM prior to SES flood warning. During periods of heavy or forecast heavy rainfall it is important that one or some of the occupants of a facility should be able to receive such messages. The occupants must then immediately follow the flood evacuation plan in this report or the instructions of the SES controller in the area.

As described in **Section 6.4** below, the SES Warning System is based on predicted rainfall and gauges in the Springvale Drain. This includes identification of potential flooding areas, estimated impacts of flooding at different heights and action time.

The BOM/ SES warning system will provide good initial guidance for triggering of flood measures, however in addition to the SES flood warning system, it is recommended that a site-specific warning system is employed to supplement the BOM gauges. Such a warning system could consist of a series of flood depth markers or responders placed within the flood compensation basin and around the proposed development area in McPherson Street and Nant Street. A suitable response/trigger methodology has been outlined in **Section 6.4** which can be utilised to inform users of the site to prepare their own site-specific flood management response plans.

Flood warning and emergency response for the development site will be based on the rainfall within the adjoining catchments.

Real-time data (updated at 15-minute intervals) for these sites can be accessed through the BoM website via the following hyperlink:

<http://www.bom.gov.au/nsw/flood/greatersydney.shtml>

## 6.4 Preparation Steps

It is the responsibility of Management to understand the risks and dangers of flooding relating to the development site, and the need to restrict access to the flood management basin (subject to flooding) in such an event.

It is recommended that key persons within Management are registered to be able to receive flood warning messages via SMS from the NSW SES. This should include a specific Flood Warden, as well as upper management personnel. Using the contents of this report, in conjunction with property specific information such as resident details and key contact person/s, the designated Flood Warden is to prepare an NSW SES Emergency Business Continuity Plan using the following website:

<https://www.sesemergencyplan.com.au/business/>

It is recommended that Emergency Flood Kits are prepared and stored in a safe and accessible location on site, nominally tenants are to prepare one for each building. This kit is to contain items such as a first aid kit, torches, batteries, bottled water, non-perishable food items, medication, blankets, spare clothes, important documents, etc.

Lastly, the evacuation framework contained in this report must be understood and adapted, as necessary. It is recommended that a copy or copies of this report are kept at several locations on site such as the construction site shed, maintenance manager, and office administrator. A thorough understanding of *Councils Local Flood Plan* should also be made.

It is noted that significant lead warning time would not be required to enable effective flood response plans to be initiated for this site to address safety of persons, however, lead warning would be necessary for removal of vehicles from the basin areas, or understanding when restriction of vehicles from entering the basin area should be made.

## 7 FLOOD RESPONSE

### 7.1 Flood Response Introduction

The following sub-sections of the report provide information on potential flood triggers that could be utilised by site management (during construction and operation) to be able to prepare their own flood response plans.

The site management may install site flood depth gauges within the flood detention basin.

The following items are to be read in conjunction with the flood management plan drawing included in **Appendix A**.

### 7.2 Response Triggers & Site Specific Measures during Construction

#### 1. **Trigger 1 - A flood alert/watch/advice is issued by the BOM.**

The BOM alert will be issued if flood producing rain is predicted. This provides an early warning that flooding may occur, however is not confirmation that flooding will occur. If this alert is issued then the designated Flood Warden should be on alert for further BOM, SES or site-specific Triggers.

#### 2. **Trigger 2 – General flood alert issued by the BOM.**

A generalised flood warning would be issued when flooding is expected to occur in a given area. These would generally be provided by the BOM with three hours warning time is expected from issue of warning to peak flood level as per the “Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 2.0” (Bureau of Meteorology, 2013).

Maintenance workers, or other persons, who might need to access the flood storage area should be restricted from entering the potentially flood affected areas unless necessary.

It is noted that Trigger 3 may occur prior to Trigger 2 and the Flood Warden is required to consider this eventuality.

#### 3. **Trigger 3 - Site flood level marker achieves flood depth of 0.1m-0.2m and/or flood water is entering the flood storage basin and/or adjacent streets are visibly inundated.**

Flood Warden at this point should immediately evacuate any persons and machinery from the flood storage basin and move them to the eastern end of McPherson Street or where flood depths are shallower. Personnel are advised to vacate vehicles and machinery and seek higher ground and shelter.

Flood warden to contact SES for additional updates, if required.

#### End of Response Operations

Once the flood levels recede below the trigger level and the danger posed by flooding has passed, the NSW SES Bayside Local Controller will issue an “all clear” message which will be conveyed in the same format as the warning message, via SMS. The site occupiers can then leave the industrial precinct if on site refuge was undertaken, or return to the precinct if evacuated.

### 7.3 Response Triggers & Site Specific Measures during Operation

#### 1. **Trigger 1 - A flood alert/watch/advice is issued by the BOM.**

The BOM alert will be issued if flood producing rain is predicted. This provides an early warning that flooding may occur, however is not confirmation that flooding will occur. If this alert is issued then the designated Flood Warden should be on alert for further BOM, SES or site-specific Triggers.

#### 2. **Trigger 2 – General flood alert issued by the BOM.**

A generalised flood warning would be issued when flooding is expected to occur in a given area. These would generally be provided by the BOM with three hours warning time is expected from issue of warning to peak flood level as per the “Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 2.0” (Bureau of Meteorology, 2013).

Maintenance workers, or other persons, who might need to access the flood storage area should be restricted from entering the potentially flood affected areas unless necessary. Site visitors should be notified that inundation of the adjacent roads could potentially restrict egress from the site. The Flood Warden may take measures to prepare the Emergency Flood Kit for use.

It is noted that Trigger 3 may occur prior to Trigger 2 and the Flood Warden is required to consider this eventuality.

#### 3. **Trigger 3 - Site flood level marker achieves flood depth of 0.1m-0.2m and/or flood water is entering the flood storage basin and/or adjacent streets are visibly inundated.**

Flood Warden at this point should immediately evacuate any persons and machinery from the flood storage basin and move them to the eastern end of McPherson Street where flood depths are shallower or onto the site suspended slab where it is clear of flood waters. The Flood Warden should direct individuals in the vicinity to seek refuge within the warehouse buildings or the designated refuge areas and restrict access to McPherson Street and Nant Street.

Flood warden to contact SES for additional updates, if required.

#### **End of Response Operations**

Once the flood levels recede below the trigger level and the danger posed by flooding has passed, the NSW SES Bayside Local Controller will issue an “all clear” message which will be conveyed in the same format as the warning message, via SMS. The site occupiers can then leave the industrial precinct if on site refuge was undertaken, or return to the precinct if evacuated.

## 8 CONCLUSION

Costin Roe Consulting Pty Ltd has been commissioned to develop this **FMP/FERP** for the industrial development at 28 McPherson Street, Banksmeadow, NSW.

The report provides a summary of flood behaviour of local flooding which affects the site, and the different conditions which cause flooding on the site.

Flood preparedness and response techniques have been clarified, including warning triggers and distribution of the flood response procedures. During flooding events, the flood detention basin is to be evacuated and closed for all personnel and vehicles and access to the adjacent roads is to be restricted. Staff and visitors should be directed to seek refuge within site's warehouse buildings.

The report provides requirements for the monitoring and maintenance of the existing flood detention basin during construction and operation to maintain the current design standard.

Further the report provides the framework for the preparation of the flood egress plans as required throughout the operational phase of the development.

## 9 REFERENCES

NSW Floodplain Management Manual 2005

OEH 2007, *Floodplain Risk Management Guidelines*

SES (2018). *Provision of and Requirements for Flood Warning*

Bureau of Meteorology (2013). *Service Level Specification for Flood Forecasting and Warning Services for New South Wales – Version 2.0"*

BMT (2019), *Flood Impact Assessment for Lot 9, 28 McPherson Street Banksmeadow*

BMT (2014), *Springvale Drain and Floodvale Drain Flood Study*

**APPENDIX A**  
**COSTIN ROE CONSULTING**  
**FLOOD RISK MANAGEMENT DRAWING**





SITE LOCALITY PLAN  
NTS

- EVACUATION NOTES:**
1. USING ONE OF THE ROUTES SHOWN, EXIT THE FLOOD DETENTION BASIN QUICKLY - **DO NOT RUN & WATCH OUT FOR VEHICLES**
  2. ASSIST OTHERS, IF IT IS SAFE TO DO SO
  3. NOTIFY ANY STAFF ON THE PREMISES
  4. DO NOT ACCESS ANY AREAS WHERE FLOOD DEPTH MARKERS SHOW DEPTH GREATER THAN 200mm

- IN AN EMERGENCY:**
- CALL 000 AND ASK FOR THEIR APPROPRIATE EMERGENCY SERVICE. WHEN ASKED, PROVIDE THE FOLLOWING INFORMATION:
1. **ADDRESS:** 28 MCPHERSON STREET, BANKSMEDAW NSW
  2. **NEAREST CROSS STREET:** CORNER OF MCPHERSON STREET AND NANT STREET
  3. **TYPE OF EMERGENCY**
  4. **INFORMATION ABOUT THE EMERGENCY**
  5. **YOUR NAME AND CONTACT NUMBER**

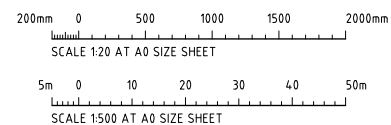


FLOODWAY WARNING SIGN  
NTS  
SUGGESTED SIZE 600mm x 450mm  
TO BE PROVIDED NEAR FLOOD WATER DEPTH BOARDS IN SUITABLE AREA  
T.B.C ON SITE

TYPICAL WATER DEPTH BOARD  
SCALE 1:20

**WATER DEPTH NOTE:**  
WATER DEPTH BOARDS ARE PLACED IN THE FLOOD COMPENSATION BASIN AND ENTRY/EXIT LOCATIONS.

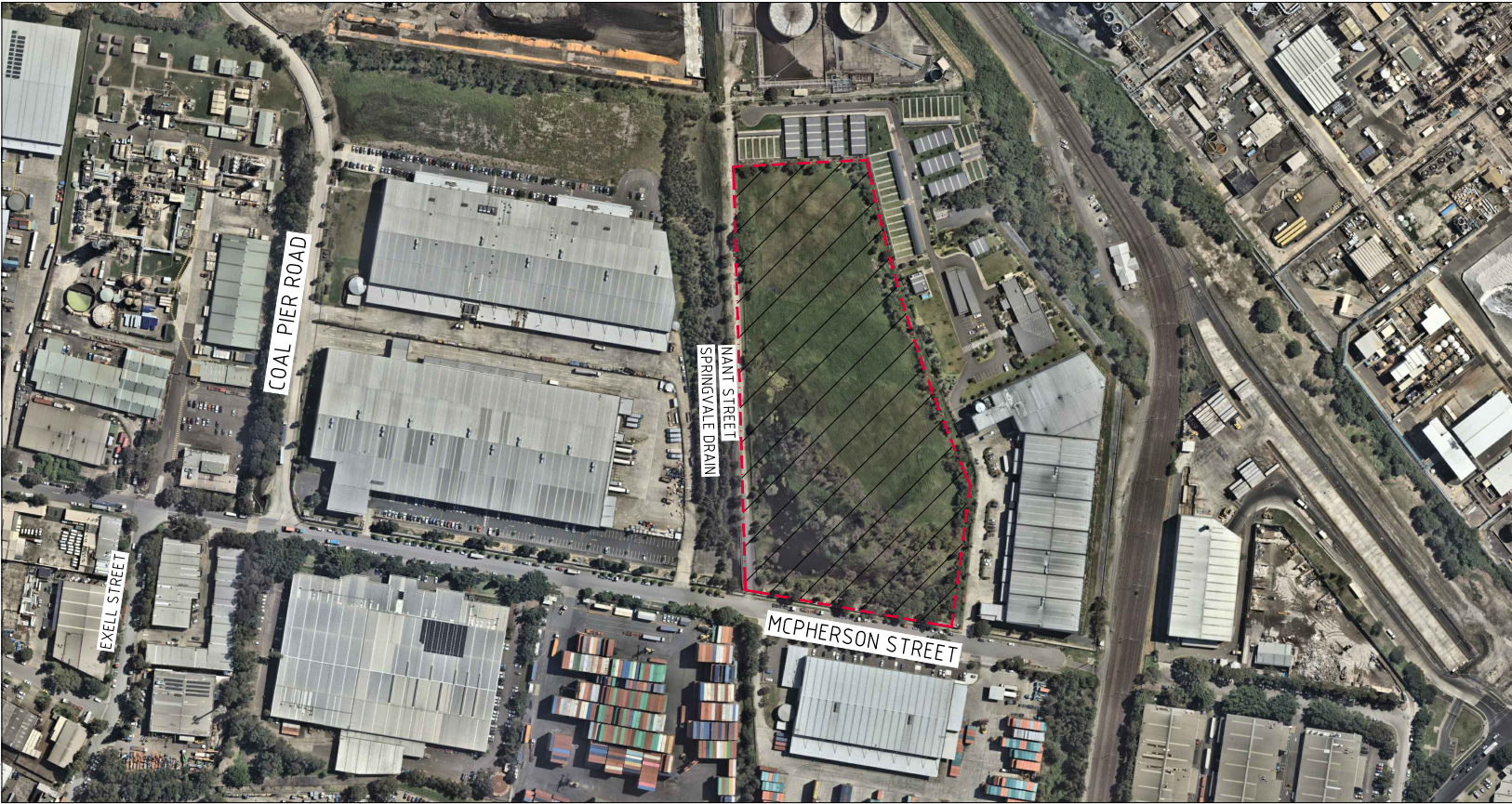
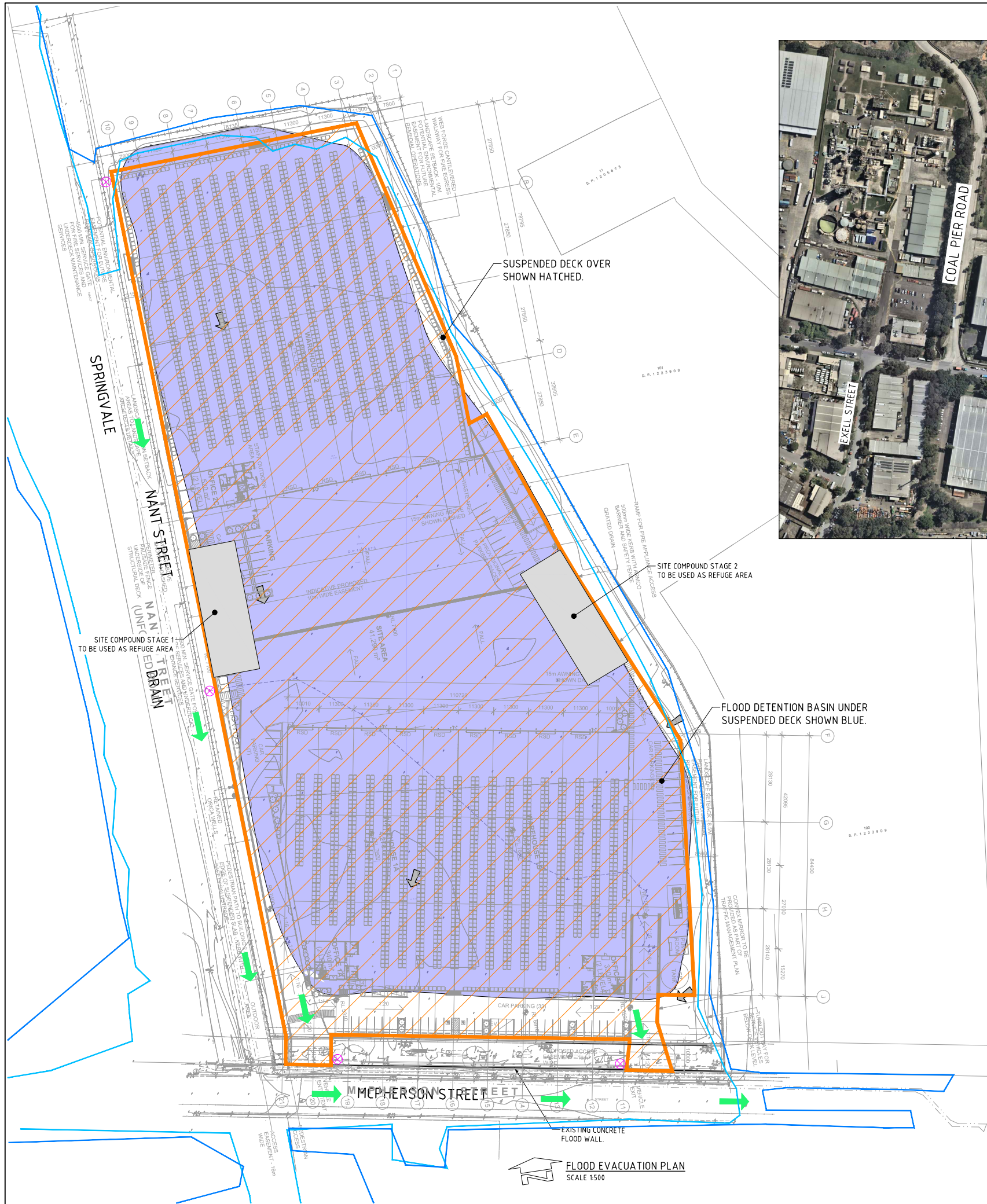
- LEGEND:**
- PEDESTRIAN EVACUATION ROUTE
  - DENOTES FLOOD COMPENSATION BASIN
  - ⊗ NOMINAL LOCATION OF FLOOD SIGN & DEPTH BOARD
  - OVERLAND FLOW DIRECTION
  - DENOTES APPROXIMATE 5% AEP FLOOD EXTENT
  - DENOTES APPROXIMATE 1% AEP FLOOD EXTENT



**FOR INFORMATION**

|                        |  |  |  |  |  |  |  |                                 |  |  |  |                             |  |  |  |   |  |  |  |                       |  |  |  |
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| AMENDMENTS             |  |  |  | REIDCAMPBELL                             |  |  |  | Goodman                         |  |  |  | PROPOSED DEVELOPMENT        |  |  |  | Costin Roe Consulting Pty Ltd.                      |  |  |  | FLOOD EVACUATION PLAN |  |  |  |
| 22.11.22               |  |  |  | Architects, Interior, Project Management |  |  |  | LEVEL 11, 60 Castlereagh Street |  |  |  | PO Box 1419 Sydney NSW 1220 |  |  |  | Level 4, 4 Woodville Street, Millers Point NSW 2000 |  |  |  | DRAWING No            |  |  |  |
| A                      |  |  |  | Level 11, 60 Castlereagh Street          |  |  |  | Sydney NSW, 2000, Australia     |  |  |  | p: +61 2 9251 7699          |  |  |  | e: +61 2 9241 3731                                  |  |  |  | C09349.17-SKC01       |  |  |  |
| DATE                   |  |  |  | Tel: +61 2 9251 7699                     |  |  |  | Fax: +61 2 9251 7699            |  |  |  | w: costinroe.com.au         |  |  |  | w: costinroe.com.au                                 |  |  |  | C09349.17-SKC01       |  |  |  |
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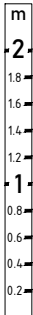
SITE LOCALITY PLAN  
NTS

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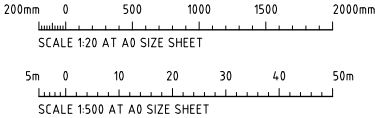
FLOODWAY WARNING SIGN  
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TO BE PROVIDED NEAR FLOOD WATER DEPTH BOARDS IN SUITABLE AREA  
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TYPICAL WATER DEPTH BOARD  
SCALE 1:20

**WATER DEPTH NOTE:**  
WATER DEPTH BOARDS ARE PLACED IN THE FLOOD COMPENSATION BASIN AND ENTRY/EXIT LOCATIONS.

- LEGEND:**
- PEDESTRIAN EVACUATION ROUTE
  - DENOTES FLOOD COMPENSATION BASIN
  - NOMINAL LOCATION OF FLOOD SIGN & DEPTH BOARD
  - OVERLAND FLOW DIRECTION
  - DENOTES APPROXIMATE 5% AEP FLOOD EXTENT
  - DENOTES APPROXIMATE 1% AEP FLOOD EXTENT



**FOR INFORMATION**

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| AMENDMENTS             |  |  |  | REIDCAMPBELL  |  |  |  | Goodman                                    |  |  |  | PROPOSED DEVELOPMENT                               |  |  |  | COSTIN ROE CONSULTING |  |  |  | FLOOD EVACUATION PLAN      |  |  |  |
| 01/12/22               |  |  |  | LEVEL 11, 60 Castlereagh Street SYDNEY NSW, 2000, Australia |  |  |  | 28 MCPHERSON STREET, BANKSMEADOW NSW, 2019 |  |  |  | PO Box 2419 Sydney NSW 1220                        |  |  |  | C09349.17-SK02        |  |  |  | SUSPENDED DECK CONSTRUCTED |  |  |  |
| DATE                   |  |  |  | Tel: 02 9251 7699 Fax: 02 9251 7699                         |  |  |  | DESIGNED: DM                               |  |  |  | Level 4, 4 Woodmill Street, Millers Point NSW 2000 |  |  |  | DRAWING No            |  |  |  | C09349.17-SK02             |  |  |  |
| DATE                   |  |  |  | Tel: 02 9251 7699 Fax: 02 9251 7699                         |  |  |  | CHECKED: XC                                |  |  |  | Level 4, 4 Woodmill Street, Millers Point NSW 2000 |  |  |  | C09349.17-SK02        |  |  |  | A                          |  |  |  |
| DATE                   |  |  |  | Tel: 02 9251 7699 Fax: 02 9251 7699                         |  |  |  | SCALE: A0                                  |  |  |  | Level 4, 4 Woodmill Street, Millers Point NSW 2000 |  |  |  | C09349.17-SK02        |  |  |  | A                          |  |  |  |
| DATE                   |  |  |  | Tel: 02 9251 7699 Fax: 02 9251 7699                         |  |  |  | SCALE: AS SHOWN                            |  |  |  | Level 4, 4 Woodmill Street, Millers Point NSW 2000 |  |  |  | C09349.17-SK02        |  |  |  | A                          |  |  |  |
| DATE                   |  |  |  | Tel: 02 9251 7699 Fax: 02 9251 7699                         |  |  |  | SCALE: AS SHOWN                            |  |  |  | Level 4, 4 Woodmill Street, Millers Point NSW 2000 |  |  |  | C09349.17-SK02        |  |  |  | A                          |  |  |  |



**APPENDIX B**  
**MONTHLY RAINFALL DATA & CLIMATE STATISTICS**

[illegible]

red = highest value    blue = lowest value

Product IDCJCM0028 Prepared at Thu 17 Nov 2022 03:55:15 AM EST

## SYDNEY AIRPORT AMO

### Mean rainfall (mm)

#### Site details

Site name: SYDNEY AIRPORT AMO

Latitude: 33.95 °S

Longitude: 151.17 °E

Site number: 066037

Elevation: 6 m

Commenced: 1929

Operational status: Still Open

Yearly data

30 year statistics

Comparison site

First statistic

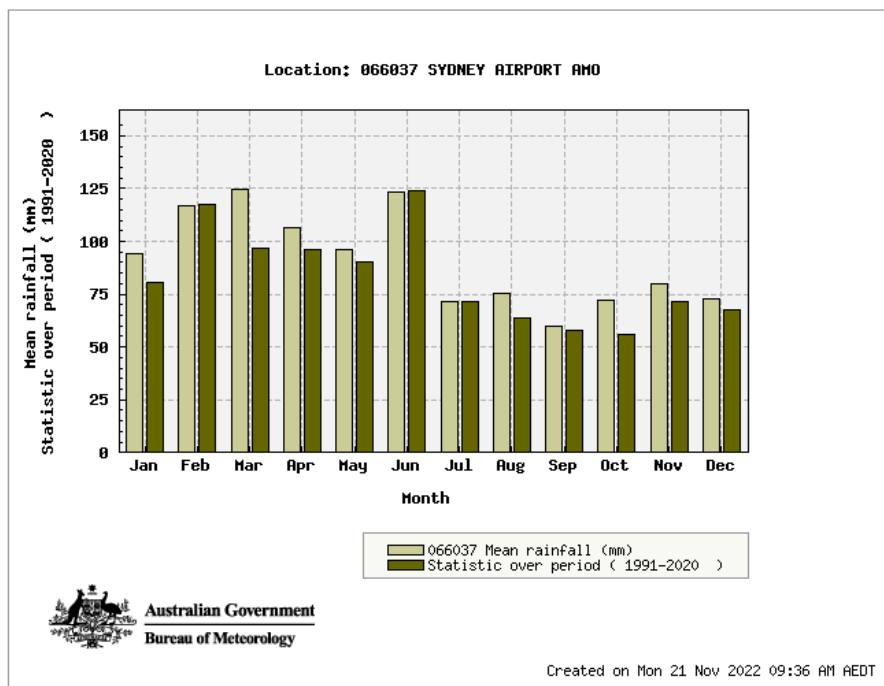
Second statistic

Note: Only one option can be redrawn at a time

Compare with statistics for the 30 year period:

1991-2020

Redraw



| Statistics                                | Jan  | Feb   | Mar   | Apr   | May  | Jun   | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  | Annual | Years |
|---|------|-------|-------|-------|------|-------|------|------|------|------|------|------|--------|-------|
| Mean rainfall (mm) for years 1929 to 2022 | 93.9 | 117.2 | 124.7 | 106.6 | 96.4 | 123.3 | 71.8 | 75.5 | 59.8 | 72.0 | 80.2 | 72.9 | 1093.8 | 93    |
| Statistics                                | Jan  | Feb   | Mar   | Apr   | May  | Jun   | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  | Annual | Years |
| Mean rainfall (mm) for years 1991 to 2020 | 80.7 | 117.7 | 96.5  | 96.0  | 90.0 | 124.3 | 71.4 | 63.4 | 58.1 | 55.8 | 71.2 | 67.3 | 993.1  | 30    |

12.3 = Not quality controlled

**APPENDIX C**  
**BAYSIDE LOCAL SES FLOOD PLAN**

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# **BAYSIDE FLOOD EMERGENCY SUB PLAN**

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**A Sub Plan of the Local Emergency Management Plan (EMPLAN)**

**Volume 1 of the Bayside Flood Plan**

**Endorsed by the Bayside Emergency Management Committee**

**June 2021**

# AUTHORISATION

The Bayside Flood Emergency Sub Plan is a sub plan of the Bayside Local Emergency Management Plan (EMPLAN). It has been prepared in accordance with the provisions of the **State Emergency Service Act 1989 (NSW)** and is authorised by the Local Emergency Management Committee in accordance with the provisions of the **State Emergency and Rescue Management Act 1989 (NSW)**.

Recommended

*Michael Hoynes*

---

NSW SES, Bayside Unit Commander

Date: 7/06/2021

Recommended

*Matthew Kirby*

---

NSW SES, The Bay Cluster Local Commander

7/06/2021

Approved

*Bryce Spelta*

---

Chair, Local Emergency Management Committee

Date:

## PREVIOUSLY ENDORSED VERSION HISTORY

| Version Number | Description   | Date       |
|----------------|---------------|------------|
| 1.0            | Rockdale City | April 2009 |

## AMENDMENT LIST

Suggestions for amendments to this plan should be forwarded to:

Metro Zone Headquarters  
NSW State Emergency Service  
Suite 5, Level 9, 1 Rider Boulevard  
RHODES NSW 2138  
[nswses.communityplanning@ses.nsw.gov.au](mailto:nswses.communityplanning@ses.nsw.gov.au)

Amendments in the list below have been entered in this plan.

| Amendment Number | Description                    | Updated by       | Date       |
|------------------|--------------------------------|------------------|------------|
| 01               | Bayside Council – Bryce Spelta | Shelly Stingmore | 03.05.2021 |
| 02               | NSW Police                     | Shelly Stingmore | 07.06.2021 |

*Document Issue: 0604201*

## DISTRIBUTION LIST

Available for general use and distribution on the following websites - [www.emergency.nsw.gov.au](http://www.emergency.nsw.gov.au)  
or [www.ses.nsw.gov.au](http://www.ses.nsw.gov.au)

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# 1 OUTLINE AND SCOPE

## 1.1 PURPOSE

- 1.1.1 The purpose of this plan is to set out the multi-agency arrangements for the emergency management of flooding in the Bayside Local Government Area (LGA).

## 1.2 AUTHORITY

- 1.2.1 This Plan is written and issued under the authority of the [State Emergency and Rescue Management Act 1989 \(NSW\)](#) ('SERM Act'), the [State Emergency Service Act 1989 \(NSW\)](#) ('SES Act') and the [NSW State Emergency Management Plan \(EMPLAN\)](#).
- 1.2.2 This plan is a sub plan to the Bayside Local Emergency Management Plan (EMPLAN) and is endorsed by the Bayside Emergency Management Committee (LEMC).

## 1.3 ACTIVATION

- 1.3.1 This plan does not require activation. The arrangements set out in this plan are always active.
- 1.3.2 The Bayside Emergency Management Plan (EMPLAN) is active at all times in anticipation of the need to coordinate support and resources requested by combat agencies, including the NSW State Emergency Service (NSW SES).

## 1.4 SCOPE

- 1.4.1 The area covered by this plan is the Bayside LGA. The Bayside LGA and its principal towns, villages, rivers and creeks are shown in Appendix A.
- 1.4.2 The council area is in the NSW SES Metro Zone and for emergency management purposes is part of the Sydney Metro Emergency Management Region.
- 1.4.3 The Plan sets out the Bayside local level emergency management arrangements for prevention, preparation, response and initial recovery for flooding in the Bayside LGA. Hazard and Risk information can be found in Volume 2, and NSW SES Response Arrangements can be found in Volume 3.
- 1.4.4 In this plan a flood is defined as a relatively high water level which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves (including tsunami) overtopping coastline defences.
- 1.4.5 The arrangements for dealing with episodes of coastal erosion by severe weather, are described in the NSW State Storm Plan.
- 1.4.6 The arrangements for the emergency management of tsunami are dealt with in the NSW State Tsunami Emergency Sub Plan.

- 1.4.7 This plan outlines the local level arrangements for the management of downstream consequences of dam failure, however it does not cover the management of flooding of an underground mine by inrush or other cause, which should be covered by the Mine Sub Plan for the respective mine.

## **1.5 GOALS**

- 1.5.1 The primary goals for flood emergency management in NSW are:
- a. Protection and preservation of life;
  - b. Establishment and operation of flood warning systems;
  - c. Issuing of community information and community warnings;
  - d. Coordination of evacuation and welfare of affected communities;
  - e. Protection of critical infrastructure and community assets essential to community survival during and emergency incident;
  - f. Protection of residential property;
  - g. Protection of assets and infrastructure that support individual and community financial sustainability and aid assisting a community to recover from an incident; and
  - h. Protection of the environment and conservation values considering the cultural, biodiversity and social values of the environment.

## **1.6 KEY PRINCIPLES**

- 1.6.1 The protection and preservation of human life (including the lives of responders and the community) is the highest priority.
- 1.6.2 Evacuation is the primary response strategy for people impacted by flooding.

## **1.7 ROLES AND RESPONSIBILITIES**

- 1.7.1 General responsibilities of emergency service organisations and functional areas are set out in the NSW State EMPLAN.
- 1.7.2 Specific roles and responsibilities for agencies, functional areas and organisations in relation to flooding within Bayside are detailed within this Plan, Appendix B and Appendix C.
- 1.7.3 Any agency with agreed responsibilities in this Plan that are temporarily, or no longer able to fulfil their responsibilities must as soon as possible notify the:
- a. NSW SES Incident Controller (for local level responsibilities during response operations);
  - b. NSW SES Zone Commander (for regional level responsibilities outside of response operations); and
  - c. NSW SES Local Commander (for local level responsibilities outside of response operations).

## 1.8 PLAN MAINTENANCE AND REVIEW

1.8.1 The NSW SES will maintain the currency of this plan by:

- a. Ensuring that all supporting emergency services and functional areas, organisations and officers mentioned in it are aware of their roles and responsibilities;
- b. Conducting exercises to test arrangements;
- c. Reviewing the contents of the plan:
  - When there are changes which alter agreed plan arrangements;
  - When changes to land use strategic plans and policies increase the population at risk;
  - After a flood including from after action reviews, reports or inquiries; and
  - As determined by the NSW SES Commissioner.
- d. The plan is to be reviewed no less frequently than every five years or after a significant flood event.

## 1.9 SUPPLEMENTARY DOCUMENTS

1.9.1 Supplementary material published in previous versions of the Local Flood Plan is now maintained on the NSW SES website at:

<https://www.ses.nsw.gov.au/about-us/flood-storm-and-tsunami-plans/> including:

- a. Flood Plan Glossary;
- b. Dam Failure Notification Flowchart;
- c. NSW SES Resupply Flowchart.

# 2 OVERVIEW OF NSW FLOOD HAZARD AND RISK

## 2.1 THE FLOOD THREAT

2.1.1 The NSW SES maintains information on the nature of flooding and effects of flooding on the community in the Bayside LGA. This is outlined in Volume 2, Hazard and Risk in Bayside.

2.1.2 [Declared dams](#) in or upstream of the Bayside LGA

| Dam Name               | Owner                   |
|------------------------|-------------------------|
| St Peters 9SWB01 Basin | Sydney Motorway Company |

2.1.3 Each Dam has a Dam Safety Emergency Plan with direct input from NSW SES to ensure adequate alert levels are adopted to provide enough time to disseminate Emergency Warnings to the at-risk downstream community

## 3 PREVENTION/ MITIGATION

### 3.1 INTRODUCTION

- 3.1.1 The Floodplain Development Manual outlines the NSW Government's Flood Prone Lands Policy which details the framework for managing flood prone land in New South Wales. Incorporation of floodplain risk management into land use planning is one of the key means to limit the exposure to flood risks to our communities and help build long term resilience to future flood events.

### 3.2 LAND USE PLANNING

- 3.2.1 **Strategy:** Work with landuse planning and consent authorities to advocate that the risks arising from floods are considered so as to prevent the creation of intolerable impacts of these hazards on the community.
- 3.2.2 **Actions:**
- a. NSW SES will provide strategic input about land use planning matters which have or will create significant flood risk; and
  - b. NSW SES will provide responses to land use planning proposal referrals that have or will create significant flood risk.

### 3.3 FLOODPLAIN RISK MANAGEMENT

- 3.3.1 **Strategy:** NSW SES advocates for the recognition of emergency management considerations through participation in the floodplain risk management program.
- 3.3.2 **Actions:**
- a. NSW SES will provide coordinated and consistent emergency management advice to councils and other agencies in relation to the management of land that is subject to flooding or coastal inundation; and
  - b. NSW SES will provide advice, support and technical resources for NSW SES representatives to contribute effectively to local Floodplain Management Committees.

## 4 PREPARATION

### 4.1 INTRODUCTION

- 4.1.1 Preparation includes arrangements or plans to deal with an emergency or the effects of an emergency.

### 4.2 FLOOD EMERGENCY PLANNING

- 4.2.1 **Strategy:** NSW SES develop, review and maintain Flood Sub Plans
- 4.2.2 **Actions:**

- a. Develop and review this NSW SES Local Flood Plan as required. Local Flood Plans outline the specific arrangements for management of flood events within an LGA, and may include cross boundary arrangements; and
- b. Review plans as per [Section 1.8](#).

4.2.3 Local EMPLAN Consequence Management Guides for flood are not required for communities covered by NSW SES Local Flood Plans.

### 4.3 FLOOD INTELLIGENCE SYSTEMS

4.3.1 **Strategy:** NSW SES develop and maintain a flood intelligence system to identify flood behaviour, its impact on the community and required response actions.

4.3.2 **Actions:**

- a. Gather and assess flood information for the full range of flood types and severities;
- b. Collect, collate and assess information on the characteristics of communities at risk and the potential effects of flooding on communities at risk; and
- c. Share flood intelligence information with supporting agencies.

### 4.4 DEVELOPMENT OF WARNING SYSTEMS

4.4.1 **Strategy:** Develop, maintain and prepare systems for the provision of flood warnings and associated warning services.

4.4.2 **Actions:**

- a. All levels of government work in partnership to develop and maintain flood warning infrastructure;
- b. NSW SES maintains a list of the requirements for flood warnings for flood gauges in NSW (including flood classifications, warning times required and key statistics) and can be found in the supplementary document to the NSW State Flood Plan (see Section 1.9). Gauges of relevance within the Bayside LGA are also listed in Volume 3 of this Plan;
- c. The NSW SES will recommend new warning services and changes to warning alert levels for gauges to the NSW Flood Warning Consultative Committee;
- d. The State Government, in partnership with Local Government, is responsible for developing and maintaining flash flood warning systems for local catchments where required;
- e. Dam Owners will provide Dam Failure Warning Systems (where required) and consult NSW SES on alert levels and messaging. Alert level definitions are listed in Dam Safety Emergency Plans;
- f. NSW SES will maintain a dedicated dam failure hotline and procedures to ensure priority dissemination of dam failure warnings; and
- g. NSW SES will develop and maintain warning and flood information products by:
  - Utilising flood intelligence data;
  - Developing pre-written warning and flood information products;



- Continuously reviewing warning and flood information products; and
- Consulting with affected communities, key stakeholders, Dam Safety NSW and the NSW Flood Warning Consultative Committee; and maintain Operational Readiness.

4.4.3 **Strategy:** Ensure NSW SES, supporting agencies, functional areas and the community are prepared and familiar with the strategies and arrangements within the Flood Sub-Plan and supporting documents.

4.4.4 **Actions:**

- NSW SES will consult stakeholders throughout the development of plans;
- NSW SES will inform stakeholders of content changes after revisions;
- NSW SES will ensure their facilities and resources are maintained and operationally ready;
- NSW SES will train personnel for their expected flood operation roles; and
- NSW SES will regularly brief stakeholders on the exercise arrangements contained in the Flood Sub Plan.

## 4.5 COMMUNITY RESILIENCE TO FLOODING

4.5.1 **Strategy:** NSW SES provides and maintains a flexible volunteer workforce to support community resilience.

4.5.2 **Actions:**

- Ensure ongoing recruitment and training of a diverse range of volunteers.
- Ensure pre-planning to facilitate the management of spontaneous volunteers and community members during a flood.

4.5.3 **Strategy:** NSW SES works with individuals, communities, businesses and government agencies to build flood resilience.

4.5.4 **Actions:**

- Work with communities to understand and manage the risks associated with floods, including providing business continuity guidance (NSW SES Business Floodsafe), family preparedness (NSW SES Home Floodsafe) and other engagement strategies.
- NSW SES will collate, assess and disseminate flood information to the community.
- Collaborate with individuals, businesses, government agencies and communities when developing flood intelligence, preparedness and response information.
- Plan for floods collaboratively with communities through community and stakeholder participation and engagement.

## 5 RESPONSE

### 5.1 INTRODUCTION

5.1.1 Flood response operations will begin:

- a. On receipt of a Bureau of Meteorology (BoM) Severe Weather Warning or Thunderstorm Warning that includes heavy rain or storm surge; or
- b. On the receipt of a BoM Flood Watch or Flood Warning; or
- c. On receipt warnings for flash flood; or
- d. On receipt of a dam failure alert; or
- e. When other evidence leads to an expectation of flooding.

### 5.2 INCIDENT MANAGEMENT ARRANGEMENTS

5.2.1 **Strategy:** Maintain effective control of flood operations across New South Wales.

5.2.2 **Actions:**

- a. The NSW SES uses the Australasian Inter-service Incident Management System (AIIMS) to manage the flood response;
- b. Control of flood response will be at the lowest effective level and may be scaled to suit the incident;
- c. The NSW SES State Controller will appoint Incident Controllers and establish Incident Control Centres (see NSW SES facilities on map in Appendix A);
- d. The Incident Controller, in consultation with participating supporting emergency services and Functional Areas will determine the appropriate breakdown of an incident area into Divisions and/or Sectors in accordance with the principles of AIIMS as well as the predefined Divisions and Sectors outlined within Volume 3 of this Plan.

5.2.3 **Strategy:** Maintain Incident Control Centre(s).

5.2.4 **Actions:**

- a. NSW SES will operate Incident Control Centre(s) as required;
- b. The NSW SES Incident Control Centre(s) will:
  - Control resources from NSW SES and coordinate resources of supporting emergency services and functional areas;
  - Manage Request for Assistance (RFA) tasking and ensure they are actioned in a timely manner;
  - Undertake response planning and determine future resourcing requirements; and
  - Coordinate information flow, including warnings, public information and social media.

5.2.5 **Strategy:** Provide effective liaison between the NSW SES and supporting agencies or functional areas in accordance with Local EMPLAN.

5.2.6 **Actions:**

- a. Supporting emergency services and Functional Areas should provide Liaison Officers to NSW SES Incident Control Centre(s) and/or Emergency Operation Centres as required; and
- b. NSW SES will provide Liaison Officer(s) to Emergency Operations Centres as required.

5.2.7 **Strategy:** Coordinate resources and logistics support to ensure operational effectiveness.

5.2.8 **Actions:**

- a. The NSW SES Incident Controller will notify agencies of potential access issues between locations, for the consideration of pre-deploying of resources;
- b. The NSW SES may request resources and logistics support directly from a supporting emergency service or Functional Area.
- c. Wherever possible, supporting organisations are to provide their own logistic support in consultation with NSW SES where appropriate.
- d. The NSW SES Incident Controller will control air support operations and may utilise supporting agencies in the management of aircraft.

### 5.3 **USE OF INFORMATION AND COLLECTION OF INTELLIGENCE**

5.3.1 **Strategy:** Ensure flood information is effectively communicated and collected during a flood.

5.3.2 **Actions:**

- a. Information relating to the consequences of flooding, response strategies, situational awareness and operational updates will be distributed by NSW SES to supporting emergency services and Functional Areas listed under this Plan;
- b. All supporting emergency services and Functional Areas will accurately record and report information relevant to their activities and any real time flood information (including road closure information) to the NSW SES Incident Controller. This may be in the form of a combined Emergency Operations Centre (EOC) report, or direct from agencies where an EOC has not been established;
- c. The NSW SES may establish and operate a Joint Intelligence Unit to coordinate the collection, collation, interpretation, mapping, actioning and dissemination of information; and
- d. Reconnaissance, mapping, damage assessments, intelligence validation and post flood evaluation will be coordinated by NSW SES. This may occur post impact and continue into the recovery phase.

5.3.3 **Strategy:** Ensure flood intelligence is incorporated into operational decision-making.

5.3.4 **Action:** The NSW SES will use flood intelligence and official forecasts and warnings, to undertake an assessment of the predicted impact of a flood and to inform operational decision-making.

## **5.4 PROVISION OF INFORMATION AND WARNINGS TO THE COMMUNITY**

**5.4.1 Strategy:** Timely and effective warnings are distributed to the community.

**5.4.2 Actions:**

- a. The BoM issues public weather and flood warning products before and during a flood. These may include:
  - Severe Thunderstorm Warnings with reference to heavy rainfall
  - Regional Severe Thunderstorm Warnings with reference to heavy rainfall
  - Detailed Severe Thunderstorm Warnings (for Sydney / Newcastle / Wollongong) with reference to heavy rainfall,
  - Severe Weather Warnings with reference to heavy rainfall and/or storm surge,
  - Flood Watches, and
  - Flood Warnings.
- b. Dam Owners will utilise Dam Failure Warning Systems to provide warnings and information to NSW SES and communities (where appropriate).
- c. NSW SES Incident Controllers will issue the following NSW SES flood information products incorporating warnings from the above, expected consequences and safety messages:
  - Livestock and Equipment (pump) Warnings
  - Local Flood Advices
  - Flood Bulletins
  - NSW SES Evacuation Warning
  - NSW SES Evacuation Order
  - NSW SES All Clear
- d. NSW SES will contact the Bureau of Meteorology to discuss the development of flood warnings as required.
- e. NSW SES will provide alerts and deliver flood information to affected communities using a combination of the following methods:
  - Mobile and fixed public address systems;
  - Two-way radio;
  - Emergency Alert (SMS and voice message alerting system);
  - Telecommunications (including Auto dial systems);
  - Facsimile
  - Standard Emergency Warning Signal;
  - Doorknocking;
  - Mobile and fixed sirens;

- Variable message signs;
  - Community notices in identified hubs;
  - Distribution through established community liaison networks, partnerships and relationships; and
  - NSW SES social media and website.
- f. NSW SES may request supporting agencies redistribute NSW SES alerts and information, including through the provision of doorknocking teams;
- g. Road closure information will be provided to the community through the following agencies/methods:
- Local Government Council websites; and
  - Transport Management Centre 'Live Traffic' website: [www.livetraffic.com](http://www.livetraffic.com) or 'Transport InfoLine': 131 500.
- h. The Public Information and Inquiry Centre will be established by the NSW Police Force where required to provide information regarding evacuees and emergency information. Contact details will be broadcast once the centre is established.
- i. The Disaster Welfare Assistance Line will be established by Disaster Welfare Services where required to provide information on welfare services and assistance. Assistance line contact details will be broadcast once Disaster Welfare Services commence.

## 5.5 PROTECTION OF PROPERTY

- 5.5.1 **Strategy:** Coordinate the protection of property from destruction or damage arising from floods.
- 5.5.2 **Action:** NSW SES, supporting agencies, and community volunteers will assist the community (where resources are available, feasible and safe to do so) in:
- a. The protection of properties through flood protection systems (e.g. sandbagging) to minimise entry of water into buildings; and
  - b. The lifting or moving of household furniture and commercial stock/equipment.

## 5.6 ROAD AND TRAFFIC CONTROL

- 5.6.1 **Strategy:** Coordinate the closing and re-opening of flood affected roads.
- 5.6.2 **Actions:**
- a. Bayside will coordinate the closure and reopening of council managed roads;
  - b. The Transport Management Centre (TMC) in coordination with Police will coordinate the closure and reopening of the state road network;
  - c. The NSW Police Force may close and re-open roads but will normally only do so (if the Bayside or the Transport NSW have not already acted) and if public safety requires such action;
  - d. NSW SES will assist with erecting road closure signs and barriers when time and resources permit.

- 5.6.3 **Strategy:** Coordinate traffic control measures in flood affected areas.
- a. The NSW SES Incident Controller may direct the imposition of traffic control measures into flood affected areas in accordance with the provisions of the *State Emergency Service Act, 1989* and the *State Emergency Rescue Management Act, 1989*.
  - b. The NSW SES Incident Controller may request the Local Emergency Operations Controller provide suitable personnel to assist with traffic coordination.

## 5.7 PROTECTION OF ESSENTIAL SERVICES

- 5.7.1 Arrangements for the protection of local assets are outlined in Volume 3 of this NSW SES local Flood Plan. In addition, Local and Region EMPLAN's contain infrastructure inventories.
- 5.7.2 **Strategy:** Minimise disruption to the community by ensuring protection of infrastructure and supply of essential energy and utility services.
- 5.7.3 **Actions:**
- a. Transport Services Functional Area will keep the NSW SES informed of the status of transport infrastructure;
  - b. The Energy and Utility Services Functional Area is to coordinate the assessment and restoration of essential energy and utility services (not including telecommunications);
  - c. The Telecommunications Services Functional Area is to coordinate the assessment and restoration of telecommunications and the Government Radio Network;
  - d. The Engineering Services Functional Area is to coordinate the assessment and restoration of critical public buildings for example hospitals; and
  - e. Functional Areas will keep the NSW SES informed of the status of utilities and infrastructure.

## 5.8 EVACUATION

- 5.8.1 Evacuation is the NSW SES's primary response strategy for managing the population at risk of flooding.
- 5.8.2 Community specific evacuation arrangements are located in Volume 3 of this Plan.
- 5.8.3 **Strategy:** Conduct planning to ensure all evacuation constraints are considered.
- 5.8.4 **Actions:**
- a. Evacuations will take place when there is a risk to public safety. Circumstances may include:
    - Evacuation of people when their homes or businesses are likely to flood;
    - Evacuation of people who are unsuited to living in isolated circumstances, due to flood water closing access; and

- Evacuation of people where essential energy and/or utility services are likely to fail or where buildings have been or may be made uninhabitable; and
- b. The NSW SES will consider the following in evacuation decisions:
  - Duration of evacuation;
  - Characteristics of the community;
  - Numbers requiring evacuation;
  - Availability of evacuation routes and transport;
  - Time available for evacuation;
  - Evacuee management requirements; and
  - Resources and delivery of evacuation information.
- c. NSW SES Incident Controllers, and flood planners will carefully consider the risks involved in conducting evacuations;
- d. All evacuation decisions will be made as per the NSW SES Communication and Dissemination of Evacuation Decisions Standard Operating Procedure and Evacuation operations are to be consistent with the NSW Evacuation Management Guidelines;
- e. Potential Evacuation Centres are located in Volume 3 / Local EMPLAN; and
- f. The NSW Police Force will coordinate the provision of overall security for evacuated areas.

5.8.5 **Strategy:** Evacuate people pre-emptively from dangerous or potentially dangerous places and or locations created by the flood hazard to safe locations away from the hazard.

- a. NSW SES will control and coordinate the evacuation of affected communities;
- b. The NSW SES Incident Controller will warn communities to prepare for a possible evacuation, where circumstances allow such lead time;
- c. The NSW SES Incident Controller will order any necessary evacuations and provide information to the community about when and how to evacuate;
- d. Support to evacuation operations may be requested from other emergency services and supporting agencies using arrangements in the local EMPLAN and supporting plans;
- e. Health Services Functional Area will coordinate the evacuation of hospitals, health centres and aged care facilities (including nursing homes) in consultation with the NSW SES and Welfare Services.
- f. School administration offices (Department of Education, Catholic Education Office and Private Schools) will coordinate the evacuation of schools in consultation with the NSW SES and Welfare Services, if not already closed.
- g. Caravan Park proprietors will inform the NSW SES Incident Controller when caravan park evacuations have been completed.



- h. People who are reluctant or refuse to comply with any Evacuation Order will be referred to the NSW Police Force.

## 5.9 EVACUEE MANAGEMENT AND WELFARE

5.9.1 Research and experience in flood operations shows that most evacuees go to family, friends and commercial accommodation outside the impact area.

5.9.2 **Strategy:** Maintain the welfare of communities and individuals affected by the impact of a flood.

5.9.3 **Actions:**

- a. NSW SES will provide initial welfare for evacuees where required but will hand the responsibility over to the Welfare Services Functional Area as soon as possible. In these cases, the NSW SES will brief the Welfare Services Functional Area at the earliest opportunity regarding the level of assistance required;
- b. Welfare Services Functional Area will manage evacuation centres for affected residents and travellers in accordance with the Welfare Services Functional Area Supporting Plan;
- c. The Department of Education will manage the safety of students directly affected by flooding and will work with the NSW SES in the temporary closure of schools and will coordinate with NSW SES Transport and Welfare Services in the management of school evacuees.
- d. Disaster Victim Registration will be controlled and coordinated by the NSW Police Force with the assistance of NSW SES and Welfare Services Functional Area;
- e. NSW SES will provide details of all residents assisted in evacuations to the Welfare Services Functional Area as early as possible;
- f. Where the expected remaining number of evacuees and the duration of evacuation is assessed to be beyond the capability and capacity of the established evacuation centre arrangements the SEOCON may establish Major Evacuation Centres or Mass Care facilities; and
- g. The decision to establish Major Evacuation Centres or Mass Care Facilities will be made by the NSW SES and SEOCON in consultation with members of the State Emergency Management Committee.

5.9.4 **Strategy:** Coordinate available and accessible health services for flood affected communities.

5.9.5 **Action:** The provision of environmental health advice, assessment of public health risks and coordination of immediate mental health support will be provided by Health Services Functional Area.

5.9.6 **Strategy:** Coordinate maintenance of food supplies for flood affected communities.

5.9.7 **Actions:** All matters relating to the primary production, manufacturing, processing and handling of all food from primary industries to retail, inclusive of all restaurants, food services and catering businesses should be referred to the

NSW Food Authority through the Agriculture and Animal Services Functional Area.

5.9.8 **Strategy:** Maintain the welfare of animals impacted by a flood.

5.9.9 **Actions:**

- a. Agriculture and Animal Services Functional Area will coordinate the welfare of livestock, pets, companion animals and wildlife including support to primary producers, animal holding establishments and community members; and
- b. Agriculture and Animal Services Functional Area role will assist with evacuation, emergency care of animals and assessment, humane destruction and disposal of affected animals, and supply of emergency fodder, water and aerial support where necessary.

## 5.10 FLOOD RESCUE

5.10.1 **Strategy:** Control and coordinate flood rescue of people and domestic animals.

5.10.2 **Actions:**

- a. NSW SES will perform flood rescue, where training and equipment is suitable and where a risk assessment has indicated that the risk to rescuers is acceptable;
- b. Flood rescue operations will be conducted in accordance with the State Rescue Board Land Rescue Policy and the NSW State Rescue Board Flood Rescue Policy which sets out the framework, governance, responsibilities and requirements for the management and conduct of flood rescue in NSW;
- c. NSW SES may request other supporting emergency services to undertake flood rescues on behalf of the NSW SES. Agencies must be authorised/accredited to undertake flood rescue operations in accordance with State Rescue Board requirements, as prescribed by NSW SES. Supporting emergency services must supply information regarding rescues performed to the NSW SES. Notification arrangements with NSW Police Force are outlined in the NSW State Rescue Board Flood Rescue Policy; and
- d. Rescue agencies will conduct rescue of domestic small and large animals as per the State Rescue Board Land Rescue Policy (and may include Large Animal Rescue of family horses and cows at a residence or property). The rescue of livestock (which includes commercial animals found on farming and breeding enterprises) will be coordinated through Animal and Agriculture Services Functional Area.

## 5.11 RESUPPLY

5.11.1 **Strategy:** Coordinate resupply to towns and villages isolated by flooding to minimise disruption to the community.

5.11.2 **Actions:**

- a. NSW SES will advise communities and businesses if flood predictions indicate that areas are likely to become isolated, and indicative timeframes where possible.

- b. Retailers should be advised to ensure sufficient stock is available for the duration of the flood.
- c. When isolation occurs, NSW SES will establish loading points where retailers can instruct suppliers to deliver goods.
- d. NSW SES will endeavour to deliver mail to isolated communities but may not be able to do so according to normal Australia Post timetables.
- e. NSW SES will assist hospitals with resupply of linen and other consumables where able.
- f. NSW SES may request resupply assistance from supporting agencies.

5.11.3 **Strategy:** Coordinate resupply to rural properties isolated by flooding.

5.11.4 **Actions:**

- a. When requested, NSW SES will establish a resupply schedule and coordinate the resupply for isolated rural properties;
- b. NSW SES will provide local suppliers with designated loading points. Resupply items are to be packaged by the supplier; and
- c. Isolated households unable to afford resupply items will be referred to Welfare Services Functional Area for assistance.

## 5.12 ALL CLEAR AND RETURN

5.12.1 **Strategy:** Coordinate the safe return of communities to flood affected areas when the immediate danger to life and property has passed.

5.12.2 **Actions:**

- a. NSW SES Incident Controller will determine when it is safe to progressively return in consultation with the relevant Emergency Operations Controller and supporting agencies, considering the impact on the following:
  - Access and egress;
  - Communications;
  - Power supply;
  - Gas supply;
  - Infrastructure damage;
  - Hazardous materials; and
  - Public health risks (including sewerage).
- b. NSW SES Incident Controller will specify the level of access to affected communities as the following:
  - Not suitable for access;
  - Limited access by emergency services and response agencies;
  - Limited access by residents and/or business operators; or
  - Full access.

- c. NSW SES Incident Controller will issue an 'All Clear' message when the immediate danger to life and property has passed for areas assessed as safe; and
- d. The NSW SES will facilitate the return of evacuees to their homes.

### **5.13 END OF RESPONSE OPERATIONS**

5.13.1 **Strategy:** Conclude response operations.

5.13.2 **Actions:**

- a. Response operations will conclude when:
  - The physical impact of the flood has ceased;
  - All requests for assistance related to the flood have been completed;
  - The need for warning and evacuation no longer exist;
  - There is no further likelihood of rescuing people;
  - Resupply is no longer required (resupply operations may occur concurrently with the recovery phase);
  - Response to fire and hazardous material incidents have concluded (not including subsequent clean-up of contaminated sites); and
  - All affected areas have had an 'All Clear' issued.

### **5.14 POST IMPACT ACTIONS**

5.14.1 **Strategy:** Learnings from the event are used to inform recovery and future events.

5.14.2 **Actions:**

- a. NSW SES will continue to engage with communities after significant floods through convening one or more community forums, workshops or other opportunities to provide communities a chance to provide feedback, address any concerns and provide input into the recovery process. These will typically include other agencies such as the Bureau of Meteorology, Welfare Services and Bayside representatives;
- b. NSW SES will ensure that damage assessment information is provided to the relevant Emergency Operations Controller to inform the recovery impact assessment;
- c. NSW SES will conduct After Action Reviews, wherever possible, within three weeks of the end of response operations, which will involve all stakeholders. Findings will be shared and incorporated into improved disaster resilience planning;
- d. NSW SES will undertake/coordinate a comprehensive review of intelligence and plans following significant flood events.

5.14.3 **Strategy:** Participate in post flood data collection analysis.

- 5.14.4 **Actions:** NSW SES will work with the NSW Department of Planning, Industry and Environment (DPIE) and Bayside Council(s) on post flood data collection analysis including review of flood intelligence where necessary.

## 6 RECOVERY OPERATIONS

### 6.1 INTRODUCTION

- 6.1.1 Recovery is the process of returning an affected community to its proper level of functioning after an emergency. It will generally commence simultaneously with the Response phase.
- 6.1.2 Recovery operations will be initiated and conducted as outlined in the NSW State EMPLAN and as further detailed in the NSW Recovery Supporting Plan.

### 6.2 NSW SES RECOVERY ROLE

- 6.2.1 **Strategy:** NSW SES will support recovery operations and established Recovery Committees.
- 6.2.2 **Actions:**
- a. NSW SES will provide representation to Recovery Committees as required and may have an ongoing role in the Recovery phase through its community engagement personnel;
  - b. NSW SES roles on Recovery Committees may include providing information about any continuing response, guidance on mitigation strategies and general advice and assistance to the committee as a subject matter specialist and or expert;
  - c. NSW SES will provide information to Resilience NSW to support applications to Treasury for Natural Disaster Relief and Recovery Arrangements;
  - d. The NSW SES, in conjunction with a Recovery Committee, will provide a service to support the information needs of a community immediately following a flood; and
  - e. NSW SES and where required supporting agencies will assist with clean-up operations after floods, where possible when resources and personnel permit.

## 7 ABBREVIATIONS

|                |   |
|----------------|---|
| <b>AIIMS</b>   | Australasian Inter-service Incident Management System |
| <b>Bureau</b>  | Australian Government Bureau of Meteorology           |
| <b>DPIE</b>    | NSW Department of Planning, Industry and Environment  |
| <b>DSEP</b>    | Dam Safety Emergency Plan                             |
| <b>EMPLAN</b>  | Emergency Management Plan                             |
| <b>EOC</b>     | Emergency Operations Centre                           |
| <b>EOCON</b>   | Emergency Operations Controller                       |
| <b>FRNSW</b>   | Fire and Rescue NSW                                   |
| <b>LEMC</b>    | Local Emergency Management Committee                  |
| <b>LEOCON</b>  | Local Emergency Operations Controller                 |
| <b>MHL</b>     | Manly Hydraulics Laboratory                           |
| <b>NSW RFS</b> | New South Wales Rural Fire Service                    |
| <b>NSW SES</b> | New South Wales State Emergency Service               |
| <b>PMF</b>     | Probable Maximum Flood                                |
| <b>RMS</b>     | Roads and Maritime Services (Transport for NSW)       |
| <b>SDOC</b>    | State Duty Operations Controller                      |
| <b>SEOCON</b>  | State Emergency Operations Controller                 |
| <b>SERCON</b>  | State Emergency Recovery Controller                   |
| <b>SOC</b>     | State Operations Centre                               |
| <b>TMC</b>     | Transport Management Centre                           |

## 8 GLOSSARY

Common emergency service terminology can be found within the [Australian Disaster Resilience Glossary](#).

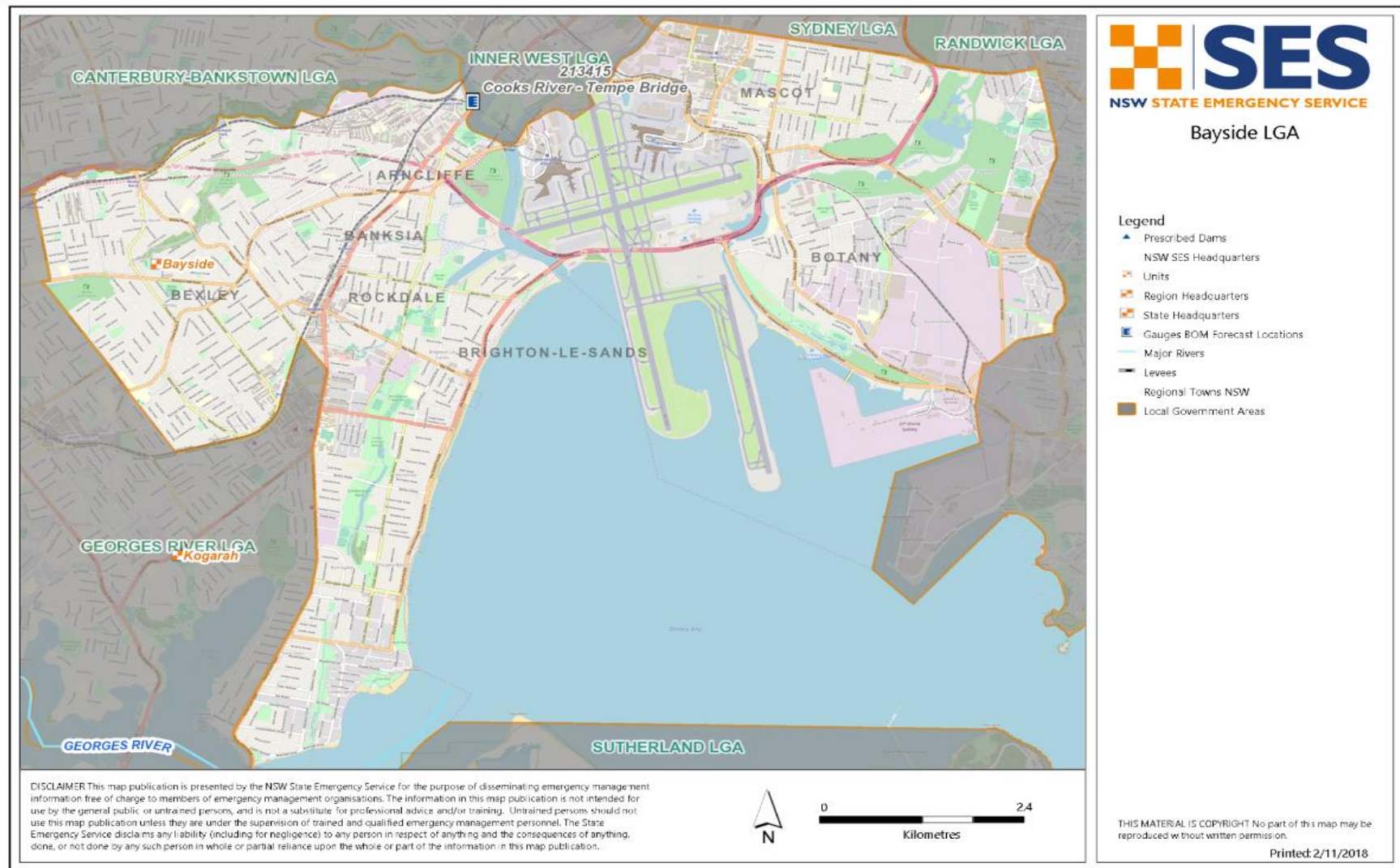
Readers should refer to EMPLAN Annex 9 – Definitions.

Refer to the [NSW State Flood Plan](#) for a complete glossary of terminology used throughout this plan and within NSW SES Flood Plans.

For a full list of definitions refer to the Supporting Document - State Flood Plan Glossary <https://www.ses.nsw.gov.au/media/2650/glossary.pdf>.



## 9 Appendix A – Map of Bayside Council Area



## 10 Appendix B – Roles and Responsibilities

| AGENCY                             | RESPONSIBILITIES   |
|------------------------------------|--|
| <b>NSW State Emergency Service</b> | The NSW SES is the designated Combat Agency for floods, storms and tsunami and controls response operations. NSW SES roles and responsibilities in relation to floods are detailed within the <a href="#">New South Wales State Flood Plan</a> . |

| AGENCY   | RESPONSIBILITIES   |
|--|--|
| <b>Agriculture and Animal Services Functional Area</b> | <p>The roles and responsibilities for Agriculture and Animal Services are outlined in the <a href="#">Agriculture and Animal Services Supporting Plan</a></p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> <li>• Disseminate briefing information to participating agriculture and animal services and related stakeholders;</li> <li>• When activated the Agriculture and Animal Services will coordinate the provision of required services which may include: <ul style="list-style-type: none"> <li>– Coordinate response for animal welfare including pets, livestock and wildlife;</li> <li>– Supply and delivery of emergency fodder;</li> <li>– Emergency water replacement in certain circumstances; and</li> <li>– Financial, welfare and damage assessment assistance to flood affected primary producers.</li> </ul> </li> <li>• Support recovery arrangements including: <ul style="list-style-type: none"> <li>– Administer transport subsidies to primary producers.</li> </ul> </li> </ul> |
| <b>Australian Government Bureau of Meteorology</b>     | The roles and responsibilities of the Australian Government Bureau of Meteorology are outlined in the <a href="#">NSW State Flood Plan</a> .   |
| <b>Bayside Council</b>                                 | <p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>• Establish and maintain floodplain and coastal risk management committees and ensure that key agencies are represented;</li> <li>• Develop and implement floodplain risk management plans in accordance with the NSW Government's Flood Prone Land Policy and the Floodplain Development Manual;</li> <li>• Provide levee studies, flood studies and floodplain management studies to the NSW SES;</li> <li>• Provide information on the consequences of dam failure to the NSW SES for incorporation into planning and flood intelligence.</li> </ul>  |

| AGENCY | RESPONSIBILITIES  |
|--------|---|
|        | <ul style="list-style-type: none"> <li>• Coordinate the development of warning services for catchments prone to flash flooding (small catchments), where appropriate;</li> <li>• Maintain council-owned flood warning networks and flood mitigation works;</li> <li>• Participate in NSW SES-led flood emergency planning meetings, to assist in the preparation of Flood Sub-Plans;</li> <li>• Maintain a plant and equipment resource list for the council area.</li> <li>• Contribute to community engagement activities.</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>• Subject to the availability of council resources, assist the NSW SES with flood operations including: <ul style="list-style-type: none"> <li>– Traffic management on council managed roads;</li> <li>– Provision of assistance to the NSW SES (plant, equipment and personnel where able and requested);</li> <li>– Property protection tasks including sandbagging;</li> <li>– Assist with the removal of caravans from caravan parks</li> <li>– Warning and/or evacuation of residents and other people in flood liable areas;</li> <li>– Provision of back-up radio communications</li> <li>– Resupply of isolated properties; and</li> <li>– Technical advice on the impacts of flooding.</li> <li>– Close and reopen council roads (and other roads nominated by agreement with RMS) and advise the NSW SES, the NSW Police Force and people who contact the council for road information;</li> <li>– Assist the NSW SES to provide filled sandbags and filling facilities to residents and business in areas which flooding is expected.</li> </ul> </li> <li>• Assist with making facilities available for domestic pets and companion animals of evacuees during evacuations.</li> <li>• Operate flash flood warning systems;</li> <li>• Operate flood mitigation works including critical structures such as detention basins and levees and advise the NSW SES regarding their operation;</li> <li>• Manage and protect council-owned infrastructure facilities during floods;</li> <li>• Work with the NSW SES and DPIE to collect flood related data during and after flood events.</li> </ul> <p><b>Recovery</b></p> |

| AGENCY                                  | RESPONSIBILITIES   |
|---|--|
|   | <ul style="list-style-type: none"> <li>• Provide for the management of health hazards associated with flooding including removing debris and waste;</li> <li>• Ensure premises are fit and safe for reoccupation and assess any need for demolition;</li> <li>• Provide services, assistance and advice to State Government in accordance with the State Recovery Plan.</li> </ul>   |
| <b>Caravan Park Proprietor(s)</b>       | <ul style="list-style-type: none"> <li>• Prepare a flood emergency plan for the Caravan Park;</li> <li>• Ensure that owners and occupiers of movable dwellings are aware that the caravan park is flood liable by providing a written notice to occupiers taking up residence and displaying this notice and emergency management arrangement within the park;</li> <li>• Ensure that owners and occupiers of movable dwellings are aware that if they are expecting to be absent for extended periods, they should: <ul style="list-style-type: none"> <li>– Provide the manager of the caravan park with a contact address and telephone number in case of an emergency; and</li> <li>– Leave any movable dwelling in a condition allowing it to be relocated in an emergency (i.e.: should ensure that the wheels, axles and draw bar of the caravans are not removed, and are maintained in proper working order);</li> </ul> </li> <li>• Ensure that occupiers are informed of Flood Information. At this time, occupiers should be advised to: <ul style="list-style-type: none"> <li>– Ensure that they have spare batteries for their radios;</li> <li>– Listen to a local radio station for updated flood information; and</li> <li>– Prepare for evacuation and movable dwelling (cabins) relocation;</li> </ul> </li> <li>• Ensure that owners and occupiers of caravans are aware of what they must do to facilitate evacuation and movable dwelling relocation when flooding occurs;</li> <li>• Coordinate the evacuation of people and the relocation of movable dwellings when floods are rising and their return when flood waters have subsided. Movable dwellings will be relocated back to the caravan park(s) by owners or by vehicles and drivers arranged by the park managers;</li> <li>• Secure any movable dwellings that are not able to be relocated to prevent floatation; and</li> <li>• Inform the NSW SES of the progress of evacuation and/or movable dwellings relocation operations and of any need for assistance in the conduct of these tasks.</li> </ul> |
| <b>Childcare Centres and Preschools</b> | <ul style="list-style-type: none"> <li>• When notified of possible flooding or isolation, childcare centres and preschools should;</li> </ul>  |

| AGENCY   | RESPONSIBILITIES   |
|--|--|
|  | <ul style="list-style-type: none"> <li>– Liaise with the NSW SES and arrange for the early release of children whose travel arrangements are likely to be disrupted by flooding and/or road closures; and</li> <li>– Assist with coordinating the evacuation of preschools and childcare centres.</li> </ul>   |
| <b>Dams Safety NSW</b>                               | The roles and responsibilities of the Dams Safety NSW (formerly NSW Dam Safety Committee) are outlined in the <a href="#">NSW State Flood Plan</a> .   |
| <b>Department of Defence</b>                         | Arrangements for Defence Assistance to the Civil Community are detailed within the State EMPLAN (section 448).   |
| <b>Department of Industry</b>                        | The roles and responsibilities for the Department of Industry (Crown Lands and Water Division) are outlined in the <a href="#">NSW State Flood Plan</a> .  |
| <b>Energy and Utilities Services Functional Area</b> | <p>The roles and responsibilities for Energy and Utilities Services are outlined in the <a href="#">Energy and Utility Services Supporting Plan (EUSPLAN)</a>.</p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> <li>• Assist NSW SES with identification of infrastructure at risk of flood damage where resources are available.</li> <li>• Facilitate local utility service distribution providers (electricity, gas, water, wastewater) to: <ul style="list-style-type: none"> <li>– Provide advice to the NSW SES of any need to disconnect power/gas/water/wastewater supplies or of any timetable for reconnection.</li> <li>– Advise the NSW SES of any hazards from utility services during flooding and coastal erosion/inundation.</li> <li>– Advise the public with regard to electrical hazards during flooding and coastal erosion/inundation, and to the availability or otherwise of the electricity supply.</li> <li>– Clear or make safe any hazard caused by power lines or electricity distribution equipment.</li> <li>– Reconnect customers' electrical/ gas/ water/wastewater installations, when certified safe to do so and as conditions allow.</li> <li>– Assist the NSW SES to identify infrastructure at risk of flooding for incorporation into planning and intelligence.</li> </ul> </li> </ul> |
| <b>Engineering Services Functional Area</b>          | The roles and responsibilities for Engineering Services are outlined in the <a href="#">Engineering Services Supporting Plan</a> .   |
| <b>Environmental Services Functional Area</b>        | The roles and responsibilities for Environmental Services are outlined in the <a href="#">Environmental Services (ENVIROPLAN) Supporting Plan</a> .  |
| <b>Floodplain Management Australia</b>               | The roles and responsibilities of Floodplain Management Australia are outlined in the <a href="#">New South Wales State Flood Plan</a> .   |

| AGENCY  | RESPONSIBILITIES  |
|---|---|
| Fire and Rescue NSW (as per NSW State Flood Plan) | <p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>• Identify and notify the NSW SES of any locations at risk of fire (within Fire Districts (13) or hazardous materials that pose a significant threat to surrounding populations due to the impact of a flood for incorporation into NSW SES flood intelligence and planning; and</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>• Meet the agreed arrangements described in the NSW SES and Fire and Rescue NSW Mutual Aid Agreement;</li> <li>• Provide Incident Management personnel and Liaison Officers to the NSW SES where required;</li> <li>• When requested by NSW SES, provide support to the NSW SES in response to flood emergencies across the State;</li> <li>• Assist the NSW SES with the warning and/or evacuation of at-risk communities;</li> <li>• Assist the NSW SES with the monitoring/reconnaissance of flood prone areas;</li> <li>• Provision of Land Based and In Water Flood Rescue Operators as required;</li> <li>• Provision of appropriately trained personnel to perform Down the Wire (DTW) functions as required;</li> <li>• Conduct Hazmat operations including asbestos risks, rising from flood emergencies in coordination with the SES Incident Controller.</li> <li>• Decontamination of Flood Rescue Operators as required;</li> <li>• Assist the NSW SES with the resupply of isolated communities and/or properties;</li> <li>• Assist the NSW SES with property protection tasks including sandbagging;</li> <li>• Provide resources for pumping flood water out of buildings and from low-lying areas;</li> <li>• Assist with clean-up operations, including the hosing out of flood affected properties;</li> <li>• Provide trained staff to support a joint intelligence unit, if established by NSW SES, including Remotely Piloted Aircraft System (RPAS) pilots to assist with field observations;</li> <li>• Assist the NSW SES to undertake damage assessment including structural collapse risks;</li> </ul> |

| AGENCY   | RESPONSIBILITIES   |
|--|--|
|  | <ul style="list-style-type: none"> <li>• Coordinate the pre-deployment of fire resources to communities within NSW Fire Districts if access is expected to be lost, in consultation with the NSW SES; and</li> <li>• Coordinate the deployment of the FRNSW High trans Pump to locations in consultation with NSW SES.</li> </ul> <p><b>Recovery</b></p> <ul style="list-style-type: none"> <li>• Participate in After Action Reviews as required.</li> <li>• Assist with clean-up operations, including the hosing out of flood affected properties;</li> </ul>   |
| Forestry Corporation of NSW                    | <p><b>Response</b></p> <ul style="list-style-type: none"> <li>• Close and reopen Forestry Corporation of NSW roads when affected by flood waters and advise the NSW SES of its status;</li> <li>• Manage traffic on Forestry Corporation of NSW roads;</li> <li>• Facilitate the safe reliable access of emergency resources on Forestry Corporation managed roads;</li> <li>• Assist the NSW SES with identification of road infrastructure at risk of flooding;</li> <li>• Assist the NSW SES with the communication of warnings and information provision to the public through variable message signs and other appropriate means; and</li> <li>• Close and relocate people from camping grounds at risk of flooding in State Forest managed areas.</li> </ul> |
| Health Services Functional Area                | <p>The roles and responsibilities for Health Services Functional Area are outlined in the <a href="#">Health Services (HEALTHPLAN) Supporting Plan</a>.</p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> <li>• Ensure that appropriate business continuity plans are developed for essential health infrastructure and are activated during floods.</li> </ul>   |
| Local Emergency Operations Controller (LEOCON) | <ul style="list-style-type: none"> <li>• Monitor flood operations.</li> <li>• If requested, coordinate support for the NSW SES Incident Controller.</li> </ul>   |
| Local Emergency Management Officer (LEMO)      | <ul style="list-style-type: none"> <li>• If requested by the NSW SES Incident Controller, advise appropriate agencies and officers of the start of response operations.</li> </ul>   |
| Manly Hydraulics Laboratory (MHL)              | <p>The roles and responsibilities of Manly Hydraulic Laboratory are outlined in the <a href="#">NSW State Flood Plan</a>.</p>  |



| AGENCY   | RESPONSIBILITIES   |
|--|--|
| Marine Rescue NSW (as per NSW State Flood Plan)                                    | <p><b>Response</b></p> <ul style="list-style-type: none"> <li>When requested by NSW SES, assist in flood operations when training and equipment are available and suitable including assistance with: <ul style="list-style-type: none"> <li>Warning and/or evacuation of at-risk communities;</li> <li>Providing communications personnel;</li> <li>Property protection tasks including sandbagging; and</li> <li>Flood rescue operations.</li> </ul> </li> </ul>   |
| NSW Ambulance  | <p>The roles and responsibilities for NSW Ambulance are outlined in the <a href="#">Health Services (HEALTHPLAN) Supporting Plan</a>.</p>  |
| NSW Department of Education  | <p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>Liaise with the NSW SES and arrange for the early release of students whose travel arrangements are likely to be disrupted by flooding and/or road closures (or where required, for students to be moved to a suitable location until normal school closing time);</li> <li>Ensure that evacuation plans for flood liable schools have arrangements for flooding; and</li> <li>Assist NSW SES with community engagement and capacity building programs.</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>Assist with the coordination of the evacuation of schools and the immediate welfare of students until returned to the appropriate carer;</li> <li>Pass information to school bus drivers/companies and/or school principals on expected or actual impacts of flooding; and</li> <li>Provide space in schools for evacuation centres where necessary.</li> </ul> |
| NSW Department of Industry, Planning and Environment (as per NSW State Flood Plan) | <p><b>Prevention</b></p> <ul style="list-style-type: none"> <li>Oversee the delivery of the NSW Flood Prone Land Policy including financial support through the Floodplain Management Program. Provide technical advice to councils and state agencies including assistance with the identification of risks, the preparation and implementation of Floodplain Risk Management Plans and associated mitigation and management actions and understanding flood mitigation schemes including levees.</li> <li>Work with the NSW SES on the Flood Data Access Program to improve the provision of flood information through the NSW Flood Data Portal;</li> <li>Assist the Department of Industry-Water in the preparation of rural floodplain management plans under the <i>Water Management Act 2000</i> (NSW); and</li> </ul>  |

| AGENCY   | RESPONSIBILITIES   |
|--|--|
|  | <ul style="list-style-type: none"> <li>• Provision of strategic technical advice to support floodplain risk management and environmental water management in rural areas of the Murray Darling Basin.</li> </ul> <p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>• Assist the NSW SES in the exercising of Flood Sub Plans;</li> <li>• Management of the state government's water level gauges for the flood warning network in tidal areas in NSW (Manly Hydraulic Laboratory operates this system as a service provider on behalf of DPIE.);</li> <li>• Advise NSW SES about conditions which may lead to coastal inundation or retarded river drainage near the coast.</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>• Provide related advice on flood risks to the NSW SES on request; and</li> <li>• Work with the relevant local council and NSW SES to collect flood related data during and after flood events.</li> </ul> <p><b>Recovery</b></p> <p>Support recovery committees as required.</p> |
| NSW Food Authority   | The roles and responsibilities for NSW Food Authority are outlined in the <a href="#">Food Industry Emergency Sub Plan</a> .   |
| NSW National Parks and Wildlife Services (as per NSW State Flood Plan) | <p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>• Assist the NSW SES with identification of road infrastructure in National Parks at risk of flooding;</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>• Close and reopen National Parks and Wildlife Service roads when affected by flood waters and advise the NSW SES of its status;</li> <li>• Facilitate the safe reliable access by emergency resources on National Parks and Wildlife Service managed roads;</li> <li>• Assist the NSW SES with the communication of warnings and information provision to the public through variable message signs and other appropriate means; and</li> </ul> <p>Close and direct people to leave camping grounds at risk of flooding in National Parks and Wildlife Service managed areas.</p>   |
| NSW Police Force (as per NSW State Flood Plan)                         | <p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>• Participate in NSW SES briefings, training and exercises as required.</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>• Provide a Liaison Officer to the NSW SES Operation Centre if required;</li> </ul>   |

| AGENCY   | RESPONSIBILITIES  |
|--|---|
|  | <ul style="list-style-type: none"> <li>• When requested by NSW SES, in flood operations when training and equipment are available and suitable; <ul style="list-style-type: none"> <li>– Assist with warning and/or evacuation of at-risk communities;</li> <li>– Assist with monitoring / reconnaissance of flood prone areas;</li> <li>– Assist with flood rescue operations;</li> </ul> </li> <li>• Conduct road and traffic control operations in conjunction with council and/or RMS;</li> <li>• Coordinate searches for missing people within flood affected areas;</li> <li>• Coordinate security of supply lines evacuated and damaged areas.</li> <li>• Manage Disaster Victim Registration; and</li> <li>• Operate the Public Information and Inquiry Centre, if requested or otherwise needed during flood events.</li> </ul> <p><b>Recovery</b></p> <ul style="list-style-type: none"> <li>• Participate in After Action Reviews as required.</li> </ul>  |
| NSW Rural Fire Service (as per NSW State Flood Plan) | <p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>• Participate in NSW SES briefings, training and exercises as required; and</li> <li>• Meet the agreed arrangements described in the NSW SES/NSW RFS Memorandum of Understanding.</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>• Provide a Liaison Officer to the NSW SES Operation Centre or Emergency Operations Centre as required;</li> <li>• Provide Incident Management Personnel when requested;</li> <li>• Provide trained staff to support a joint intelligence unit, if established by NSW SES;</li> <li>• Provide aviation support, management and advice as requested through the State Air Desk;</li> <li>• Provide speciality aircraft and appropriately trained personnel to perform Down the Wire (DTW) functions as required;</li> <li>• Assist with Damage Assessments; and</li> <li>• Provide Strike Teams during flood operations when requested by NSW SES. This may include assistance with: <ul style="list-style-type: none"> <li>– Warning and/or evacuation of at-risk communities;</li> <li>– Monitoring / reconnaissance of flood prone areas.</li> <li>– Property protection tasks including sandbagging;</li> <li>– Pumping flood water out of buildings and from low-lying areas;</li> </ul> </li> </ul> |

| AGENCY   | RESPONSIBILITIES   |
|--|--|
|  | <ul style="list-style-type: none"> <li>– Back-up radio communications;</li> <li>– Clean-up operations, including the hosing out of flood affected properties;</li> <li>– Deploying resources to communities within Rural Fire Districts where access is expected to be lost in consultation with the NSW SES;</li> <li>– The resupply of isolated communities and/or properties; and</li> <li>– Decontamination of NSW SES Flood Rescue Operators as required.</li> </ul> <p><b>Recovery</b></p> <ul style="list-style-type: none"> <li>• Participate in After Action Reviews as required.</li> </ul>  |
| <b>NSW Volunteer Rescue Association (as per NSW State Flood Plan)</b>                      | <p><b>Response</b></p> <ul style="list-style-type: none"> <li>• Where requested by the NSW SES, assist in flood operations when training and equipment are available and suitable, including assistance with: <ul style="list-style-type: none"> <li>– The warning and/or evacuation of at-risk communities;</li> <li>– Flood rescue operations;</li> <li>– Monitoring / reconnaissance of flood prone areas;</li> <li>– Resupply of isolated communities and/or properties; and</li> <li>– Property protection tasks including sandbagging.</li> </ul> </li> </ul>  |
| <b>Office of Emergency Management</b>  | <p>The roles and responsibilities of the Office of Emergency Management are outlined in the <a href="#">NSW State Flood Plan</a>.</p>  |
| <b>Owners of Declared Dams within or upstream of the LGA (as per NSW State Flood Plan)</b> | <p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>• Assist the NSW SES with community engagement programs;</li> <li>• Provide NSW SES with information necessary for response planning and warning distribution;</li> <li>• Assist the NSW SES identify correlations between water level and/or discharges at the dam for use in flood response operations (warning and evacuation); and</li> <li>• Consult with the NSW SES State Headquarters in the development of Dam Safety Emergency Plans, including the development of dam failure alerts, in accordance with the Dam Safety Committee Guidelines.</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>• Where water level monitoring or other instrumentation allows, provide NSW SES with flood advices as per pre-agreed thresholds for use in downstream flood response operations (warnings);</li> <li>• Notify NSW SES of potential or actual dam failures in accordance with the Dam Safety Emergency Plan and Dam Safety NSW Guidelines;</li> </ul> |

| AGENCY   | RESPONSIBILITIES   |
|--|--|
|  | <ul style="list-style-type: none"> <li>• Close at-risk camping grounds / recreational areas within their managed areas;</li> <li>• In the case of declared dams whose risks are intolerable, assist the NSW SES in planning to warn and evacuate people at risk of dam failure and maintain and operate any special Dam Failure Warning Systems and/or automatic telemetered monitoring devices to assist with early detection of incidents which are installed until such time that the risks have been lowered to an acceptable level; and</li> </ul> <p>Owners of gated dams:</p> <ul style="list-style-type: none"> <li>• Provide all available information to the BoM and the NSW SES on storage levels and actual and prospective water releases and their likely impacts on downstream river levels;</li> <li>• Advise the downstream community of prospective and actual water releases, except in those circumstances where the BoM would issue flood warnings; and</li> <li>• Where possible actively work with NSW SES and the BoM to reduce the impacts of flooding on communities through management of water releases within identified safe parameters and within statutory licencing provisions under the <i>Water Management Act 2000</i> and <i>Water NSW Act 2014</i>.</li> </ul> |
| <b>Public Information Services Functional Area</b> | <p>The roles and responsibilities for Public Information Services are outlined in the <a href="#">Public Information Services Supporting Plan</a>.</p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> <li>• On receipt of advice from NSW SES of any weather event likely to result in significant multi agency operational activity, the Public Information Functional Area Coordinator PIFAC determines if a daily multi-agency teleconference is required to ensure that the information needs of each agency are being met and to address any issues. These teleconferences continue through the response phase into the recovery phase.</li> </ul>  |
| <b>Transport for NSW</b>                           | <ul style="list-style-type: none"> <li>• TMC coordinates information on road conditions for emergency services access.</li> <li>• TMC coordinates the management of the road network across all modes of transport.</li> <li>• Transport for NSW, TMC and Police in conjunction will assist the NSW SES with the evacuation of at-risk communities by maintaining access and egress routes;</li> <li>• TMC will assist the NSW SES with the communication of flood warnings and information provision to the public through Variable Message Signs (VMS) according to the VMS protocols and procedures;</li> </ul>   |

| AGENCY   | RESPONSIBILITIES  |
|--|---|
|  | <ul style="list-style-type: none"> <li>Assist the NSW SES with identification of road infrastructure at risk of flooding.</li> </ul>  |
| SEOCON/SEOC  | The roles and responsibilities of the SEOCON/SEOC are outlined in the <a href="#">NSW State Flood Plan</a> .  |
| Surf Life Saving NSW (as per NSW State Flood Plan) | <p><b>Preparedness</b></p> <ul style="list-style-type: none"> <li>Contribute to NSW SES reviews into plans, policies and procedures as required; and</li> <li>Participate in NSW SES briefings, training and exercises as required.</li> </ul> <p><b>Response</b></p> <ul style="list-style-type: none"> <li>Assist the NSW SES with the warning and/or evacuation of at-risk communities;</li> <li>Provide accommodation in Surf Life Saving facilities for evacuation centres where required; and</li> <li>Assist the NSW SES with flood rescue operations, where training and equipment are suitable.</li> </ul> |
| Telecommunications Services Functional Area        | The roles and responsibilities for Telecommunications Services are outlined in the <a href="#">Telecommunications Services (TELCOPLAN) Supporting Plan</a> .  |
| Transport Services Functional Area                 | <p>The roles and responsibilities for Transport Services are outlined in the <a href="#">Transport Services Supporting Plan</a>.</p> <p>Roles and responsibilities in addition to the Supporting Plan are:</p> <ul style="list-style-type: none"> <li>Participate in risk management studies;</li> <li>Assist the NSW SES to identify transport infrastructure at risk of flood damage for incorporation into planning and intelligence; and</li> <li>Coordinate the provision of traffic and transport operations as consistent with the roles of Transport organisations.</li> </ul>                              |
| WaterNSW   | The roles and responsibilities for WaterNSW are outlined in the <a href="#">NSW State Flood Plan</a> .  |
| Welfare Services Functional Area                   | The roles and responsibilities for Welfare Services are outlined in the <a href="#">Welfare Services Functional Area Supporting Plan</a> .  |

## 11 Appendix C – Community Specific Roles and Responsibilities

|                          |  |
|--------------------------|--|
| <b>Community Members</b> | <p><b>Preparedness</b></p> <ul style="list-style-type: none"><li>• Understand the potential risk and impact of flooding;</li><li>• Prepare homes and property to reduce the impact of flooding;</li><li>• Understand warnings and other triggers for action and the safest actions to take in a flood;</li><li>• Households, institutions and businesses develop plans to manage flood risks, sharing and practicing this with family, friends, employees and neighbours;</li><li>• Have an emergency kit; and</li><li>• Be involved in local emergency planning processes.</li></ul> <p><b>Recovery</b></p> <ul style="list-style-type: none"><li>• Assist with community clean up if required and able to do so.</li></ul> <p>Participate in After Action Reviews if required.</p> |
|--------------------------|--|



**APPENDIX D**  
**FLOOD EVACUATION INDUCTION & SIGN-OFF**

| PROJECT POSITION                 | NAME | SIGNATURE | REVISIONS                   |
|----------------------------------|------|-----------|-----------------------------|
|                                  |      |           | <DATE> <DATE> <DATE> <DATE> |
| Project Director                 |      |           |                             |
| Project Manager                  |      |           |                             |
| Site Manager /<br>Flood Warden   |      |           |                             |
| Site Supervisor                  |      |           |                             |
| Contract<br>Manager              |      |           |                             |
| Contract<br>Administrator        |      |           |                             |
| WHS<br>/Environmental<br>Manager |      |           |                             |
| Quality<br>Co-ordinator          |      |           |                             |
| Leading Hand                     |      |           |                             |
| Add others:                      |      |           |                             |
|                                  |      |           |                             |
|                                  |      |           |                             |
|                                  |      |           |                             |



28 McPherson Street Banksmeadow

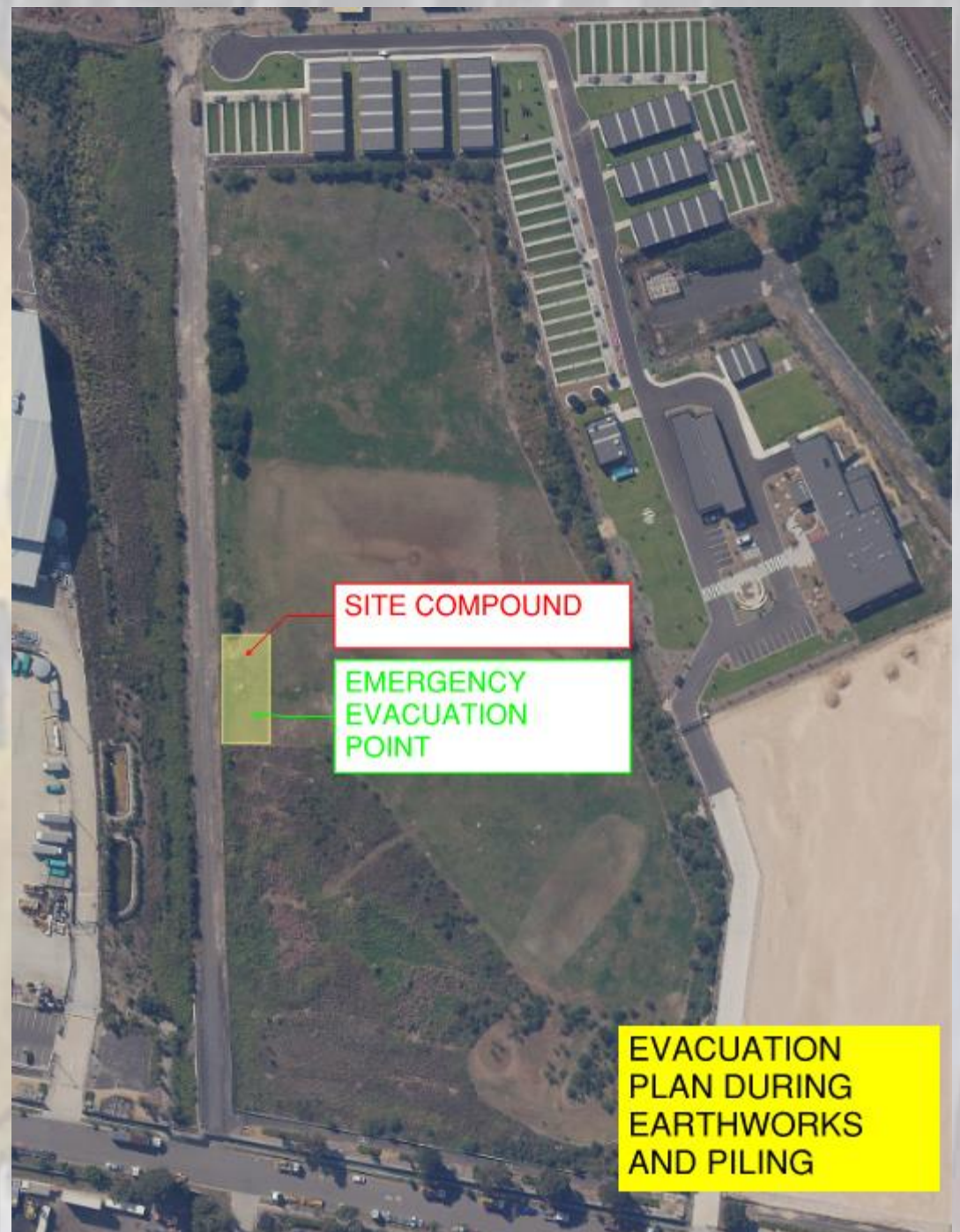
28 McPherson Street is located within a flood basin and is prone to regular flooding. When working on this project all personnel are to be mindful of the potential for flooding.

To mitigate the risks the following has been implemented;

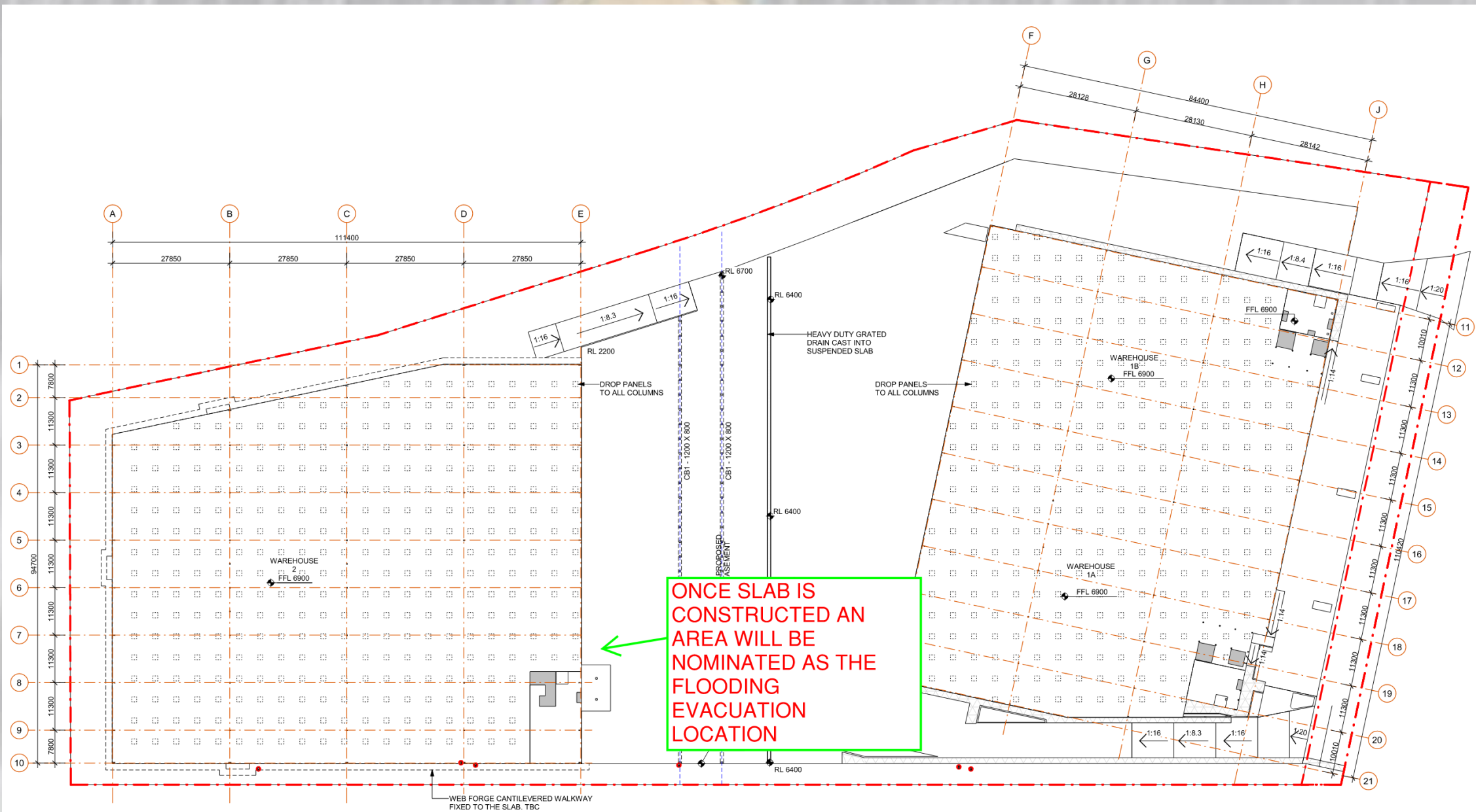
- Flood Evacuation Points above the expected maximum flood levels have been nominated. Refer to diagram and signage around site for location
- All Subcontractor Supervisors are to be registered on the site emergency WhatsApp group to receive emergency notifications from RCC
- Flood warning signs have been placed at all site entry points notifying personnel including visitors or delivery drivers of the potential of flooding.
- All personnel to be mindful of upcoming wet weather and potential of flooding by visiting the Bureau Of Meteorology website or app
- If a site evacuation is required, RCC will sound a siren notifying all site personnel to make their way to the evacuation point




## Site Evacuation Location




# Site Evacuation Location




For Further Information on flooding visit the Bureau Of Meteorology web site

BUREAU OF METEOROLOGY




# WATCH


THINK & PREPARE




**BROAD  
AREA**  
OF FLOOD RISK



**EARLY  
ADVICE**  
FOR POTENTIAL  
FLOODING




**ISSUED  
1–4 DAYS**  
BEFORE IMPACT




# WARNING


TAKE ACTION



**SPECIFIC  
LOCATION**  
OF FLOOD IMPACT



**MINOR  
MODERATE  
MAJOR**  
FLOODING



**ISSUED  
>6 HOURS**  
BEFORE IMPACT

KNOW YOUR WEATHER.  
**KNOW YOUR RISK.**

[bom.gov.au/australia/flood](https://bom.gov.au/australia/flood)



## Appendix H Incident/Injury Record Sheet

## 01.1 Incident/Injury Record

| PROJECT DETAILS   |   |  |
|---|---|--|
| Project Name:   | Project No:   | Report No:                             |
| SUBMIT WITHIN 24 HOURS OF THE INCIDENT  |   |  |
| Location of Incident:   |   |  |
| Date:   | Time:   |  |
| TYPE OF INJURY/INCIDENT   |   |  |
| <b>Workplace Injury</b>   | <b>Non Injury</b>   | <b>Other</b>                           |
| Class 1 <input type="checkbox"/>  | Major <input type="checkbox"/>                              | Safety <input type="checkbox"/>        |
| Class 2 <input type="checkbox"/>  | Minor <input type="checkbox"/>                              | Environmental <input type="checkbox"/> |
| Class 3 <input type="checkbox"/>  | Near Miss/<br>Dangerous Occurrence <input type="checkbox"/> |  |
| Have any authorities/stakeholder been notified?   |   |  |
| Yes <input type="checkbox"/>  |   |  |
| No <input type="checkbox"/>   |   |  |
| PERSONAL DATA   |   |  |
| Name of Injured Person(s):  | Date of Birth:  |  |
| <b>Persons Involved in Incident</b>   | <b>Type of Employment:</b>                                  |  |
| Employee <input type="checkbox"/>   | Permanent <input type="checkbox"/>                          |  |
| Subcontractor <input type="checkbox"/>  | Casual <input type="checkbox"/>                             |  |
| Other:  | Labour Hire <input type="checkbox"/>                        |  |
| Employee's Company Name:  | Contact Number  | Trade                                  |
| DETAILS OF INJURY/INCIDENT  |   |  |
| What work activity was being undertaken at time of the incident?  |   |  |
| Summary of Incident/Injury Description:<br>(Describe what happened – who, when, how & why) in first aid patients/involved persons own words |   |  |

|   |                                      |                                |
|---|--------------------------------------|--------------------------------|
|   |                                      |                                |
| <b>DETAILS OF ACTIONS TAKEN</b>   |                                      |                                |
| <b>Actions taken to control the Incident/Treat the injury</b>                   |                                      |                                |
|   |                                      |                                |
| <b>DETAILS OF INJURY</b>  |                                      |                                |
| <b>Nature of Injury or Illness No</b>   | <b>Bodily location of Injury No.</b> | <b>Mechanism of Injury No.</b> |
| <b>Call MEND Injury Management Ph 1300 176 774 to log/discuss injury record</b> |                                      |                                |
| Yes <input type="checkbox"/>  | No <input type="checkbox"/>          |                                |
| <b>Employee Involved</b>  | <b>Signature</b>                     | <b>Date</b>                    |
|   |                                      |                                |
| <b>Record/First Aid conducted by</b>  | <b>Signature</b>                     | <b>Date</b>                    |
|   |                                      |                                |

01.1 Incident/Injury Record

|   |  |  |
|---|--|--|
|   |  |  |
| Page 1 only is required for Class 2 and Class 3 incidents. Class 2 incidents may be investigated on the Discretion of the HOS/BSM |  |  |

TO BE PLACED ON WALL AT FIRST AID BOX IN ROOM *(do not submit with report)*

| Nature of Injury            |  | Bodily Location of Injury/Disease |   |
|-----------------------------|--|-----------------------------------|---|
| 01                          | Fractures (excluding of vertebral column)  | 01                                | Eye   |
| 02                          | Fracture of vertebral column with or without mention of spinal cord lesion   | 02                                | Ear   |
| 03                          | Dislocations   | 03                                | Face  |
| 04                          | Sprains and strains of joints and adjacent muscles (including acute trauma sprains and strains only)                 | 04                                | Head (Other than eye, ear and face)   |
| 05                          | Intracranial injury, including concussion  | 05                                | Neck  |
| 06                          | Internal injury of chest, abdomen and pelvis   | 06                                | Back  |
| 07                          | Traumatic amputation, including enucleation of eye (loss of eyeball)   | 07                                | Trunk (other than back and excluding internal organs)                                   |
| 08                          | Open wound not involving traumatic amputation  | 08                                | Shoulders and arms  |
| 09                          | Superficial injury   | 09                                | Hands and fingers   |
| 10                          | Contusion with intact skin surface and crushing injury, excluding those with fracture                                | 10                                | Hips and legs   |
| 11                          | Foreign body on external eye, in ear or nose or in respiratory, digestive or reproductive system (including choking) | 11                                | Feet and toes   |
| 12                          | Burns  | 12                                | Internal organs (located in the trunk)  |
| 13                          | Injuries to nerves and spinal cord without evidence of spinal bone injury  | 98                                | Multiple locations (more than one of the above)   |
| 14                          | Poisoning and toxic effects of substances  |                                   |   |
| 15                          | Effects of weather, exposure, air pressure and other external causes (including bends, drowning, electrocution)      |                                   |   |
| 16                          | Multiple injuries (only to be used where no principal injury can be identified)                                      |                                   |   |
| 17                          | Damage to artificial aids  |                                   |   |
| 19                          | Disease  |                                   |   |
| Mechanism of Injury/Disease |  |                                   |   |
| 01                          | Falls from a height  | 11                                | Contact with electricity  |
| 02                          | Falls on the same level (including trips and slips)  | 12                                | Contact or exposure to heat and cold  |
| 03                          | Hitting objects with a part of the body  | 13                                | Exposure to radiation   |
| 04                          | Exposure to mechanical vibration   | 14                                | Single contact with chemical or substance (excludes insect and spider bites and stings) |
| 05                          | Being hit by moving objects  | 15                                | Long term contact with chemical or substance  |
| 06                          | Exposure to sharp, sudden sound  | 16                                | Other contact with chemical or substance (includes insect and spider bites and stings)  |
| 07                          | Long term exposure to sounds   | 17                                | Contact with, or exposure to, biological factors  |
| 08                          | Exposure to variations in pressure (other than sound)  | 18                                | Exposure to mental stress factors   |
| 09                          | Repetitive movement with low muscle loading  | 19                                | Slide or cave in  |
| 10                          | Other muscular stress  | 20                                | Vehicle accident  |

## **Appendix I    Community Consultation and Engagement**

10/11/2022

**Goodman Banksmeadow  
PROJECT NO. 1296**

**COMMUNITY CONSULTATION  
AND ENGAGEMENT PLAN**



**RICHARD CROOKES**  
  
**CONSTRUCTIONS**

**Delivering  
Certainty**



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# Revision

| Rev Date   | Revision Description | PM's Initials<br>(acceptance of changes) |
|------------|----------------------|--|
| 10/11/2022 | Original Issue       | BT                                       |
|            |                      |  |
|            |                      |  |
|            |                      |  |
|            |                      |  |
|            |                      |  |
|            |                      |  |
|            |                      |  |
|            |                      |  |
|            |                      |  |
|            |                      |  |

# 1 Introduction

This Community Consultation and Engagement Plan forms part to the Project Management Plan for

## 1.1 Purpose of the Plan

Richard Crookes Constructions (RCC) recognises the importance of trust in relationship building with stakeholders involved with the project. Consequently, being accountable is paramount and we seek to be transparent with our communications and documentation.

Further, in line with our company commitment to continual improvement, we constantly aim for a greater level of engagement and interaction with stakeholders, particularly when our project activities may impact on the communities in which we operate.

The purpose of this plan is to outline processes for:

- Achieving our Objectives and Targets;
- Consultation Strategies;
- Identification of Stakeholders;
- Responsibilities for Implementing the Plan; and
- Stakeholder Grievances and Concerns.

# 2 RCC Objectives and Targets

RCC's overall objective is to promote an open communications environment that will minimise disruptions and issues for both the project team and the community.

To support this, and in line with commitments made in RCC's Environmental Policy, project level objectives and targets include:

- Community complaints are to be actioned within 24hours;
- No repeat complaints for the same issue.

# 3 Description of the Project

## 3.1 General

The Project consists of the Construction of two warehouses, each circa 10,000m<sup>2</sup> on top of a suspended concrete deck of circa 35,000m<sup>2</sup>. The concrete deck will be supported off concrete/steel piles extending circa 3m above the ground.

The project is located at 28 McPherson Street Banksmeadow, NSW.

### 3.2 Hours of Operation

The Development Consent hours of operation for the construction project are:

Monday to Friday 7:00am to 6:00pm and Saturday 8:00am to 1:00pm.

### 3.3 Proposed Timeframes

The table below provides an overview of the construction activities and the timeframe for the works.

| Construction Activities –                    |  |            |
|--|--|------------|
| Activity                                     | Methodology  | Timeframe  |
| Site set up including environmental controls | Perimeter fencing / sediment controls / site hoardings/ temp accommodation     | ~ 10 days  |
| Earthworks                                   | Stripping of trees, vegetation and 100mm top soil, placing of marker layer     | ~ 22 days  |
| Piling platform                              | Placement of temporary road base material to allow safe access for piling rig. | ~ 50 days  |
| Piling                                       | Piling at typical 5m grid placement over site entirety                         | ~ 60 days  |
| Suspended Concrete Slab                      | Forming, reinforcing and pouring of concrete deck inclusive of entry ramps     | ~ 100days  |
| Warehouse and Offices construction           | Structural steel framing, metal roofing, cladding and fit out of offices       | ~ 296 days |
| External works incl. pavements, landscaping  | External hardstand, carpark and landscaping                                    | ~ 55 days  |

## 4 Site Management Contact Details

Key contact details are provided below:

| Position         | Name          | Phone (W) | Phone (M)    |
|------------------|---------------|-----------|--------------|
| General Manager  | Claude Concha | 9902 4700 | 0434 077 660 |
| Project Director | Brendan Peera | 9902 4700 | 0433 221 668 |
| Project Manager  | Ben Taylor    | 9902 4700 | 0409 127 322 |

| Position                       | Name  | Phone (W) | Phone (M)    |
|--------------------------------|---|-----------|--------------|
| Contracts Manager              | Gary Kenny  | 9902 4700 | 0468 631 807 |
| Senior Design Manager          | Maruthi Dhurjati  | 9902 4700 | 0437 422 405 |
| Senior Contract Administrator  | John Yonan  | 9902 4700 | 0423 748 582 |
| Site Manager                   | Michael French  | 9902 4700 | 0437 637 649 |
| Site Engineer                  |   |           |              |
| Building Cadet                 |   |           | 0            |
| WHS& E Advisor                 | Marcello Di Paolo                                       | 9902 4700 | 0438 674 465 |
|                                | Location  | Phone     | Facsimile    |
| Site Management Project Office | 28 McPherson Street<br>Banksmeadow<br>(off Nant Street) | 9902 4700 |              |

## 5 Balancing Community Expectation and RCC Obligations

Balanced community engagement involves both a commitment from RCC and an expectation from the community, as summarised below.

|                       | Inform   | Consult   | Involve  | Collaborate   |
|-----------------------|--|---|--|---|
| Community Expectation | To get balanced and objective information about aspects of the project that impact on us | To be asked our opinions and allow us to provide feedback to the company on the matters that concern us | To be involved in the decision making process and the exploration of alternatives regarding those issues that are of concern to us | To create a partnership with us whereby we have faith that our concerns and ideas are integrated into the decision making process |

|                   | Inform                                   | Consult  | Involve   | Collaborate  |
|-------------------|--|--|---|--|
| RCC<br>Obligation | We will keep the community well informed | We will listen and acknowledge community concerns and provide evidence that concerns are considered in decision making | We will work with the community to make sure concerns and issues are reflected in any alternatives developed. Provide feedback to the community on how their inputs has influenced outcomes | We will look to the community for advice and innovation in solving issues and concerns and incorporate their advice into the decision making process to the maximum extent possible. |

## 6 Consultation and Strategy/Our Approach to Dialogue

### 6.1 General

Community consultation can be involving, meaningful, useful and effective if the following principles are used as a starting point for making consultation work:

- Making it timely: participation should not be so late in the process of an issue that it is tokenistic or merely confirms decisions already made. Give people enough time to express their views.
- Making it inclusive: Participation should be selected in a way that is not open to manipulation, and should include a cross section of the participation.
- Making it community focused: Ask participants not what they personally want but what is appropriate in their role as a citizen.
- Making it interactive: avoid reducing questions to a simplistic response. Allow consideration of the big picture so people can readily become engaged.

- Making it effective: Although decision making can strive for consensus, complete agreement may not be the outcome. Be clear on how the decisions will be made so participants understand the impact of their involvement. Allow enough time for participants to become familiar with the project issues.
- Making it Matter: it is important that a strong likelihood that any recommendations that emerge from the consultative process will be accepted. If they are not, it is important that a public explanation is provided.

## 6.2 Ways to Consult

Different community stakeholder groups need different consultation methods at different stages of the project. Some of the processes that may be used are listed below.

| Consultation Method | Inform  | Consult  | Involve   | Collaborate  |
|---------------------|---|--|---|--|
| Tools               | Fact Sheet / flyers<br>Website<br>Project Open days<br>Briefings<br>24 hrs. contact points<br>Media<br>Direct personal visits<br>Project inductions | Public submissions<br>Focus groups<br>Public meetings<br>Surveys | Community liaison groups<br>Workshops<br>Submissions<br>Community projects / sponsorship<br>Local suppliers preference policy | Advisory groups<br>Decision making<br>Consensus building |

Appendix 1 identifies how these methods will be employed specifically to this project.

## 6.3 Letter Box Drops and Public Notices

Letter box drops or public notices will include at least the following:

- Why the works are required;
- When they will occur;
- What mitigation measures are in place to minimise any community or environmental impacts;
- Who will be doing the work and a contact phone number for further information; and
- Emergency Contact number / community complaints line.



## 6.4 Communication Protocols

The protocols for establishing and continuing community consultation for this project include:

- Communicating clearly;
- Including 3 or 4 main messages, and repeat them in different ways;
- Ensuring information is structured around the same messages i.e. Consistency;
- Ensuring project staff are clear about main messages, so stakeholders receive consistent messages;
- Providing information promptly;
- Establishing timelines and lines of communication: for this project a 2 day response time to deal with community concerns has been determined;
- Making the information accessible to all interested parties; and
- Being open to changes that may result from listening and incorporating innovations or concerns from the community into the project activities and methodologies.

# 7 Identification of Stakeholders for this Project

## 7.1 General

Key stakeholders are generally identified as people who are adversely or positively impacted by our operations, those who have an interest in / influence on what we do.

Our project sites are required to identify their key stakeholders and consider their expectations and concerns during design (where achievable) and operational activities.

These projects key stakeholders are many and varied and may include:

- RCC's Employees Client and end users, subcontractors, and suppliers;
- Local and Indigenous communities;
- Customers;
- Surrounding property occupiers or owners;
- Community organisations that represent local and indigenous communities near our projects, particularly in regional NSW;
- Unions who are concerned about upholding workers' rights and interests; and
- Governments – local & state;
- The media; and

- Industry associations.

Within these groups, there are stakeholders that may be interested in specific issues or affected by a range of issues.

## 7.2 Community Consultation Planning

Appendix 1 summarises the Community and Stakeholders Mapping Guide and overall consultation strategy planned for this project.

## 7.3 Stakeholders Identified for this Project & Consultation Strategies

For this project, business, residential and other stakeholders that may be specifically impacted by project works and the corresponding consultation strategy have been listed in the table below:

| Stakeholders and Consultation Strategies |  |  |
|--|--|--|
| Precinct                                 | Impacts  | Consultation Strategy  |
| Businesses                               | <p>During Construction: extra traffic (concrete trucks)</p> <p>Noise sensitive neighbours – Detector Dogs facility to North and East of site</p> | <p>A letterbox drop to businesses informing them on planned construction works and give name and contact details of RCC personnel to consult with throughout the project.</p> <p>A construction update advising of progress of current works and advice of commencement of soft ground works will be issue in advance of works commencing</p> <p>Personal consultation – a visit will be made to update progress on works and inform businesses of upcoming works</p> <p>Ongoing communication with the Client, Property managers and business tenants via regular email flyers and project updates.</p> <p>The agreed complaint handling procedures will be implemented</p> |

| Stakeholders and Consultation Strategies |  |   |
|--|--|---|
| Precinct                                 | Impacts  | Consultation Strategy   |
| Residents                                | During Construction: Noise, Traffic, Dust  | <p>Prior to works starting, notification and consultation will be undertaken with the identified key sensitive receivers.</p> <p>Personal consultation will be undertaken with identified sensitive receivers to make them aware of works, and the potential issues such as concrete trucks utilising site on a 10 hour basis including Saturdays, rock hammering etc.</p> <p>Personal consultation will be undertaken with the residents potentially impacted by regenerated noise and vibration</p> <p>The agreed complaint handling procedures will be implemented</p> |
| Employees & Subcontractors               | <p>WHS concerns</p> <p>Career progression &amp; learning opportunities</p> <p>For those who live in regional communities where our projects are based – interactions out of work hours, business creation during the life of the project, supporting social infrastructure</p> | <p>Both the Head Office at Artarmon and project sites, employees and contractors are expected to participate in company improvements, via:</p> <p>Safety committees</p> <p>Performance appraisals</p> <p>Direct communications between employees &amp; management</p> <p>Newsletters &amp; alerts</p> <p>Intranet</p> <p>Monthly reporting &amp; corporate reports</p> <p>IT helpdesk</p>   |

| Stakeholders and Consultation Strategies |  |   |
|--|--|---|
| Precinct                                 | Impacts  | Consultation Strategy   |
| Local & Indigenous Communities           | <p>Disengagement of local &amp; indigenous communities with the project</p> <p>Non – fulfilment of GC21 Contract obligations contained in Aboriginal Participation Plans</p> <p>Miss-alignment of RCC’s policies and the NSW Government’s commitment to creating outcomes (training, employment, enterprise development) for Aboriginal people, as referred to in the Making It Our Business Strategy and procurement in construction policy.</p> <p>Potential to affirm and respect indigenous and other heritage &amp; cultural values</p> | <p>Development of Aboriginal Participation Plans to involve the indigenous community</p> <p>Community consultation groups</p> <p>Newsletters and other targeted communications</p> <p>Monthly reporting &amp; corporate reports</p> <p>Community perception surveys</p> |
| Suppliers                                | <p>Suppliers and subcontractors not aware of RCCs expectations</p> <p>Impacts of RCC’s payment terms and conditions on suppliers and subcontractors</p>  | <p>Technology exchanges</p> <p>Identification of risks associated with their activities and implementation of controls</p> <p>Seek to utilise local suppliers and support these suppliers</p>   |
| Community Organisations                  | <p>Assurance that potential impacts (social, environmental, safety etc.) have been considered during RCC’s projects and mitigated</p> <p>RCC’s community interactions and support are mutually beneficial and sustainable</p>  | <p>Community consultation and engagement groups</p> <p>Support local sporting and other groups</p> <p>Corporate programs</p>  |
| Unions                                   | <p>Freedom of our employees to choose to join labour unions</p>  | <p>Communicate with unions on specific issues, RCC’s CBA etc.</p>   |

| Stakeholders and Consultation Strategies |  |   |
|--|--|---|
| Precinct                                 | Impacts  | Consultation Strategy   |
| Regulators                               | Government has mechanisms of regulation that cover a range of aspects within RCC including industrial, safety, environment | <p>RCC's activities required to work within legislative frameworks and local and state levels</p> <p>Meetings with Council, BCA consultant with respect to planning and design issues</p> <p>Onsite meetings with Local Council, DECC, WorkCover, ABCC to ensure RCC works complying with legislation, minimising impacts to stakeholders, minimising industrial relations conflicts etc.</p> |

## 7.4 Indigenous Stakeholders

RCC recognises and respects the importance of Indigenous peoples' culture, heritage and traditional rights and supports the identification, recording, management and protection of indigenous cultural heritage sites.

Indigenous cultural heritage is broadly defined to include matters that are significant to either Indigenous peoples or under legislation, such as dreaming, ceremonial, sacred and burial sites; archaeological sites where evidence of the past occupation and use by Indigenous peoples can be found; more contemporary historic sites; and traditional knowledge.

We recognise that Indigenous peoples have a vital role to play in identifying and properly managing cultural heritage, especially where it could be affected by our activities.

Where identified by the planning process, projects will undertake early consultations and assessments with Indigenous peoples to ascertain whether our proposed activities are likely to impact cultural heritage values and, in conjunction with Indigenous peoples and relevant authorities, determine how best to plan and undertake those activities to avoid or minimise such impacts.

RCC also actively seeks to utilise traditional knowledge in the development of site-based practices such as environmental management plans (refer Section 4 and Appendix 1 of the Project Management Plan).

## 7.5 Aboriginal Participation Plan

Aboriginal Participation Plans will be developed for a project in accordance with the Contract requirements or where there is a significant

potential to benefit the local community in line with the NSW Government's policies (see Appendix 1 of the Project Management Plan).

## 8 Responsibility for Implementing the Plan

The Project Manager is responsible for developing and implementing the Community Consultation and Engagement Plan for this project. Where required, specialist consultants will be engaged.

## 9 Stakeholder Grievances and Concerns

Project sites are required to maintain a register of concerns, complaints and relevant external communications.

Concerns and complaints are to be investigated as incidents, using RCC's standard investigation processes (Form 01.1), and outcomes and actions are reported back to relevant stakeholders.

## 10 Is the Plan Effective?

Monitoring public opinion and complaints will identify how successful the project Community Consultation and Engagement Plan is:

- If issues can be resolved by consultation and collaboration, then the program is successful.
- If issues are escalating and resolution is improbable, the program is to working.

A regular review process during the project is also a central requirement of stakeholder identification, to ensure that all appropriate groups and individuals are effectively identified and suitably engaged.

## 11 Resources

<http://www.vlgaconsultation.org.au/>

<http://www.communitysolutions.com.au/index.html>

Landcom Booklet Stakeholder Consultation Workbook (available on internet)





# Appendix 1 – Stakeholder Table

| Community Stakeholder Mapping Guide |                      |                                      |                       |            |                             |  |                      |                            |
|-------------------------------------|----------------------|--------------------------------------|-----------------------|------------|-----------------------------|--|----------------------|----------------------------|
| Stakeholder                         | Issue / Impact       | Does the stakeholder have / require? |                       |            | Implementation Requirements |  |                      | Affected / Level of Impact |
|                                     |                      | Information Needs                    | Expertise / Knowledge | Regulation | Planning Approval           | Construction Management Plans e.g. Noise & Vibration | Contract Requirement |                            |
| Residents                           | Dust, noise          |                                      |                       |            |                             |  |                      |                            |
| Business                            | Traffic, Dust, Noise |                                      |                       |            |                             |  |                      |                            |
| Community Groups                    | Traffic              |                                      |                       |            |                             |  |                      |                            |
| Indigenous Group                    | Heritage             |                                      |                       |            |                             |  |                      |                            |
| Client                              | Operations           |                                      |                       |            |                             |  |                      |                            |
| EPA                                 | Environment          |                                      |                       |            |                             |  |                      |                            |
| WorkSafe                            | Safety               |                                      |                       |            |                             |  |                      |                            |
| Local Council                       | Building             |                                      |                       |            |                             |  |                      |                            |
| Union                               | IR                   |                                      |                       |            |                             |  |                      |                            |

| Stakeholder      | Level of Impact | Consultation Strategy |         |         |             |
|------------------|-----------------|-----------------------|---------|---------|-------------|
|                  |                 | Inform                | Consult | Involve | Collaborate |
| Residents        | 1               | ✓                     |         |         |             |
| Business         | 3               | ✓                     | ✓       | ✓       |             |
| Community Groups | 2               | ✓                     |         |         |             |
| Indigenous Group |                 |                       |         |         |             |
| Client           |                 |                       |         |         |             |
| EPA              |                 | ✓                     |         |         | ✓           |
| WorkSafe         |                 | ✓                     | ✓       |         |             |
| Local Council    |                 | ✓                     | ✓       |         |             |
| Union            |                 | ✓                     |         |         |             |

## Step 1:

Rank why a particular group is a stakeholder for this project  
i.e. is their interest low, medium, high?

1 = low

2 = medium

3 = high

## Step 2:

✓ Indicate Consultation Strategy employed

Details provided in Section 7.0.



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## **Appendix J Construction Waste Management Plan**

10/11/22

**Goodman Banksmeadow  
PROJECT NO. 1296**

**CONSTRUCTION WASTE  
MANAGEMENT PLAN**



**RICHARD CROOKES**  
  
**CONSTRUCTIONS**

Delivering  
Certainty

# Contents

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# Revision

| Rev Date | Revision Description | PM's Initials (i.e. acceptance of changes) |
|----------|----------------------|--|
| 10/11/22 | Original Issue       | BT   |
|          |                      |  |
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# 1 Introduction

This Construction Waste Management Plan forms part of the Project Management Plan for 28 McPherson Street, Banksmeadow

## 1.1 Purpose of the Plan

Richard Crookes Constructions (RCC) recognises the importance of promoting building design and construction techniques which minimise waste and provides an efficient recycle procedure for all waste material.

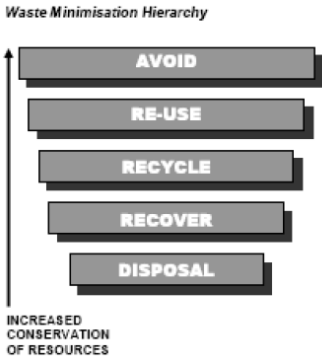
The purpose of this plan is to outline processes for:

- Objectives and Targets;
- Operational Controls;
- Recording, Monitoring Corrective Action; and,
- Reporting.

# 2 RCC Objectives and Targets

RCC's overall objective is to achieve a minimum of (80%) for recycled waste (by weight) generated by the Project.

The Operational Controls implemented to achieve this include:

| Operational Controls   |  | Method of Recording                                       |
|--|--|---|
| General  | Identify any hazardous and toxic materials (e.g. asbestos) and comply with WorkCover requirements.<br>Develop project Waste Management Plan<br>Try not to over-order on materials (initial waste avoidance).<br>Communicate housekeeping & litter reduction rules with subcontractors during contract letting and site inductions. | Hazardous substance survey<br>Waste Records<br>Inductions |
| Implement the waste hierarchy – avoid, reuse, recycle and lastly disposal to landfill.   |  |   |
|  <p>The diagram illustrates the Waste Minimisation Hierarchy. It consists of five horizontal bars of decreasing length, stacked vertically. From top to bottom, the bars are labeled: AVOID, RE-USE, RECYCLE, RECOVER, and DISPOSAL. To the left of these bars is a vertical arrow pointing upwards, with the text 'INCREASED CONSERVATION OF RESOURCES' at its base.</p> |  |   |



| Operational Controls                      |  | Method of Recording   |
|---|--|---|
| Demolition Plan                           | <p>Demolition is not Applicable based on current scope of works. If minor structures are found and are required to be demolished:</p> <p>Demolition disposal for concrete, bricks, plasterboard, timber, tiles, PVC, metal, paper &amp; cardboard, glass, appliance, carpet, vegetation, soil – to Recycled Facility</p> <p>Asbestos ACM to be removed by a licenced contractor (up to 30 June 2007 &gt;200m<sup>2</sup>, 1 July 2007 &gt; 50m<sup>3</sup>, from 1 Jan 2008 &gt; 10m<sup>2</sup> of bonded asbestos) &amp; managed in accordance with WHS Act &amp; Regulation 2012 and EPA requirements.</p> <p>Lead paints &amp; dusts will be removed using wet sanding and vacuum techniques (cleaners which comply with AS/NZS 3544 Industrial vacuum cleaners for particulates hazardous to health). Waste will be contained within sealed plastic bags for disposal. Clean up with a wet mop.</p> | <p>Monthly Waste Report</p> <p>Disposal dockets</p>                                 |
| Consider recycling reprocessing           | <p>Where practicable:</p> <p>Timber for reuse or mulching</p> <p>Aluminium wall frames – reprocess</p> <p>Plasterboard – recycled or use as soil improvers</p> <p>Steel – reprocess</p> <p>Toughened Glass – reprocess</p> <p>Carpet &amp; underlay – reprocess &amp; mulch mats</p>   | Monthly Waste Report  |
| Product Stewardship                       | Investigate returning waste to the supplier? (e.g. plasterboard, packaging)  | Contract/<br>Supply arguments   |
| Putrescibles Waste                        | Putrescible waste is to be contained in bins and collected by licenced contractor for disposal   | Invoices  |
| Contaminated Soils                        | <p>Contaminated soils will be excavated and classified in accordance with EPA guidelines “Environmental Guidelines: Assessment, Classification &amp; Management of Liquid &amp; Non-Liquid Wastes” (June 2004) – <a href="http://www.environment.nsw.gov.au/waste/envguidlms/index.htm">www.environment.nsw.gov.au/waste/envguidlms/index.htm</a>.</p>   | <p>RAP Reports</p> <p>Test Reports</p> <p>Waste Records</p> <p>Disposal Dockets</p> |
| Virgin Excavated Natural Materials (VEMN) | <p>VENM excavated from site with suitable compaction qualities will be beneficially re-used on other construction sites whenever possible. Disposal to landfill will be the last option.</p> <p>No fill will be received on site that does not comply with EPA guidelines i.e. Contamination limits appropriate to the development.</p>  | <p>Test Reports</p> <p>Waste Records</p> <p>Disposal Dockets</p>                    |
| Acid Sulphate Soils (ASS)                 | Potential for acid sulphate soils ASS will be assessed based on the sites proximity to low-lying coastal areas e.g. coastal plains, wetlands and mangroves where the surface elevation is less than five metres above mean sea level.  | <p>ASSMP</p> <p>Test Reports</p> <p>Product delivery (lime) dockets</p>             |

| Operational Controls |  | Method of Recording                                |
|----------------------|--|--|
|                      | If suspected, consultant to prepare Acid Sulphate Soil Management Plan (ASSMP).<br>Excavation and neutralisation to be supervised by consultants as per ASSMP.   | Site Plans   |
| Monitoring           | Bin(s) with heavy lids shall be provided for putrescibles waste<br>Daily inspections shall be carried out to ensure the worksite is litter free.   | Env. Inspection Checklist                          |
| Reporting            | Waste reports/management plans indicate estimated waste min (80%) of accumulated totals for the project.   | Monthly Reports                                    |
| Non-Compliance       | Generation of water pollution and/or air pollution from onsite waste storage<br>Inappropriate/illegal off-site disposal of waste materials<br>Asbestos & CCA treated timber contamination of recoverable waste stream thereby requiring landfill disposal. | Env. Inspection Checklist<br>Incident Report, NCRS |
| Emergency Response   | No specific requirements associated with waste management<br>Scenarios such as spill, fires, explosions covered by the project emergency response plans.   | Incident Report                                    |

### 3 Reporting

#### Greenstar:

The Project Green Star Administrator will be responsible for collecting monthly waste reports (Form 18.1) or utilising the waste subcontractor reporting format and issuing them to the Project Manager and Client Representative.

These reports will measure the weight of waste generated of material by classification, total weight of waste, percentage by weight recycled and percentage by weight to landfill.

**General waste reporting:**

Nominated member of the project team will be responsible for collecting monthly waste reports and issuing them to the Project Manager and Client Representative.

These reports will measure the weight of waste generated of material by classification, total weight of waste, percentage by weight recycled and percentage by weight to landfill.

## 4 Estimated Quantities

The Waste management plan – Construction chart (Form 18.2b) is an estimate of the core waste streams that will be removed from the Goodman Banksmeadow Project waste to be removed will be assessed for the Reuse & recycling content and the Disposal to landfill.

| Materials on site |                                    | Destination   |   |   |
|-------------------|------------------------------------|---|---|---|
| Type of material  | Estimated volume (m <sup>3</sup> ) | On-site<br>(Reuse or recycle)   | Off-site<br>(Detail contractor and recycling contractor)  | Disposal<br>(Detail contractor and landfill site) |
| Concrete          | 5m <sup>3</sup>                    | Separated on site and crushed for use in pavement construction where possible | Collected by contractor and disposed at concrete recycling facility   | Facility TBA upon appointment of contractor       |
| Timber (formwork) | 35m <sup>3</sup>                   | Separated and where feasible, reused for further formwork                     | Unused material separate and stockpiled onsite.<br><br>Collected by specialist timber subcontractor for recycling | Facility TBA upon appointment of contractor       |

|                     |                  |                  |   |   |
|---------------------|------------------|------------------|---|---|
| Metals              | 10m <sup>3</sup> | No on-site reuse | Collected by specialist metal subcontractor for recycling   | Facility TBA upon appointment of contractor |
| Plasterboard        | 5m <sup>3</sup>  | No on-site reuse | Collected by the contractor for recycling.  | Facility TBA upon appointment of contractor |
| Carpet              | 2m <sup>3</sup>  | No on-site reuse | This will be disposed of into a designated bin and collected regularly as required for recycling if of the required quality or disposal to landfill | Facility TBA upon appointment of contractor |
| Mixed hard plastics | 10m <sup>3</sup> | No on-site reuse | Collected by contractor for recycling. Facility TBA upon appointment of contractor.   | No disposal to landfill                     |
| Glazing             | 2m <sup>3</sup>  | No on-site reuse | Recyclers consulted as to potential for recycling and if suitable separated for recycling.  | Facility TBA upon appointment of contractor |

| Materials on site |                                    |                               | Destination  |   |
|-------------------|------------------------------------|-------------------------------|--|---|
| Type of material  | Estimated volume (m <sup>3</sup> ) | On-site (Reuse or recycle)    | Off-site (Detail contractor and recycling contractor)  | Disposal (Detail contractor and landfill site)  |
| Soil/Sand/Gravel  | 10m <sup>3</sup>                   | Will be stockpiled for reuse. | Excavation materials will be collected and used as clean fill by the waste contractor with appropriate notification as to location | All remaining material will be disposed at landfill – facility (or other sites as fill), TBA upon appointment of contractor |
| Mixed Recyclables | 15m <sup>3</sup>                   | No on-site reuse              | Contractor appointed to collect and recycle  | No disposal to landfill   |
| General waste     | 30m <sup>3</sup>                   | No on-site reuse              | No recycling or reuse  | Facility TBA upon appointment of contractor   |

## 5 Excavated Material Register

As per the requirement of the Remediation Action Plan (RAP) by JBS&G Reference 54709/119224 Rev 0, 100mm of topsoil on site will be excavated and replaced with a 100mm imported barrier layer.

An excavated material register will be maintained for all topsoil material removed from site. This will include the location of the material, testing and classification of the material along with the approved waste facility the material is disposed at. Refer to Table 5.1 showing template register that will be utilised on the project. Figure 5.1 shows the Lot Layout Plan to enable locations to be determined and tracked.

## EXCAVATED MATERIAL REGISTER

### 28 McPHERSON STREET BANKSMEADOW

Site testing to be completed as per RAP Table 6.2 Soil Validation Sampling  
Program 1 / 100m3 (1/1000m2)

| Lot | Waste<br>Classification<br>Report No. | Waste Classification | Tons<br>Removed | Licenced Waste<br>Facility |
|-----|---------------------------------------|----------------------|-----------------|----------------------------|
| 1   |                                       |                      |                 |                            |
| 2   |                                       |                      |                 |                            |
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| 33  |                                       |                      |                 |                            |
| 34  |                                       |                      |                 |                            |
| 35  |                                       |                      |                 |                            |

Table 5.1 Excavated Material Register

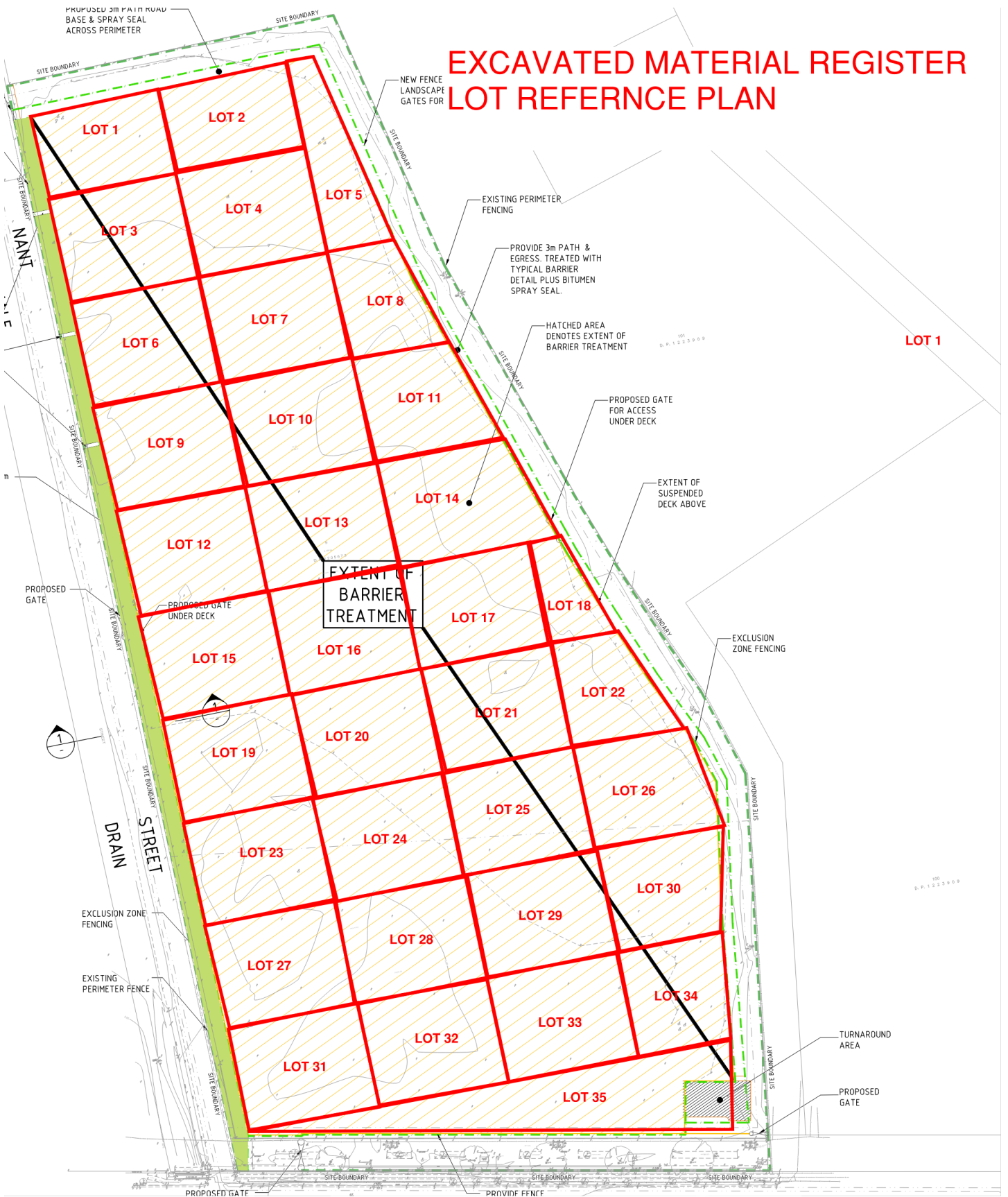


Figure 5.1 Excavated Material register Lot reference Plan

## **Appendix K Traffic Management Plan**





# **Construction Traffic Management Plan**

28 McPherson Street, Banksmeadow

14/02/2023

Ref: P2186r01v4

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## Document Control

|                       |  |
|-----------------------|--|
| <b>Project No</b>     | P2186  |
| <b>Project</b>        | 28 McPherson Street, Banksmeadow                           |
| <b>Client</b>         | Richard Crookes Constructions                              |
| <b>File Reference</b> | P2186r01v4 CTMP 28 McPherson Street, Banksmeadow; Issue IV |

## Revision History

| Revision No. | Date       | Details | Author                       | Approved by |
|--------------|------------|---------|------------------------------|-------------|
| -            | 23/11/2022 | Draft   | S. Bandaranayake/<br>M. Kong | M. Kong     |
| I            | 05/12/2022 | Issue   | S. Bandaranayake/<br>M. Kong | M. Kong     |
| II           | 23/12/2022 | Issue   | S. Bandaranayake/<br>M. Kong | M. Kong     |
| III          | 25/01/2023 | Issue   | S. Bandaranayake/<br>M. Kong | M. Kong     |
| IV           | 14/02/2023 | Issue   | S. Bandaranayake/<br>M. Kong | M. Kong     |

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### APPENDICES

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# 1 Introduction

## 1.1 Introduction

Ason Group has been engaged by Richard Crookes Constructions (RCC) to prepare a Construction Traffic Management Plan (CTMP) in relation to the construction activities associated with the proposed industrial development (the Proposal) at 28 McPherson Street, Banksmeadow (the Site).

This CTMP details the measures and strategies to be undertaken during construction to minimise the effects of work on the surrounding road network and to ensure the safety and efficiency of the community, all workers, and all road users.

## 1.2 Project Representatives & Stakeholders

This report has been prepared by a consultant who holds a SafeWork NSW Work Health & Safety Traffic Control Work card, accredited for the 'Prepare a Work Zone Traffic Management Plan'. Details of the accredited consultant are provided below:

- Siew Hwee Kong                      Ticket No. TCT1030659

This CTMP has been prepared to meet the requirements outlined in Appendix A and Appendix E, Section E.2 of the Transport for NSW Traffic Control at Work Sites Technical Manual (Issue No. 6.1, 2022).

Through the preparation of this CTMP, the project representatives and stakeholders who have been consulted in the development of the traffic management strategy are listed in **Table 1**.

**TABLE 1: PROJECT REPRESENTATIVES AND STAKEHOLDERS**

| Name             | Organisation                                  | Role   |
|------------------|---|--|
| Tom Bertwistle   | Department of Planning and Environment (DPE)  | Senior Environmental Assessment Officer - Industry Assessments |
| Maryam Yadak     | Transport for NSW (Customer Journey Planning) | Precinct Manager   |
| Matthew Hammond  | Bayside Council                               | Urban Planner  |
| Ben Taylor       | RCC   | Project Manager  |
| Maruthi Dhurjati | RCC   | Senior Design Manager  |
| Dora Choi        | Ason Group                                    | Principal Lead: Traffic Management & Operations                |
| Meg Kong         | Ason Group                                    | Principal: Traffic Management & Operations                     |

## 1.3 Authority Requirements

---

This CTMP forms part of this process and outlines the proposed construction traffic management arrangements associated with the construction phases for the development in accordance with the following conditions no. B1, B2, B8 and B37 of the approved application: SSD-9691, dated 8 April 2021 as follows:

### *Construction Traffic Management Plan*

*B1. Prior to the commencement of construction, the Applicant must prepare a Construction Traffic Management Plan for the development to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by Condition C2 and must:*

- (a) be prepared by a suitably qualified and experienced person(s).*
- (b) be prepared in consultation with Council and TfNSW.*
- (c) detail the measures that are to be implemented to ensure road safety and network efficiency during construction.*
- (d) detail heavy vehicle routes, access and parking arrangements.*
- (e) include a Driver Code of Conduct to:*
  - (i) minimise the impacts of earthworks and construction on the local and regional road network.*
  - (ii) minimise conflicts with other road users.*
  - (iii) minimise road traffic noise; and*
  - (iv) ensure truck drivers use specified routes.*
- (f) include a program to monitor the effectiveness of these measures; and*
- (g) if necessary, detail procedures for notifying residents and the community (including local schools), of any potential disruptions to routes.*

### *B2. The Applicant must:*

- (a) not commence construction until the Construction Traffic Management Plan required by Condition B1 is approved by the Planning Secretary; and*
- (b) implement the most recent version of the Construction Traffic Management Plan approved by the Planning Secretary for the duration of construction.*

*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 park in nearby public and residential streets or public parking facilities.*

This CTMP forms part of the CEMP and outlines the proposed construction traffic management arrangements associated with the construction phases for the development.

RCC will not commence construction until this CTMP is approved by the Planning Secretary; and implement the most recent version of the Construction Traffic Management Plan approved by the Planning Secretary for the duration of construction.

**TABLE 2: RESPONSE TO SSD-9691 CONDITIONS NO. B1 AND B2**

| Condition No. | Condition   | Response                                     |
|---------------|---|--|
| <b>B1</b>     | <i>Prior to the commencement of construction, the Applicant must prepare a Construction Traffic Management Plan for the development to the satisfaction of the Planning Secretary. The plan must form part of the CEMP required by Condition C2 and must:</i>   |  |
| <b>a)</b>     | <i>(a) be prepared by a suitably qualified and experienced person(s);</i>   | See <b>Section 1.2.</b>                      |
| <b>b)</b>     | <i>(b) be prepared in consultation with Council and TfNSW;</i>  | See <b>Sections 1.2, 1.6 and Appendix A.</b> |
| <b>c)</b>     | <i>(c) detail the measures that are to be implemented to ensure road safety and network efficiency during construction;</i>   | See <b>Sections 2.3, 3.3 and Appendix E.</b> |
| <b>d)</b>     | <i>(d) detail heavy vehicle routes, access and parking arrangements;</i>  | See <b>Sections 2.3, 2.7 and 3.2.</b>        |
| <b>e)</b>     | <i>(e) include a Driver Code of Conduct to:</i><br><i>(i) minimise the impacts of earthworks and construction on the local and regional road network.</i><br><i>(ii) minimise conflicts with other road users.</i><br><i>(iii) minimise road traffic noise; and</i><br><i>(iv) ensure truck drivers use specified routes;</i> | See <b>Section 3.1 and Appendix E.</b>       |
| <b>f)</b>     | <i>(f) include a program to monitor the effectiveness of these measures; and</i>  | See <b>Section 4.1.</b>                      |
| <b>g)</b>     | <i>(g) if necessary, detail procedures for notifying residents and the community (including local schools), of any potential disruptions to routes.</i>   | See <b>Section 3.9.</b>                      |
| <b>B2</b>     | <i>The Applicant must:</i>  |  |
| <b>a)</b>     | <i>not commence construction until the Construction Traffic Management Plan required by Condition B1 is approved by the Planning Secretary; and</i>   | See <b>Section 1.3.</b>                      |
| <b>b)</b>     | <i>implement the most recent version of the Construction Traffic Management Plan approved by the Planning Secretary for the duration of construction.</i>   | See <b>Section 1.3.</b>                      |
| <b>B8</b>     | <i>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 park in nearby public and residential streets or public parking facilities.</i>   | See <b>Section 3.2.</b>                      |

## 1.4 Project Details

---

The Proposal envisages the construction of 3 warehouse buildings with 3 ancillary offices. The development has a total gross floor area (GFA) of 19,695 m<sup>2</sup> of which includes a warehouse use GFA of 18,505 m<sup>2</sup> and an office use GFA of 1,190 m<sup>2</sup>. In detail, the development will comprise of:

- Warehouse Building 1A:
  - 4,270 m<sup>2</sup> of Warehouse GFA
  - 340 m<sup>2</sup> of Office Space GFA (2 levels)
- Warehouse Building 1B:
  - 4,560 m<sup>2</sup> of Warehouse GFA
  - 330 m<sup>2</sup> of Office Space GFA (2 levels)
- Warehouse Building 2:
  - 9,675 m<sup>2</sup> of Warehouse GFA
  - 520 m<sup>2</sup> of Office Space GFA (2 levels)

The Site is proposed to continue to operate 24-hour, 7-day basis as approved under SSDA 9691. The proposal includes a total of 116 car parking spaces, including 3 accessible spaces

### 1.4.1 Site Location

---

The Site is located within the Bayside LGA, approximately 14 kilometres south of Sydney CBD and adjacent to the neighbouring suburbs of Botany and Port Botany. Port Botany acts as a vital industry and trade corridor for Sydney, therefore, is well-placed for a development of this nature. The Site has a frontage to McPherson Street to the south and Nant Street to the west.

The Site is bound by industrial land and warehouse facilities in each direction. The Site is currently zoned IN1 - General Industrial under the Three Ports LEP 2013 and is currently vacant. The site is legally known as Lot 9 in DP 1205673. The location of the Site is presented in **Figure 1**.





Figure 1: Site Location and Surrounding Roads

## 1.5 Site Related Data

### 1.5.1 Road Details

The key roads surrounding the Site are identified in **Figure 2** and summarised in **Table 3**.

**TABLE 3: LOCAL ROAD NETWORK**

| Road Name                           | Section                        | Speed Limit | Parking              | Traffic Volumes | Road Classification |
|-------------------------------------|--------------------------------|-------------|----------------------|-----------------|---------------------|
| <b>Foreshore Road / Botany Road</b> | Sirius Road & Beauchamp Road   | 70 km/h     | No                   | ~ 10,000 vpd    | Urban               |
| <b>Botany Road</b>                  | Hill St & Foreshore Road       | 50 km/h     | Unrestricted Parking | ~ 10,000 vpd    | Urban               |
| <b>Hills Street</b>                 | McPherson Street & Botany Road | 50 km/h     | Unrestricted Parking | < 5,000 vpd     | Urban               |
| <b>McPherson Street</b>             | Nant St                        | 50 km/h     | Unrestricted Parking | < 5,000 vpd     | Urban               |



|                     |                                |         |                      |             |       |
|---------------------|--------------------------------|---------|----------------------|-------------|-------|
| <b>Exell Street</b> | McPherson Street & Botany Road | 50 km/h | Unrestricted Parking | < 5,000 vpd | Urban |
|---------------------|--------------------------------|---------|----------------------|-------------|-------|

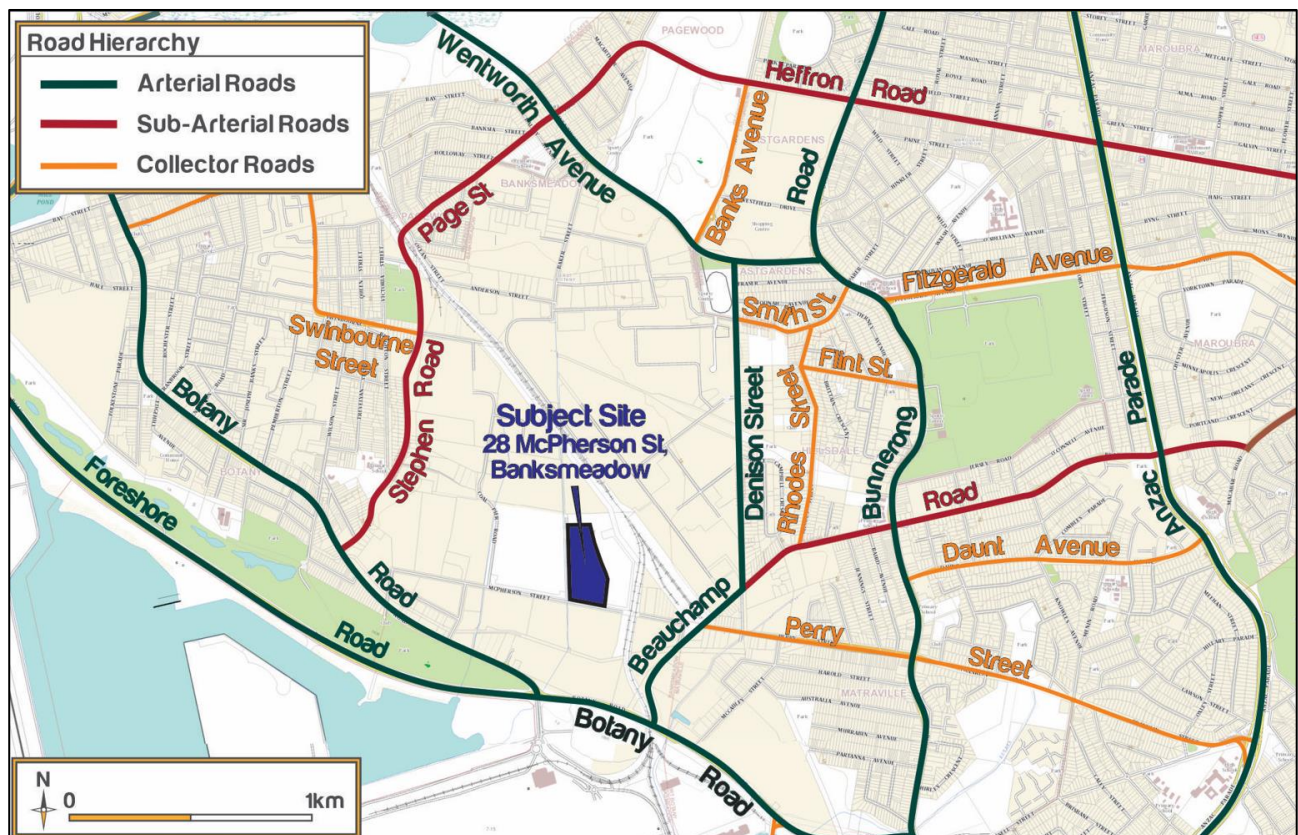


Figure 2: Road Hierarchy

### 1.5.2 Crash History

A review of the TfNSW Centre for Road Safety has been undertaken to analyse the crash history around the Site. The locations where crashes were recorded (between 2017 to 2021) are shown in **Figure 3** and **Table 4**.

Of those crashes, the ones that occurred on the Site frontage roads are highlighted below.

| TABLE 4: CRASH HISTORY |          |                        |                                     |
|------------------------|----------|------------------------|-------------------------------------|
| Year                   | Crash ID | Degree of Crash        | RUM Code (Description) <sup>1</sup> |
| 2016                   | 1110872  | Non-casualty (towaway) | 49 – Other manoeuvring              |
| 2017                   | 1134853  | Moderate Injury        | 37 – Left turn sideswipe            |
| 2018                   | 1162993  | Non-casualty (towaway) | 63 – Vehicle door                   |
| 2020                   | 1233648  | Non-casualty (towaway) | 71 – Off-road left to object        |
| 2020                   | 1236878  | Non-casualty (towaway) | 79 – Other straight                 |

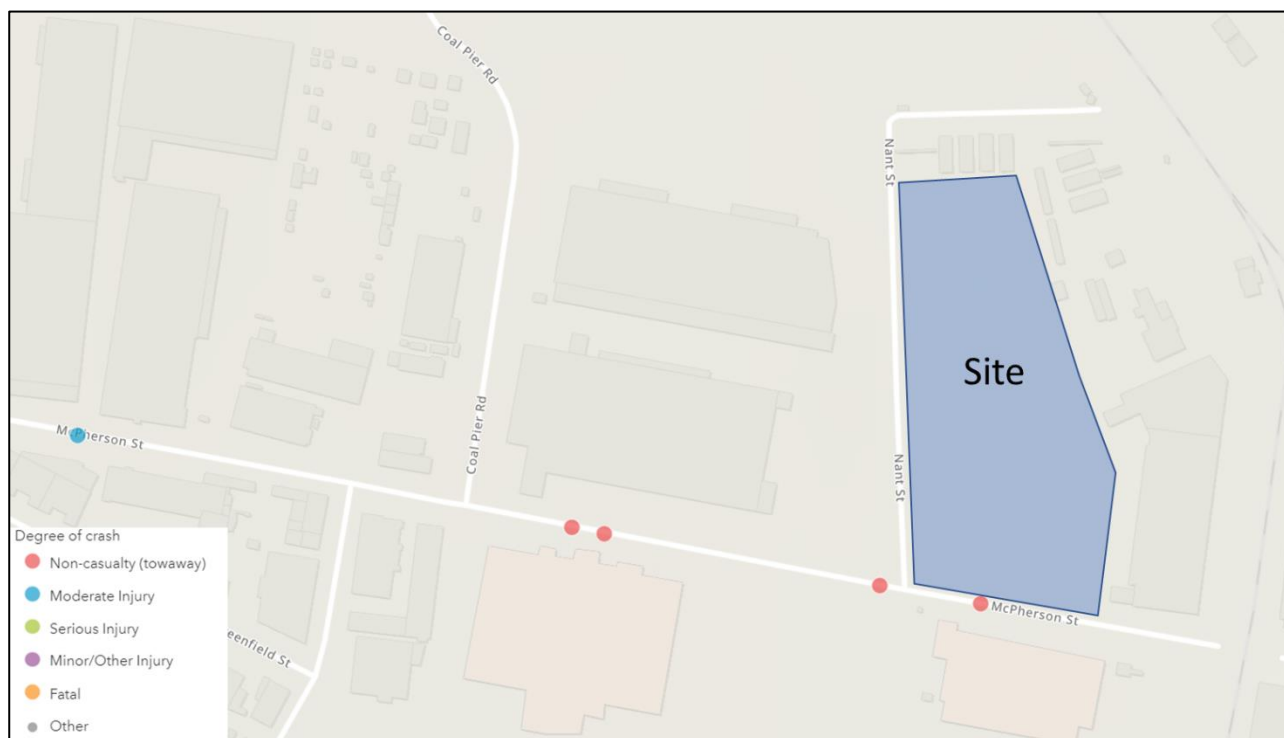


Figure 3: 2017 to 2021 Crash History Surrounding the Site

Having regard to the above, there have been 5 crashes over the last 5-year reporting period along McPherson Street. Although there have been recorded crashes within McPherson Street, they are infrequent and not concentrated in a particular area, therefore, there is no adverse risk present in the adjoining road network.

### 1.5.3 Vulnerable Road Users

Vulnerable road users (VRU) are road users not in a car, bus, or truck. In the event of a crash, VRUs as shown in **Table 4**, have little to no protection from crash forces, therefore, need to be addressed within this CTMP.

**TABLE 5: PUBLIC AND ACTIVE TRANSPORT**

| Road Name                           | Pedestrian   | Cycling                        | Public Transport                   |
|-------------------------------------|--|--------------------------------|------------------------------------|
| <b>Foreshore Road / Botany Road</b> | Yes<br>Along northern side<br>Footpath Width = 2.0m      | No dedicated cycle/shared path | Yes<br>Bus stops for bus route 309 |
| <b>Botany Road</b>                  | Yes<br>Along the northern side:<br>Footpath Width = 2.0m | No dedicated cycle/shared path | Yes<br>Bus stops for bus route 309 |
| <b>Hills Street</b>                 | Yes  | No dedicated cycle/shared path | No                                 |

|                         |  |                                |    |
|-------------------------|--|--------------------------------|----|
|                         | along the eastern and western sides:<br>Footpath width = 1.2m          |                                |    |
| <b>McPherson Street</b> | Yes<br>along the northern and southern sides:<br>Footpath width = 1.2m | No dedicated cycle/shared path | No |
| <b>Exell Street</b>     | Yes<br>along the eastern and western sides:<br>Footpath width = 1.2m   | No dedicated cycle/shared path | No |

## 1.6 Stakeholder Engagement

### 1.6.1 Pre-Submission Consultation

As per Condition B1, RCC have liaised with Bayside Council (Council) and Transport for New South Wales (TfNSW) regarding the contents of this CTMP.

Details of the consultation with Council and TfNSW are presented in **Appendix A**.

### 1.6.2 Stakeholder Engagement Plan and Notification

The consultation actions are shown in **Table 6**.

| <b>TABLE 6: STAKEHOLDER CONSULTATION ACTIONS</b>    |  |
|---|--|
| <b>Stakeholder</b>                                  | <b>Action</b>  |
| <b>TfNSW</b>  | RCC has submitted final CTMP to stakeholder for review and comments. Refer to Appendix A for consultation details and endorsement.                           |
| <b>Bayside Council</b>                              | RCC has submitted final CTMP to stakeholder for review and comments. Refer to Appendix A for consultation details and Ason's response to Council's comments. |
| <b>Department of Planning and Environment (DPE)</b> | RCC to submit this updated final CTMP to DPE for approval.   |

### 1.6.3 Stakeholder Notification

---

In the event that any disruptions to roadways / footpaths occur as a result of construction works, the procedure outlined below is to be followed:

- If any future disruptions to roadways / footpaths are required, Council / TfNSW is to be notified first and depending on the extent of the disruption RCC is to notify affected property occupiers using letter drops and Variable Message Sign (VMS)
- If any unforeseen disruptions to roadways / footpaths occur, Council / TfNSW is to be notified first and depending on the extent of the disruption RCC is to notify affected property occupiers via traffic controller and Variable Message Sign (VMS)
- In the event that heavy vehicle damage to Council / TfNSW assets / infrastructure, contractors will notify Council's Traffic & Transport team and / or Assets Branch.

## 2 Proposed Works and Staging

### 2.1 Proposed Construction Activity / Works

The proposed construction activities are part of the detailed construction phasing, and as such, this CTMP shall outline the works involved and the applicable traffic management measures.

**TABLE 7: STAGES OF CONSTRUCTION**

| Stage | Stage                | Timeline                |
|-------|----------------------|-------------------------|
| 1     | Excavation / Piling  | 15.12.22 until 26.04.23 |
| 2     | General Construction | 20.01.23 until 19.04.24 |
| 3     | Concrete Pours       | 02.02.23 until 30.06.23 |
| 4     | External Finishes    | 20.01.23 until 19.04.24 |

#### 2.1.1 Stage 1

**TABLE 8: STAGE 1 CONSTRUCTION DETAILS**

| Criteria   | Response   |
|--|--|
| Description of Key Activities                                    | General earthworks, construction of the temporary accesses, and piling                       |
| Max. Vehicle Size  | 18.1m Truck and Dog  |
| Vehicle Movement Frequency                                       | Maximum 20 light vehicle movements / day<br>+<br>Maximum of 22 heavy vehicle movements / day |
| Truck Access Requirements  | Traffic controller required  |
| Vehicle access / egress in a forward direction (Y / N)           | Y  |
| Out of Hours Deliveries (Y/N)                                    | No – refer to Section 2.2 for construction hours.<br>Deliveries to align with these hours.   |
| Contractor Parking   | Up to 80 spaces provided to the western edge of the Site                                     |
| Pedestrian Control   | Fencing shall be provided at all boundaries of the Site                                      |
| Public Transport Services Affected                               | N  |
| Road Occupancy Requirements<br>(if yes, provide further details) | N  |
| Lane or Footpath Closures<br>(if yes, provide further details)   | N  |
| Traffic Control Plan   | see <b>Appendix B</b> for applicable TGS   |

## 2.1.2 Stage 2

**TABLE 9: STAGE 2 CONSTRUCTION DETAILS**

| Criteria  | Response   |
|---|--|
| Description of Key Activities                                 | General Construction   |
| Max. Vehicle Size   | 20.0m Articulated Vehicle (AV)   |
| Vehicle Movement Frequency                                    | Maximum 20 light vehicle movements / day<br>+ Maximum of 6 heavy vehicle movements / day |
| Truck Access Requirements                                     | Traffic controller will be required  |
| Vehicle access / egress in a forward direction (Y / N)        | Y  |
| Out of Hours Deliveries (Y/N)                                 | No – refer to Section 2.2 for construction hours. Deliveries to align with these hours.  |
| Contractor Parking  | Up to 80 spaces provided to the western edge of the Site                                 |
| Pedestrian Control  | N  |
| Public Transport Services Affected                            | N  |
| Road Occupancy Requirements (if yes, provide further details) | N  |
| Lane or Footpath Closures (if yes, provide further details)   | N  |
| Traffic Control Plan  | see <b>Appendix B</b> for applicable TGS   |

## 2.1.3 Stage 3

**TABLE 10: STAGE 3 CONSTRUCTION DETAILS**

| Criteria   | Response  |
|--|---|
| Description of Key Activities                          | Concrete Pours  |
| Max. Vehicle Size                                      | 8.8m Concrete Agitators   |
| Vehicle Movement Frequency                             | Maximum 20 light vehicle movements / day<br>+ Maximum of 30 heavy vehicle movements / day |
| Truck Access Requirements                              | N   |
| Vehicle access / egress in a forward direction (Y / N) | Y   |
| Out of Hours Deliveries (Y/N)                          | No – refer to Section 2.2 for construction hours. Deliveries to align with these hours.   |
| Contractor Parking                                     | Up to 80 spaces provided to the western edge of the Site                                  |
| Pedestrian Control                                     | N   |
| Public Transport Services Affected                     | N   |

|  |  |
|--|--|
| Road Occupancy Requirements<br>(if yes, provide further details) | N  |
| Lane or Footpath Closures<br>(if yes, provide further details)   | N  |
| Traffic Control Plan   | see <b>Appendix B</b> for applicable TGS |

## 2.1.4 Stage 4

**TABLE 11: STAGE 4 CONSTRUCTION DETAILS**

| Criteria   | Response   |
|--|--|
| Description of Key Activities                                    | External Finishes  |
| Max. Vehicle Size  | 20.0m AV   |
| Vehicle Movement Frequency                                       | Maximum 20 light vehicle movements / day<br>+ Maximum of 6 heavy vehicle movements / day   |
| Truck Access Requirements  | Traffic controller will be required  |
| Vehicle access / egress in a forward direction<br>(Y / N)        | Y  |
| Out of Hours Deliveries (Y/N)                                    | No – refer to Section 2.2 for construction hours.<br>Deliveries to align with these hours. |
| Contractor Parking   | Up to 80 spaces provided to the western edge of the Site                                   |
| Pedestrian Control   | N  |
| Public Transport Services Affected                               | N  |
| Road Occupancy Requirements<br>(if yes, provide further details) | N  |
| Lane or Footpath Closures<br>(if yes, provide further details)   | N  |
| Traffic Control Plan   | see <b>Appendix B</b> for applicable TGS   |

## 2.2 Construction Hours

As per Condition B37 of the approved SSD-9601, **Table 11** indicates the approved construction hours to be carried out on a building site.

**TABLE 12: HOURS OF WORK**

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



|  |                          |                           |
|--|--------------------------|---------------------------|
|  | Sunday & Public Holidays | No Work to be carried out |
|--|--------------------------|---------------------------|

It is anticipated that construction works, and deliveries will not be conducted or undertaken outside of the hours outlined above. Should out-of-work hours be required, RCC will lodge an application for a Request to Carry Out Work Outside Standard Permitted Hours with Council to seek approval.

## 2.3 Truck Routes

It is proposed that all construction vehicles would enter and exit the Site via the main routes shown in **Figure 4**.

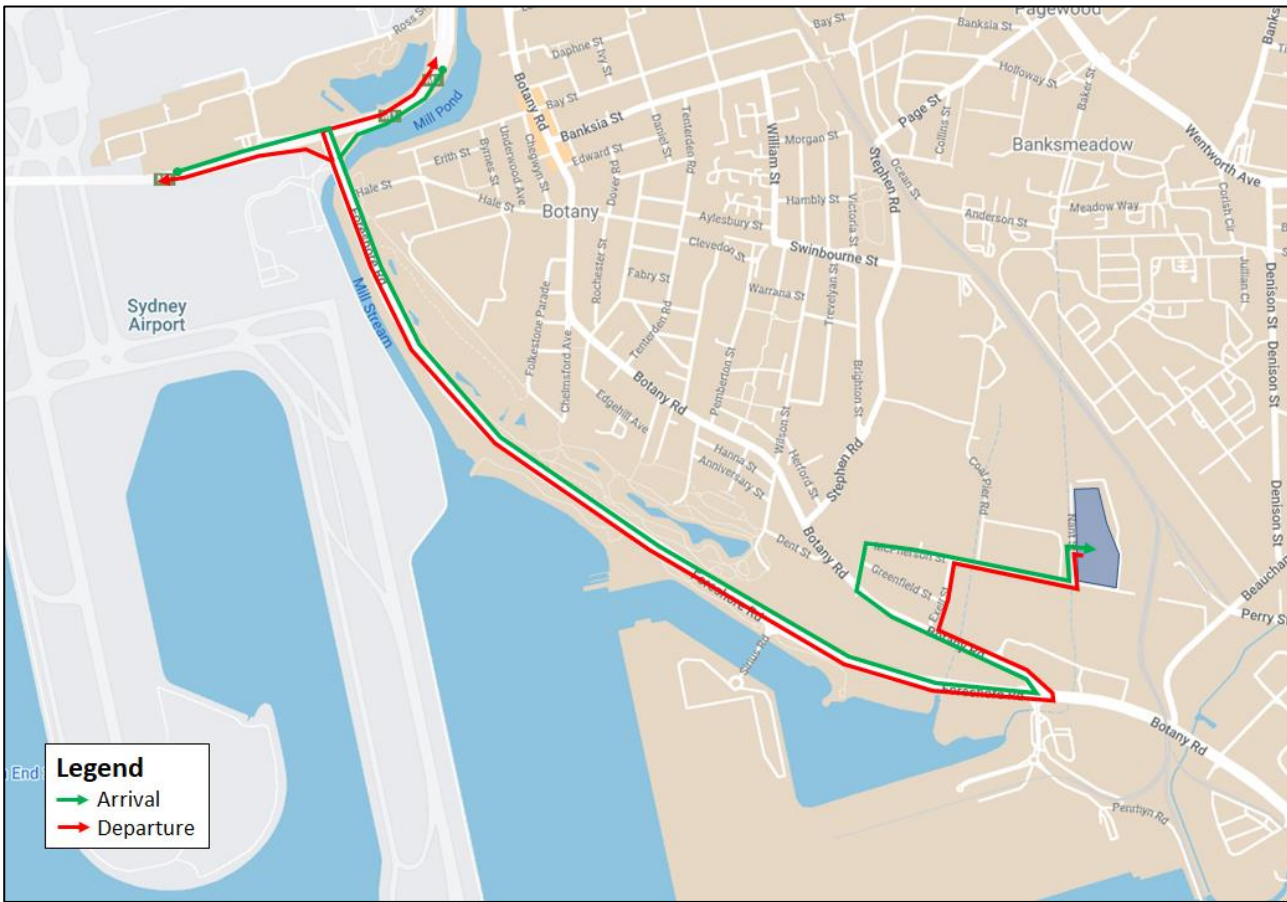


Figure 4: Construction Vehicle Route Map

Truck movements would be scheduled to occur outside of peak traffic periods when possible - AM (7 am-9 am) and PM (4 pm-6 pm) to minimise traffic (pedestrian, bus and traffic flows) impacts and associated road network delays. Construction truck drivers will be reminded that there should be no idling on and the use of Nant Street and McPherson Street as TMA. With the above measures, it is not expected that this level of traffic movement would create any adverse impact on the surrounding road network.

## 2.4 Temporary Traffic Management Method

---

Traffic management shall be undertaken in accordance with the methodology outlined within the TGS, **Appendix B**. Traffic and non-vehicle-related road users are expected to be directed around the worksite in order to physically separate the road user from any hazards within the worksite.

## 2.5 Risk Assessment

---

A risk assessment is aimed to identify the hazards and risks associated with the works. The purpose of this risk assessment is to determine the controls required for the protection of road workers and road users. A Risk assessment has been completed and is attached in **Appendix C**.

## 2.6 Site Contact

---

The nominated site contact from RCC is:

Maruthi Dhurjati  
Senior Design Manager  
dhurjatim@richardcrookes.com.au  
0437 422 405

## 2.7 Site Access

---

During all stages of construction, access to the site will be via the 3 proposed access gates (**Figure 5**) along the western frontage of the Site along Nant Street. The following describes the access configuration for all construction vehicles:

- Vehicles up to 18.1m Truck and Dog:
  - Ingress: The vehicle will drive forward along McPherson Street, turn left onto Nant Street and right into the access gates in a forward direction.
  - Egress: The vehicle will turn left out of the Site onto Nant Street and right onto McPherson Street in a forward direction.
- Vehicles up to 20.0m AVs:
  - Ingress: The vehicle will drive in a forward direction along McPherson Street, pass Nant Street and reverse into Nant Street and the site accesses under the management of traffic controller.
  - Egress: The vehicle shall turn left out of the Site onto Nant Street and right onto McPherson Street in a forward direction.



Figure 5: Proposed Site Access Gates and Construction Site Layout

The above access configuration is demonstrated in the swept path assessments provided in **Appendix D**.

## 2.8 Works Zone

---

No Works Zone is proposed. All civil and construction works will take place within the work site.

In the event that the implementation of any temporary traffic control measures on public road/road related area RCC will obtain a Road Occupancy Permit (ROP) from Council. If excavation and/or road opening works on a public road is required, RCC will obtain a Road Opening Permit.



## 3 Traffic Management

### 3.1 Vehicle Management

---

In accordance with TfNSW requirements, all vehicles transporting loose materials will have the entire load covered and/or secured to prevent any large items, excess dust, or dirt particles from depositing onto the roadway during travel to and from the site. All drivers are to be familiar with the Driver Code of Conduct before attending the Site. A copy of the Code is included in **Appendix E**.

All subcontractors must be inducted by the lead contractor to ensure that the procedures are met for all vehicles entering and exiting the construction site. The lead contractors will monitor the roads leading to and from the site and take all necessary steps to rectify any road deposits caused by site vehicles.

Vehicle movements to, from and within the site shall do so in a manner which does not create unreasonable or unnecessary noise or vibration. No tracked vehicles will be permitted or required on any paved roads. Public roads and access points will not be obstructed by any materials, vehicles, refuse skips, or the like, under any circumstances.

At no stage shall un-planned queueing occur on the public road network. It is expected that a schedule for deliveries of materials and goods will be established prior to that day, with Traffic Controller maintain radio contact with construction vehicles at all times. This schedule shall be prepared by utilising construction traffic management software (such as Mooven or other similar products).

### 3.2 Contractor Parking

---

It is anticipated that there will be a maximum of 80 workers on-site during the construction stage.

With reference to **Figure 5**, there will adequate off-street parking within the the western edge of the Site to accommodate the parking demand for all workers.

While there is ample on-site car parking, construction workers will be encouraged to carpool or use public buses to access the site.

A tool drop-off and storage facility will be provided within the site office. This would allow tradespeople to drop off and store their tools and machinery, allowing them to use public transport to travel to/ from the site on a daily basis. This will be incorporated into the site induction program.

### 3.3 Pedestrian Management

---

During the building construction activities, pedestrian movements will be maintained along the McPherson Street and Nant Street frontages of the Site. Traffic controls would need to be in accordance with AS1742.3 and TfNSW 'Traffic Control at Worksites' manual at all times.

### 3.4 Fencing Requirements

---

A mix of existing fencing and ATF fencing with shade cloth covering will be utilised 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 along the Nant Street frontage and shall be closed at all times outside of the permitted construction hours.

### 3.5 Traffic Control

---

Site-specific TGS's have been developed as required, to reflect specific work activities and/or changes to road conditions. See **Appendix B**.

### 3.6 Authorised Traffic Controller

---

Authorised traffic controller will be present as required throughout the project.

Whilst on Site, the responsibilities include:

- Implementation of the Traffic Guidance Scheme, and
- Supervision of all vehicle movements during truck and dog trailer and AV arrival/departure at all times.

Refer to **Appendix B** for the Traffic Guidance Scheme for details of the proposed location of traffic controller and associated traffic management measures.

### 3.7 Driver Code of Conduct

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All drivers shall adhere to the Driver Code of Conduct, outlined in **Appendix E**.

### 3.8 Worker Induction

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All workers and subcontractors engaged on-site would be required to complete a site induction. The induction should include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, work, health, and safety (WHS), driver protocols and emergency procedures.

Any workers required to undertake works or traffic control within the public domain would be suitably trained and covered by adequate and appropriate insurances.

## 3.9 Public Notifications

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RCC would prepare notification letters, under the approval of Council, which would be delivered to adjoining property owners, residents and the community (including local schools), of any potential disruptions to routes and to advise of the construction works and timeframes for completion of each phase of the process.

## 3.10 Impact on On-Street Parking

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To accommodate the turning paths of egressing truck and dog and AV, 5 unrestricted on-street parking spaces on the southern side of McPherson Street near Nant Street will be temporarily removed during the construction hours. Outside of the construction hours, these spaces would be maintained. Based on the on-site observation, the parking demand along McPherson Street is medium. As such, the removal of the on-street spaces is not anticipated to have an adverse impact on parking in the area.

## 4 Monitoring and Review

### 4.1 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. Review of the CTMP shall occur monthly. All and any reviews undertaken should be documented, however key considerations regarding the review of the CTMP shall be:

- Tracking deliveries against the volumes outlined within report. Deliveries will be tracked against approved volumes and will keep a vehicle log - including Rego & time of entry - for the purpose of assessing the effectiveness of these monitoring programs.
- To identify any shortfalls and develop an updated action plan to address issues that may arise during construction (Parking and access issues)
- To ensure TGS's 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 to ensure all loads are entering and leaving site covered as outlined within this CTMP.
- A Dilapidation report shall be undertaken every periodically to assess the condition of the road and note whether there has been any reduction in quality of the road as result of construction vehicles.

The development of a program to monitor the effectiveness of this CTMP shall be established by RCC. 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.

The roadway (including footpath) must be kept in a serviceable condition for the duration of construction. At the direction of Council, undertake remedial treatments such as patching at no cost to Council.

### 4.2 Work Site Inspections, Recording and Reporting

Recording and reporting of the monitoring programs shall be done in accordance with Section E.3, E.4 and E.5 of the TCAWs Manual. As such, the structure, schedule and frequency of these activities have been considered and identified.

To inspect, review and audit the temporary traffic management (TTM) arrangements implemented on site, the following actions are to be undertaken by suitably qualified personnel in accordance with TCAWS 6.1 requirement during all phases of construction, being:

**TABLE 13: EXAMPLE REVIEW OF ACTIVITIES**

| Activity           |                              |                             | Frequency or Details |
|--------------------|------------------------------|-----------------------------|----------------------|
| Shift Inspections  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |                      |
| Weekly Inspections | <input type="checkbox"/> Yes | <input type="checkbox"/> No |                      |
| TMP Review         | <input type="checkbox"/> Yes | <input type="checkbox"/> No |                      |
| Road Safety Audit  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |                      |
| Other              | <input type="checkbox"/> Yes | <input type="checkbox"/> No |                      |
| Comments           |                              |                             |                      |

Given that the length of construction and that no regular works have been proposed outside of the site, monthly TTM inspections is considered to be sufficient.



## 4.3 Contingency Plan

A contingency plan shall be established by RCC and is to be included in the overarching CEMP. Notwithstanding, **Table 14** 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 14: CONTINGENCY PLAN**

| Risk                   |          | Condition Green  | Condition Amber  | Condition Red  |
|------------------------|----------|--|--|--|
| Construction Movements | Trigger  | Construction traffic volume is in accordance with permissible and programmed volume and time constraints | Construction traffic volumes exceeds programmed volume but is within permissible volume constraints  | Construction traffic volumes exceeds permissible volume and time constraints   |
|                        | Response | No response required   | Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: <ul style="list-style-type: none"> <li>Review CTMP and update where necessary</li> <li>Provide additional training.</li> </ul>                             | As with Condition Amber, plus; <ul style="list-style-type: none"> <li>If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies.</li> <li>Stop all transportation into and out of the site.</li> </ul>  |
|                        | Trigger  | No construction vehicle movement during peak periods   | Construction vehicle movement close to peak periods  | Construction vehicle movement during peak periods  |
|                        | Response | No response required<br>Continue monitoring program  | Review and investigate construction activities, and where appropriate, implement additional remediation measures such as: <ul style="list-style-type: none"> <li>Provide additional training (including toolbox talks and further notification of Driver Code of Conduct)</li> </ul> | As with Condition Amber, plus; <ul style="list-style-type: none"> <li>If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies.</li> <li>Stop all transportation into and out of the site.</li> <li>Review CTMP and update where necessary.</li> </ul> |
| 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   | As with Condition Amber, plus <ul style="list-style-type: none"> <li>Review and investigate</li> </ul>   |

|                                |          |  |   |   |
|--------------------------------|----------|--|---|---|
|                                |          |  | should be provided with additional training and an extra copy of the Driver Code of Conduct   | <p>construction activities.</p> <ul style="list-style-type: none"> <li>• If it is concluded that construction activities were directly responsible for the exceedance, submit an incident report to government agencies.</li> <li>• Temporary halting of activities and resuming when conditions have improved.</li> <li>• Stop all transportation into and out of the site.</li> <li>• Review CTMP and update where necessary, provide additional training.</li> </ul> |
| <b>Noise</b>                   | 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.  |
| <b>Traffic Guidance Scheme</b> | Trigger  | No observable issues                                 | Minor inconsistencies with TGS to onsite operations   | Near miss or incident occurring regardless of / as a result of the TGS being implemented  |
|                                | Response | No response required                                 | Traffic Controller to amend TGS on site and to keep a log of all changes  | Stop work until an investigation has been undertaken into the incident. There are to be changes made to the TGS to ensure that the safety of all workers, students and civilians are catered for.   |
| <b>Dust</b>                    | 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: | <p>As with Condition Amber.</p> <ul style="list-style-type: none"> <li>• If it is concluded that construction activities were directly responsible for the exceedance, submit an incident</li> </ul>  |

|  |  |  |  |   |
|--|--|--|--|---|
|  |  |  | <ul style="list-style-type: none"> <li>• Deployment of additional water sprays</li> <li>• Relocation or modification of dust-generating sources</li> <li>• Check condition of vibrating grids to ensure they are functioning correctly.</li> <li>• Temporary halting of activities and resuming when conditions have improved</li> </ul> | <ul style="list-style-type: none"> <li>• report to government agencies.</li> <li>• Implement relevant responses and undertake immediate review to avoid such occurrence in future.</li> </ul> |
|--|--|--|--|---|

# Appendix A. Consultation with TfNSW and Bayside Council

## PRE-APPROVAL CONSULTATION RECORD 01

|  |   |
|--|---|
| Identified Party to Consult:                     | Bayside Council   |
| Consultation type:                               | E-mail correspondence and phone calls   |
| When is consultation required?                   | Prior to the commencement of construction.  |
| Why?   | To consult with Council regarding a review and comments of this document resulting in any changes needing to be made.   |
| When was consultation scheduled/held?            | 23 <sup>rd</sup> December 2022<br>10 <sup>th</sup> January 2023<br>17 <sup>th</sup> January 2023<br>24 <sup>th</sup> January 2023<br>7 <sup>th</sup> February 2023<br>14 <sup>th</sup> February 2023  |
| Identify persons and positions who were involved | <b>Bayside Council</b> – Shayal Singh (Senior Traffic and Road Safety Engineer), Karim Elazar (Public Domain Coordinator), Sarah Mijoski (Administration Officer), Matthew Hammond (Urban Planner)<br><br><b>Ason</b> – Meg Kong (Principal Traffic Engineer), Sadeepth Bandaranayake (Traffic Engineer)  |
| Provide the details of the consultation          | <ul style="list-style-type: none"> <li>23<sup>rd</sup> December 2022 – Email correspondence, Issue II of the CTMP sent to <a href="mailto:council@bayside.nsw.gov.au">council@bayside.nsw.gov.au</a> and Shayal.Singh@bayside.nsw.gov.au</li> <li>10<sup>th</sup> January 2023 – Email correspondence, follow up email sent to <a href="mailto:council@bayside.nsw.gov.au">council@bayside.nsw.gov.au</a> and Shayal.Singh@bayside.nsw.gov.au regarding the status of the CTMP review</li> <li>10<sup>th</sup> January 2023 – Email correspondence, Shayal Singh from Council referring to the Strategic Planning team as the team responsible for reviewing the CTMP</li> <li>17<sup>th</sup> January 2023 – Phone call with Council customer service team, project details were provided to Council, confirmed they have received the CTMP report, asked to reissue the CTMP to <a href="mailto:council@bayside.nsw.gov.au">council@bayside.nsw.gov.au</a>, CTMP was reissued to <a href="mailto:council@bayside.nsw.gov.au">council@bayside.nsw.gov.au</a></li> <li>24<sup>th</sup> January 2023 – Phone call with Council customer service team, project details were provided to Council with Council informing of a future call back from the Strategic Planning team</li> <li>7<sup>th</sup> February 2023 – Phone call with Sarah Mijoski (Administration Officer) &amp; Karim Elazar (Public Domain coordinator) confirming Council has received and are reviewing the CTMP</li> <li>13<sup>th</sup> February 2023 – Phone call with Karim Elazar (Public Domain coordinator) confirming CTMP has been reviewed with no issues</li> <li>14<sup>th</sup> February 2023 – Response from Matthew Hammond (Urban Planner) confirming CTMP has been reviewed and</li> </ul> |

|  |   |
|--|---|
|  | endorsed, pending one comment regarding the Traffic Guidance Scheme |
|--|---|

## PRE-APPROVAL CONSULTATION RECORD 02

|   |  |
|---|--|
| <b>Identified Party to Consult:</b>                     | TfNSW  |
| <b>Consultation type:</b>                               | E-mail correspondence and phone calls  |
| <b>When is consultation required?</b>                   | Prior to the commencement of construction.   |
| <b>Why?</b>   | To consult with TfNSW regarding a review and comments of this document resulting in any changes needing to be made.  |
| <b>When was consultation scheduled/held?</b>            | 23 <sup>rd</sup> December 2022<br>17 <sup>th</sup> January 2023<br>9 <sup>th</sup> February 2023   |
| <b>Identify persons and positions who were involved</b> | <b>TfNSW</b> – Maryam Yadak (CCed in)<br><b>Ason</b> – Meg Kong (Principal Traffic Engineer), Sadeepth Bandaranayake (Traffic Engineer)  |
| <b>Provide the details of the consultation</b>          | <ul style="list-style-type: none"> <li>23<sup>rd</sup> December 2022 – Email correspondence, Issue II of the CTMP sent to <a href="mailto:development.CTMP.CJP@transport.nsw.gov.au">development.CTMP.CJP@transport.nsw.gov.au</a> and <a href="mailto:Developments.CJP@transport.nsw.gov.au">Developments.CJP@transport.nsw.gov.au</a></li> <li>17<sup>th</sup> January 2023 – Phone correspondence with TfNSW customer service team, they were unable to transfer the call. Left a message to await a return call.</li> <li>9<sup>th</sup> February 2023 – Email correspondence from TfNSW, with CTMP endorsement subject to conditions</li> </ul> |

## Sadeepth Bandaranayake

---

**From:** Shayal Singh <Shayal.Singh@bayside.nsw.gov.au>  
**Sent:** Tuesday, 10 January 2023 12:54 PM  
**To:** Sadeepth Bandaranayake  
**Subject:** RE: SSD-9691 - Condition B1 CTMP for 28 McPherson Street, Banksmeadow

Hi Sadeepth,

The traffic and road safety team does not assess CTMPs associated with developments. I'm not sure who has directed you to my team.

Please call 1300 581 299 and request to speak with the Strategic Planning team, alternatively you can receive advise from the Development Advisory Service on who to contact.

Kind Regards,  
Shayal



### Shayal Singh

Senior Traffic and Road Safety Engineer  
444-446 Princes Highway, Rockdale NSW 2216 ph: 9562 1618  
**E** [shayal.singh@bayside.nsw.gov.au](mailto:shayal.singh@bayside.nsw.gov.au) **W** [www.bayside.nsw.gov.au](http://www.bayside.nsw.gov.au)

---

**From:** Sadeepth Bandaranayake <sadeepth.bandaranayake@asongroup.com.au>  
**Sent:** Tuesday, 10 January 2023 12:47 PM  
**To:** Shayal Singh <Shayal.Singh@bayside.nsw.gov.au>; Bayside Council <Bayside.Council@bayside.nsw.gov.au>  
**Cc:** David Nguyen <David.Nguyen@bayside.nsw.gov.au>; Raj Shah <Raj.Shah@bayside.nsw.gov.au>; Benjamin Taylor <taylorbe@richardcrookes.com.au>; Dora Choi <dora.choi@asongroup.com.au>; Maruthi Dhurjati <dhurjatim@richardcrookes.com.au>; John Yonan <YonanJ@richardcrookes.com.au>; Gary Kenny <KennyG@richardcrookes.com.au>; Meg Kong <meg.kong@asongroup.com.au>  
**Subject:** RE: SSD-9691 - Condition B1 CTMP for 28 McPherson Street, Banksmeadow

Hi Shayal,

I hope you had a great new year and holiday period.

Meg is on annual leave until January 27<sup>th</sup> so I'll be handling this project. I'm just writing to follow up on the below from Meg regarding any comments or queries you may have had for the CTMP.

Kind regards,

### Sadeepth Bandaranayake

Traffic Engineer | Ason Group

**T:** +61 2 9083 6601 | **M:** 0490 074 048 | **E:** [sadeepth.bandaranayake@asongroup.com.au](mailto:sadeepth.bandaranayake@asongroup.com.au)  
**A:** Suite 17.02, Level 17, 1 Castlereagh Street, Sydney NSW 2000

---

**From:** Meg Kong <[meg.kong@asongroup.com.au](mailto:meg.kong@asongroup.com.au)>  
**Sent:** Friday, 23 December 2022 11:35 AM  
**To:** [Shayal.Singh@bayside.nsw.gov.au](mailto:Shayal.Singh@bayside.nsw.gov.au); [council@bayside.nsw.gov.au](mailto:council@bayside.nsw.gov.au)  
**Cc:** [David.Nguyen@bayside.nsw.gov.au](mailto:David.Nguyen@bayside.nsw.gov.au); [Raj.Shah@bayside.nsw.gov.au](mailto:Raj.Shah@bayside.nsw.gov.au); Benjamin Taylor <[taylorbe@richardcrookes.com.au](mailto:taylorbe@richardcrookes.com.au)>; Dora Choi <[dora.choi@asongroup.com.au](mailto:dora.choi@asongroup.com.au)>; Maruthi Dhurjati

<[dhurjatim@richardcrookes.com.au](mailto:dhurjatim@richardcrookes.com.au)>; John Yonan <[YonanJ@richardcrookes.com.au](mailto:YonanJ@richardcrookes.com.au)>; Gary Kenny  
<[KennyG@richardcrookes.com.au](mailto:KennyG@richardcrookes.com.au)>; Sadeepth Bandaranayake <[sadeepth.bandaranayake@asongroup.com.au](mailto:sadeepth.bandaranayake@asongroup.com.au)>

**Subject:** SSD-9691 - Condition B1 CTMP for 28 McPherson Street, Banksmeadow

Hi Shayal

Hope you are keeping well.

Condition B1 requires us to prepare the CTMP for 28 McPherson Street, Banksmeadow works in consultation with Council and TfNSW.

Please see attached CTMP for your review and comments.

Feel free to contact me if you have any questions.

Thank you in advance and wishing you a Merry Christmas and a Happy New Year.

Kind regards

**Meg Kong**

Principal - Traffic Management & Operations | Ason Group

**T:** +61 2 9083 6601 | **M:** +61 424 007 141 | **E:** [meg.kong@asongroup.com.au](mailto:meg.kong@asongroup.com.au)

**A:** Suite 17.02, Level 17, 1 Castlereagh Street, Sydney NSW 2000

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## Sadeepth Bandaranayake

---

**From:** Sadeepth Bandaranayake  
**Sent:** Tuesday, 17 January 2023 10:59 AM  
**To:** council@bayside.nsw.gov.au  
**Cc:** David.Nguyen@bayside.nsw.gov.au; Raj.Shah@bayside.nsw.gov.au; Benjamin Taylor; Dora Choi; Maruthi Dhurjati; John Yonan; Gary Kenny; Meg Kong  
**Subject:** RE: SSD-9691 - Condition B1 CTMP for 28 McPherson Street, Banksmeadow  
**Attachments:** P2186r01v2 CTMP 28 McPherson Street, Banksmeadow; Issue II.pdf

Attention Strategic Planning,

I refer to folder no. SS20/2787. Condition B1 requires us to prepare the CTMP for 28 McPherson Street, Banksmeadow works in consultation with Council and TfNSW.

Please see attached CTMP for your review and comments.

Feel free to contact me if you have any questions.

Kind regards,

**Sadeepth Bandaranayake**  
Traffic Engineer | Ason Group

**T:** +61 2 9083 6601 | **M:** 0490 074 048 | **E:** [sadeepth.bandaranayake@asongroup.com.au](mailto:sadeepth.bandaranayake@asongroup.com.au)  
**A:** Suite 17.02, Level 17, 1 Castlereagh Street, Sydney NSW 2000

---

**From:** Meg Kong <meg.kong@asongroup.com.au>  
**Sent:** Friday, 23 December 2022 11:35 AM  
**To:** Shayal.Singh@bayside.nsw.gov.au; council@bayside.nsw.gov.au  
**Cc:** David.Nguyen@bayside.nsw.gov.au; Raj.Shah@bayside.nsw.gov.au; Benjamin Taylor <taylorbe@richardcrookes.com.au>; Dora Choi <dora.choi@asongroup.com.au>; Maruthi Dhurjati <dhurjatim@richardcrookes.com.au>; John Yonan <YonanJ@richardcrookes.com.au>; Gary Kenny <KennyG@richardcrookes.com.au>; Sadeepth Bandaranayake <sadeepth.bandaranayake@asongroup.com.au>  
**Subject:** SSD-9691 - Condition B1 CTMP for 28 McPherson Street, Banksmeadow

Hi Shayal

Hope you are keeping well.

Condition B1 requires us to prepare the CTMP for 28 McPherson Street, Banksmeadow works in consultation with Council and TfNSW.

Please see attached CTMP for your review and comments.

Feel free to contact me if you have any questions.

Thank you in advance and wishing you a Merry Christmas and a Happy New Year.

Kind regards

**Meg Kong**  
Principal - Traffic Management & Operations | Ason Group

**T:** +61 2 9083 6601 | **M:** +61 424 007 141 | **E:** [meg.kong@asongroup.com.au](mailto:meg.kong@asongroup.com.au)  
**A:** Suite 17.02, Level 17, 1 Castlereagh Street, Sydney NSW 2000



## Sadeepth Bandaranayake

---

**From:** Meg Kong  
**Sent:** Tuesday, 14 February 2023 11:24 AM  
**To:** Matthew Hammond  
**Cc:** Robert Ristevski; Karim Elazar; Dora Choi; Sadeepth Bandaranayake; Tom Bertwistle  
**Subject:** RE: Orica Southlands - SSD-9500 - Post Approval Matters

Hi Matthew

Thanks for the comments.

We only have the traffic controller/truck, prepare to stop, and workers signs on the westbound approach and truck crossing sign on the eastbound approach as the traffic controller will only hold on the westbound traffic flow during truck arrival.



Hope the above clarify.

Feel free to contact me should you have any questions.

Kind regards

**Meg Kong**

Principal - Traffic Management & Operations | Ason Group

**T:** +61 2 9083 6601 | **M:** +61 424 007 141 | **E:** [meg.kong@asongroup.com.au](mailto:meg.kong@asongroup.com.au)

**A:** Suite 17.02, Level 17, 1 Castlereagh Street, Sydney NSW 2000

---

**From:** Matthew Hammond <Matthew.Hammond@bayside.nsw.gov.au>  
**Sent:** Tuesday, 14 February 2023 10:42 AM  
**To:** Tom Bertwistle <Thomas.Bertwistle@planning.nsw.gov.au>  
**Cc:** Robert Ristevski <Robert.Ristevski@bayside.nsw.gov.au>; Karim Elazar <Karim.Elazar@bayside.nsw.gov.au>; Dora Choi <dora.choi@asongroup.com.au>; Meg Kong <meg.kong@asongroup.com.au>; Sadeepth Bandaranayake <sadeepth.bandaranayake@asongroup.com.au>  
**Subject:** RE: Orica Southlands - SSD-9500 - Post Approval Matters

Hi Tom,

Thank you for your email and well wishes.

I can confirm that the Construction Traffic Management Plan (CTMP) was received by Bayside Council on Friday 23 December 2022.

I have discussed the CTMP with our traffic & road safety and public domain & referrals coordinators (CC'd), who have provided the following comment:

*"The Traffic Guidance Scheme (TGS) for Site Access as shown in Appendix B, only shows advanced warning signage for the eastbound approach to the site. This requires amendment to include advanced warning signage for the westbound approach.  
All other information provided within the CTMP – Ref: P2186r01v2, is deemed sufficient."*

Please let me know if you require any additional information.

Regards,



**Matthew Hammond** | Urban Planner  
444-446 Princes Highway, Rockdale NSW 2216  
**T** 02 9562 1621  
**E** [Matthew.Hammond@bayside.nsw.gov.au](mailto:Matthew.Hammond@bayside.nsw.gov.au) **W** [www.bayside.nsw.gov.au](http://www.bayside.nsw.gov.au)

---

**From:** Tom Bertwistle <[Thomas.Bertwistle@planning.nsw.gov.au](mailto:Thomas.Bertwistle@planning.nsw.gov.au)>  
**Sent:** Monday, 13 February 2023 10:42 AM  
**To:** Matthew Hammond <[Matthew.Hammond@bayside.nsw.gov.au](mailto:Matthew.Hammond@bayside.nsw.gov.au)>  
**Subject:** Orica Southlands - SSD-9500 - Post Approval Matters

Hi Matthew,

Hope you are well.

You have previously provided advice for previous Mods for this one, however I am wondering if you can help with advice on a post approval matter/direct me to someone in Council that may be working on it?

Conditions of consent require the Applicant to prepare a Construction Traffic Management Plan in consultation with Council. The Applicant has now provided the CTMP to the Department, however, they have stated they are yet to hear back from Council with any comments.

I wanted to check if the CTMP has been submitted to Council and if so, have any comments been issued to the Applicant? Any update on the status/info on the CTMP that Council can provide would be appreciated.

Thanks,

**Tom Bertwistle**  
Senior Environmental Assessment Officer  
Industry Assessments  
**Department of Planning and Environment**

**T** (02) 8275 1025 **E** [thomas.bertwistle@planning.nsw.gov.au](mailto:thomas.bertwistle@planning.nsw.gov.au)

[dpie.nsw.gov.au](http://dpie.nsw.gov.au)

4 Parramatta Square  
12 Darcy Street



I acknowledge the traditional custodians of the land and pay respects to Elders past and present. I also acknowledge all the Aboriginal and Torres Strait Islander staff working with NSW Government at this time.

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## Sadeepth Bandaranayake

---

**From:** Meg Kong <meg.kong@asongroup.com.au>  
**Sent:** Friday, 23 December 2022 11:28 AM  
**To:** Development Applications; development.CTMP.CJP@transport.nsw.gov.au  
**Cc:** Benjamin Taylor; Dora Choi; Maruthi Dhurjati; John Yonan; Gary Kenny; Sadeepth Bandaranayake  
**Subject:** SSD-9691 - Condition B1 CTMP for 28 McPherson Street, Banksmeadow  
**Attachments:** P2186r01v2 CTMP 28 McPherson Street, Banksmeadow; Issue II.pdf

Hi CJP officer

Hope you are keeping well.

Condition B1 requires us to prepare the CTMP for 28 McPherson Street, Banksmeadow works in consultation with Council and TfNSW.

Please see attached CTMP for your review and comments.

Feel free to contact me if you have any questions.

Thank you in advance and wishing you a Merry Christmas and a Happy New Year.

Kind regards

**Meg Kong**

Principal - Traffic Management & Operations | Ason Group

**T:** +61 2 9083 6601 | **M:** +61 424 007 141 | **E:** [meg.kong@asongroup.com.au](mailto:meg.kong@asongroup.com.au)

**A:** Suite 17.02, Level 17, 1 Castlereagh Street, Sydney NSW 2000

## Sadeepth Bandaranayake

---

**From:** Development Applications <Developments.CJP@transport.nsw.gov.au>  
**Sent:** Thursday, 9 February 2023 12:55 PM  
**To:** Meg Kong  
**Cc:** Maryam Yadak  
**Subject:** FW: SSD-9691 - Condition B1 CTMP for 28 McPherson Street, Banksmeadow  
**Attachments:** P2186r01v2 CTMP 28 McPherson Street, Banksmeadow; Issue II.pdf

Transport for NSW (TfNSW), Greater Sydney Division has reviewed the CTMP and endorse the proposed temporary construction arrangements, subject to the following conditions:

- Any Traffic Guidance Schemes (TGS) prepared are to comply with AS1742.3 and Transport for NSW's "Traffic Control at Worksites" manual and be signed by a person with TfNSW certification to prepare a TGS.
- Proponent must apply and obtain approval from the Transport Management Centre for a Road Occupancy Licence (ROL) for any required lane closures and/or Speed Zone Authorisations as part of the ROL that may impact the state road network or is within 100m of traffic signals.
- Access to be maintained for local residents, businesses and emergency vehicles at all times.
- No marshalling or queuing of construction vehicles is to occur on public roads. Arriving vehicles that are not able to use parking bay/work zone must continue to a holding point until space becomes available.
- When heavy vehicles are entering or leaving the site a traffic controller is to be provided to manage any conflicts between pedestrians and heavy vehicles.
- Transport for New South Wales reserve the right to alter the CTMP Conditions at any time to maintain safe and efficient traffic and pedestrian movements in this area.
- Any approved Works Zone should only be used for work activities. No infrastructure, including bins, tanks or traffic control equipment should be left on the road when the works zone is not in use by a vehicle. All non-vehicular items must be contained with the work area and not on the carriageway. When a work zone is not in use, the area/lane must be opened up to allow for normal trafficable conditions
- Should TfNSW Network and Asset Management, Network Operations, CJP Operations, Network and Safety or other TfNSW business area determine that that more information is to be provided for review and acceptance, including other TCS locations, this information must be submitted prior to the CTMP being implemented, or otherwise agreed upon.
- Any traffic control devices, including signage and line marking, should be installed by the proponent and must conform with Australian Standards 1742

Endorsement of the CTMP is not an approval to the type of traffic management or delineation devices used, nor is it an approval to any traffic guidance schemes depicted within the CTMP. It is assumed that the proponent has used type approved devices and has developed its traffic guidance schemes in accordance with the relevant Australian Standards and Guidelines.

The proponent is to ensure local residents, businesses, schools and other stakeholders in the affected area as well as emergency service organisations are notified of the changes associated with the CTMP, prior to its implementation. Please ensure this CTMP is shared and adhered to by all contractors. If the CTMP changes, please forward a copy to [Developments.CJP@transport.nsw.gov.au](mailto:Developments.CJP@transport.nsw.gov.au) or further review and endorsement.

Regards,



Transport  
for NSW

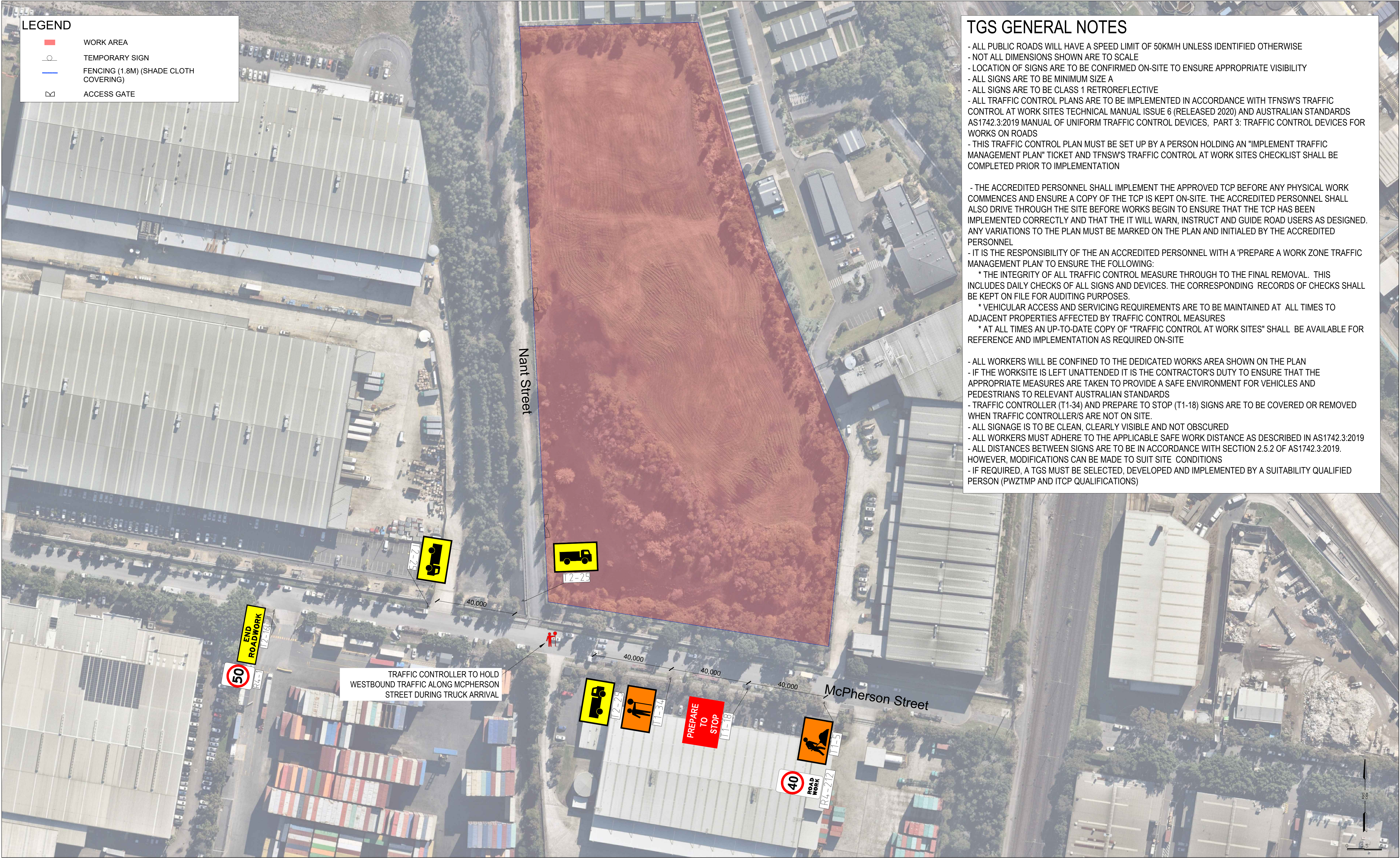
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# Appendix B. Traffic Guidance Scheme





- ### TGS GENERAL NOTES
- ALL PUBLIC ROADS WILL HAVE A SPEED LIMIT OF 50KM/H UNLESS IDENTIFIED OTHERWISE
  - 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)

| AMENDMENTS |          |             |     |     | GENERAL NOTES   |  |  | DESIGNED    | PAPER SIZE | CLIENT                           | DOCUMENT INFORMATION                              |  |  |
|------------|----------|-------------|-----|-----|---|--|--|-------------|------------|----------------------------------|---|--|--|
|            |          |             |     |     | This drawing is provided for information purposes only and should not be used for construction.<br>Aerial image acquired from Nearmap, dated 02.08.22.<br>McPherson Street has a posted speed limit of 50 km/h. |  |  | Sadeepth B. | A1         | RICHARD CROOKES CONSTRUCTIONS    | TRAFFIC GUIDANCE SCHEME FOR SITE ACCESS (ARRIVAL) |  |  |
|            |          |             |     |     |   |  |  | CHECKED BY  | DATE       | PROJECT                          | MCPHERSON STREET (AV AND TRUCK & DOG)             |  |  |
|            |          |             |     |     |   |  |  | M.K         | 05.12.2022 | 2186                             |   |  |  |
|            |          |             |     |     |   |  |  | APPROVED BY | SCALE      | 28 MCPHERSON STREET, BANKSMEADOW | DRAWING STATUS                                    |  |  |
|            |          |             |     |     |   |  |  | M.K         | Custom     |                                  | ISSUE I   |  |  |
| 02         | 05.12.22 | ISSUE I     |     |     |   |  |  |             |            |                                  | FILE NAME   |  |  |
| 01         | 23.11.22 | DRAFT       | SB  | MK  | MK  |  |  |             |            |                                  | AG2186-01-v02.dwg                                 |  |  |
| REV        | DATE     | DESCRIPTION | DRW | CHK | APP   |  |  |             |            |                                  | SHEET   |  |  |
|            |          |             |     |     |   |  |  |             |            |                                  | AG01  |  |  |



# Appendix C. Risk Assessment

**Lot 11 DP 1047924, 31 Birnie Avenue Lidcombe**  
**Risk Assessment**

|                         |                                  |   |            |
|-------------------------|----------------------------------|---|------------|
| Project Number          | 2186                             |   |            |
| Project Name            | Industrial Development           |   |            |
| Site Location           | 28 McPherson Street, Banksmeadow |   |            |
| Date of Assessment      | 23 November 2022                 |   |            |
| Revision                | Issue A                          |   |            |
|                         |                                  |   |            |
| Name                    | Company                          | Title                                       |            |
| M. Kong                 | Ason Group                       | Principal - Traffic Management & Operations |            |
|                         |                                  |   |            |
|                         |                                  |   |            |
|                         |                                  |   |            |
|                         |                                  |   |            |
|                         |                                  |   |            |
|                         |                                  |   |            |
|                         |                                  |   |            |
| <b>Document Control</b> |                                  |   |            |
| Date Issued             | Revision                         | Issued By                                   | Checked By |
| 23 November 2022        | Issue A                          | M. Kong                                     |            |
|                         |                                  |   |            |

| Risk Matrix   |   | Consequence |        |        |          |              |
|---------------|---|-------------|--------|--------|----------|--------------|
|               |   | Minor       | Major  | Severe | Critical | Catastrophic |
|               |   | A           | B      | C      | D        | E            |
| Very Unlikely | 1 | Low         | Low    | Medium | Medium   | Medium       |
| Unlikely      | 2 | Low         | Low    | Medium | Medium   | High         |
| Possible      | 3 | Low         | Medium | High   | High     | High         |
| Likely        | 4 | Medium      | Medium | High   | High     | Extreme      |

|                |   |        |      |      |         |         |
|----------------|---|--------|------|------|---------|---------|
| Almost Certain | 5 | Medium | High | High | Extreme | Extreme |
|----------------|---|--------|------|------|---------|---------|

| Description      |   |
|------------------|---|
| A - Minor        | Could result in injury or illness not resulting in a lost workday or minimal environmental damage not required to be notified under jurisdiction requirements.            |
| B - Major        | Could result in injury or illness resulting in one or more lost workday(s) or environmental damage can be mitigated and is not required to be notified under jurisdiction |
| C - Severe       | requirements where restoration activities can be accomplished.  |
| D - Critical     | Could result in permanent partial disability, injuries or illness that may result in  |
| E - Catastrophic | hospitalisation of persons or environmental damage can be mitigated and is required to be notified under jurisdiction requirements.                                       |

| Likelihood Descriptor | Design Likelihood  |
|-----------------------|--|
| 1 - Very unlikely     | Industry experience suggests design failure is very unlikely. It can be assumed failure        |
| 2 - Unlikely          | Industry experience suggests design failure is unlikely to occur in the life of design.        |
| 3 - Possible          | Industry experience suggests design failure is possible sometime during the life of the        |
| 4 - Likely            | Industry experience suggests design failure is likely to occur during the life of the product. |
| 5 - Almost certain    | Industry experience suggests design failure is almost certain to occur during the life of the  |

## Risk Assessment

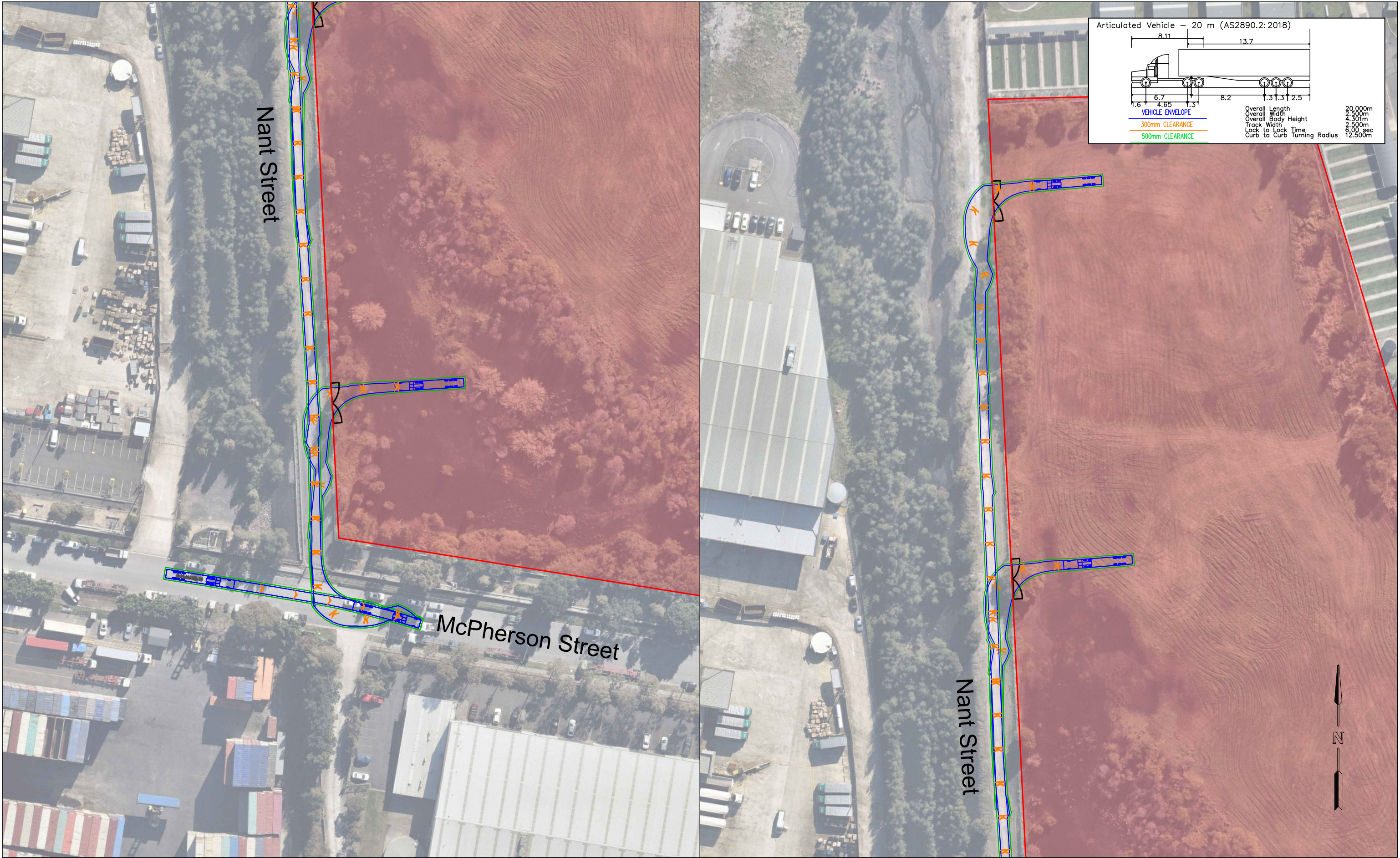
| ID.<br>Ref | Risk and/ or<br>Hazard                                | Risk<br>Description   | Location                            | Existing<br>Control | Initial Risk Rating |   |        | Design Response to<br>risk and /or hazard   | Status<br>of Risk  | Assignment<br>of risk or<br>hazard | Residual risk rating |   |     |
|------------|---|---|-------------------------------------|---------------------|---------------------|---|--------|---|--------------------|------------------------------------|----------------------|---|-----|
|            |   |   |                                     |                     | C                   | L | RR     |   |                    |                                    | C                    | L | RR  |
| 1          | Unauthorized<br>Access to the<br>Site                 | Site prevents<br>unauthorised<br>access   | Entire<br>Site                      | Nil                 | C                   | 3 | High   | A mix of existing<br>perimeter and<br>temporary<br>construction fencing<br>will be provided as part<br>of the works. The<br>design provides a<br>defined separation<br>between public areas<br>and work area.                     | Design<br>Solution | Main<br>Contractor                 | B                    | 2 | Low |
| 2          | Interaction<br>between<br>pedestrians<br>and vehicles | Vehicles and<br>pedestrians<br>to be<br>separated<br>via water<br>barrier<br>within the<br>site (where<br>possible) | Entire<br>Site &<br>Access<br>Roads | Nil                 | D                   | 3 | High   | Footpath and<br>pedestrian crossings<br>will be retained.<br>Pedestrian controllers<br>to be provided at all<br>site accesses. Truck<br>drivers will be inducted<br>to drive safely and at<br>posted speed limit at<br>all times. | Design<br>Solution | Main<br>Contractor                 | B                    | 2 | Low |
| 3          | Potential<br>vehicle<br>conflict<br>points            | Vehicles can<br>crash with<br>each other<br>while<br>manoeuvring<br>within the<br>site                              | Entire<br>Site &<br>Access<br>Roads | Nil                 | B                   | 3 | Medium | Truck visitation will be<br>programmed in a way<br>that only one vehicle<br>will arrive or depart at<br>any one time. In<br>addition, truck drivers<br>will be inducted to<br>drive safely and no                                 | Design<br>Solution | Main<br>Contractor                 | B                    | 1 | Low |



| ID. Ref | Risk and/ or Hazard                       | Risk Description                 | Location    | Existing Control | Initial Risk Rating |   |      | Design Response to risk and /or hazard  | Status of Risk  | Assignment of risk or hazard | Residual risk rating |   |        |
|---------|---|----------------------------------|-------------|------------------|---------------------|---|------|---|-----------------|------------------------------|----------------------|---|--------|
|         |   |                                  |             |                  | C                   | L | RR   |   |                 |                              | C                    | L | RR     |
|         |   |                                  |             |                  |                     |   |      | more than 10kmph within the site at all times.  |                 |                              |                      |   |        |
| 4       | Fatigue                                   | Injury caused by fatigue         | Entire Site | Nil              | C                   | 3 | High | Toolbox meetings and regular breaks (in line with WHS practices) to minimise fatigue  | Design Solution | Main Contractor              | B                    | 1 | Low    |
| 5       | Fall risks                                | Injury due to falls (in general) | Entire Site | Nil              | E                   | 3 | High | Ensuring level changes across the site to be minimised as best possible, with additional black & yellow hazard tape/markings being installed where appropriate. Installation of handrails where level changes / ramps grades are significant. | Design Solution | Main Contractor              | C                    | 2 | Medium |
| 6       | Misdirected access into neighbouring site | Vehicle in unsafe locations      | Entire Site | Nil              | C                   | 3 | High | Ensuring appropriate directional signage has been provided to ensure vehicles do not access the wrong construction site, which could create potential safety breaches and hazards for all parties. In   | Design Solution | Main Contractor              | B                    | 2 | Low    |

| ID.<br>Ref | Risk and/ or<br>Hazard         | Risk<br>Description   | Location    | Existing<br>Control | Initial Risk Rating |   |      | Design Response to<br>risk and /or hazard   | Status<br>of Risk | Assignment<br>of risk or<br>hazard | Residual risk rating |   |        |
|------------|--------------------------------|---|-------------|---------------------|---------------------|---|------|---|-------------------|------------------------------------|----------------------|---|--------|
|            |                                |   |             |                     | C                   | L | RR   |   |                   |                                    | C                    | L | RR     |
|            |                                |   |             |                     |                     |   |      | addition, all drivers will undertake an induction of the site layout prior to arriving to the site.   |                   |                                    |                      |   |        |
| 7          | Conflicting Traffic Management | Coordinating traffic controllers could create misleading and wrong advice | Entire Site | Nil                 | C                   | 3 | High | Toolbox meetings, regular liaison with all construction teams and review of signage plans on site in order to minimise contradicting signage. | Design Solution   | Main Contractor                    | C                    | 2 | Medium |

# Appendix D. Swept Path Assessment



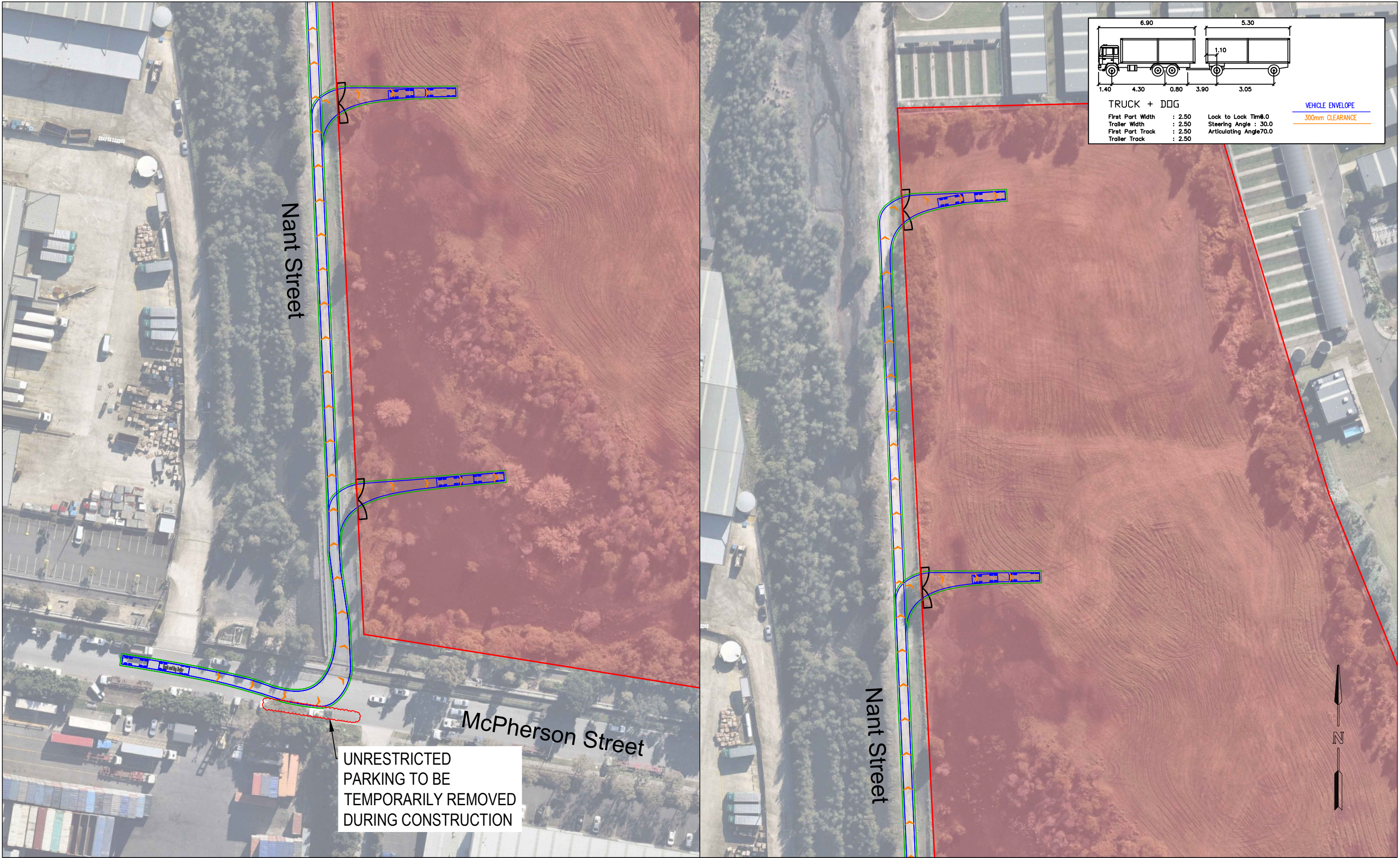




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|--|---------------------|---|---|--|---------------|
| <b>GENERAL NOTES</b><br>This drawing is provided for information purposes only and should not be used for construction.<br>Aerial image acquired from Nearmap, dated 02.08.22.<br>McPherson Street has a posted speed limit of 50 km/h.<br>Swept path assessments completed at 10 km/h and 500mm clearance.<br>Design vehicle: 20.0m Articulated Vehicle      Check Vehicle: 20.0m Articulated Vehicle | DESIGNED<br>Sadeeph | PAPER SIZE<br>A3  | CLIENT<br>RICHARD CROOKES CONSTRUCTIONS | <b>DOCUMENT INFORMATION</b><br><br>SWEPT PATH ASSESSMENT<br><br>20.0M AV INGRESS |               |
|  | APPROVED BY<br>M.K  | DATE<br>23.11.2022  | PROJECT<br>2186                         |  |               |
|  | SCALE<br>1:1000     |  |   | FILE NAME<br>AG2186-02-v01.dwg   | SHEET<br>AG01 |
| <div><div>Suite 17.02, Level 17, 1 Castlereagh St<br/>Sydney NSW 2000<br/>info@asongroup.com.au</div></div>   |                     |   |   |  |               |



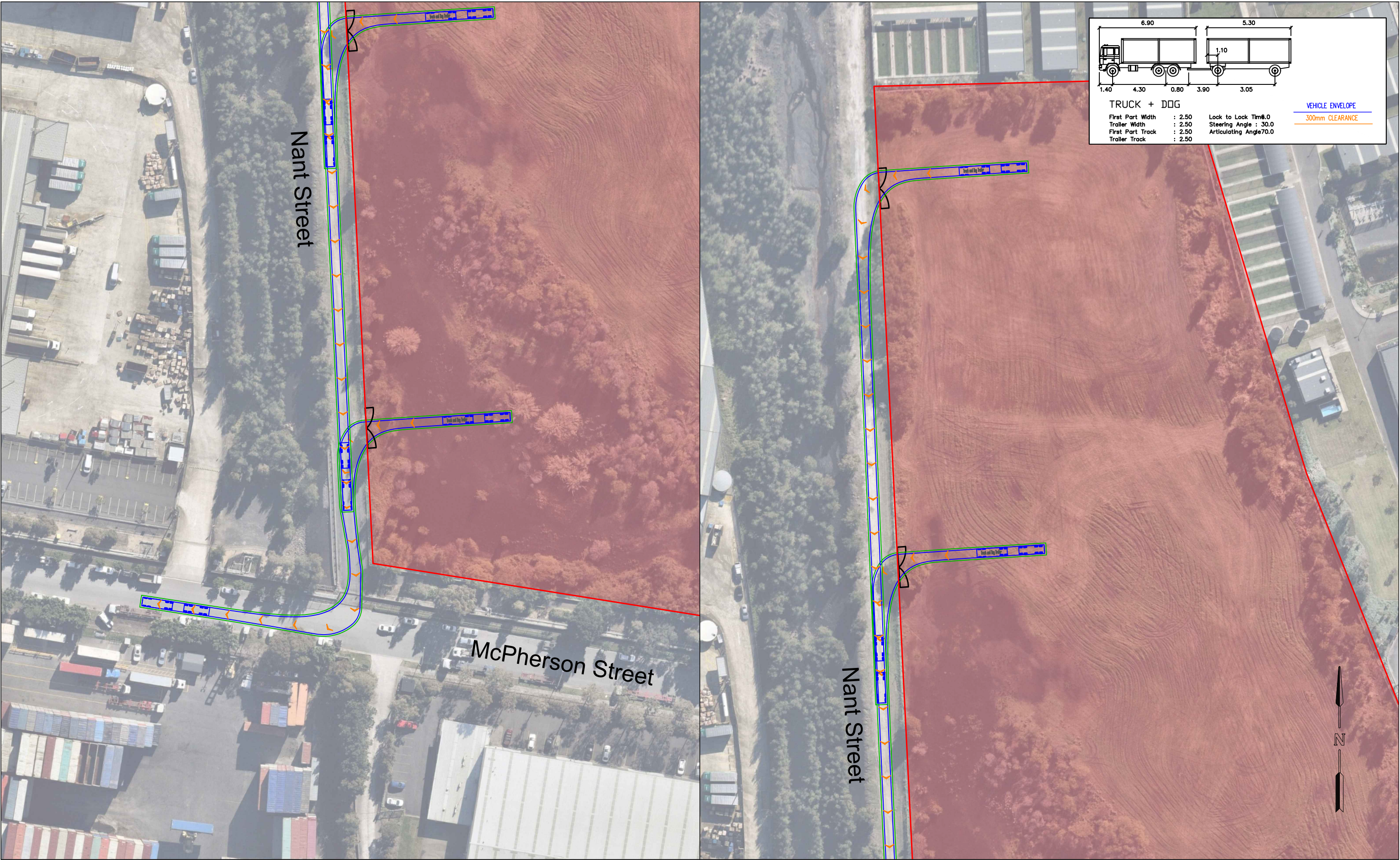






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| <b>GENERAL NOTES</b><br>This drawing is provided for information purposes only and should not be used for construction.<br>Aerial image acquired from Nearmap, dated 02.08.22.<br>McPherson Street has a posted speed limit of 50 km/h.<br>Swept path assessments completed at 10 km/h and 500mm clearance.<br>Design vehicle: 18.1m Truck and Dog      Check Vehicle: 18.1m Truck and Dog | DESIGNED<br>Sadeepth | PAPER SIZE<br>A3  | CLIENT<br>RICHARD CROOKES CONSTRUCTIONS | <b>DOCUMENT INFORMATION</b><br><br>SWEPT PATH ASSESSMENT |               | <br><br>Suite 17.02, Level 17, 1 Castlereagh St<br>Sydney NSW 2000<br>info@asongroup.com.au |
|  | APPROVED BY<br>M.K   | DATE<br>23.11.2022  | PROJECT<br>2186                         | 18.1M TRUCK AND DOG INGRESS                              |               |  |
|  | SCALE<br>1:1000      |  |   | FILE NAME<br>AG2186-02-v01.dwg                           | SHEET<br>AG03 |  |





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Swept path assessments completed at 10 km/h and 500mm clearance.  
Design vehicle: 18.1m Truck and Dog      Check Vehicle: 18.1m Truck and Dog

|                     |                    |
|---------------------|--------------------|
| DESIGNED<br>Sadeeph | PAPER SIZE<br>A3   |
| APPROVED BY<br>M.K  | DATE<br>23.11.2022 |
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|   |
|---|
| CLIENT<br>RICHARD CROOKES CONSTRUCTIONS |
| PROJECT<br>2186                         |
| 28 MCPHERSON STREET, BANKSMEADOW        |

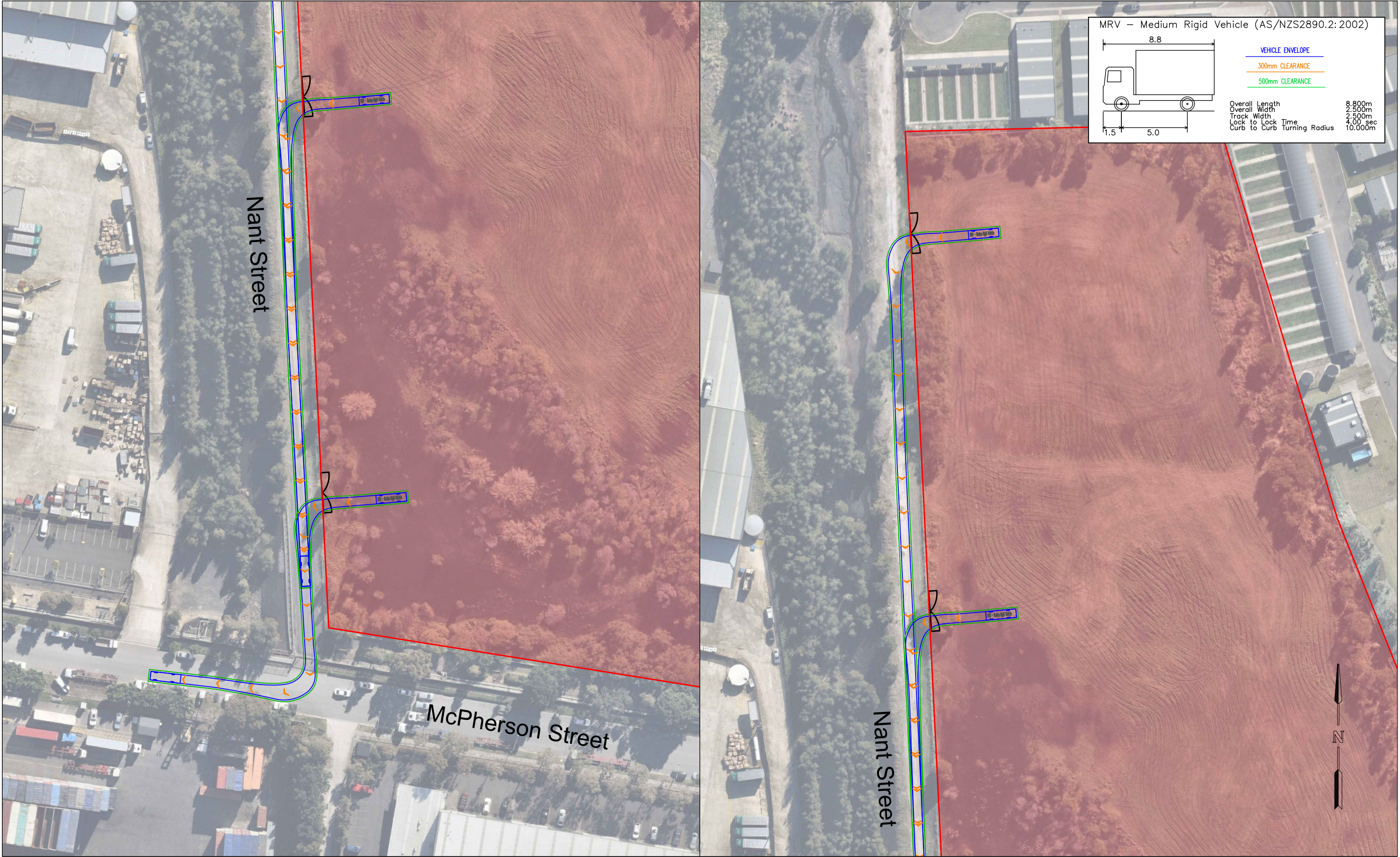
|                            |       |
|----------------------------|-------|
| DOCUMENT INFORMATION       |       |
| SWEPT PATH ASSESSMENT      |       |
| 18.1M TRUCK AND DOG EGRESS |       |
| FILE NAME                  | SHEET |
| AG2186-02-v01.dwg          | AG04  |

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|  |                      |                    |   |   |               |
|--|----------------------|--------------------|---|---|---------------|
| <b>GENERAL NOTES</b><br>This drawing is provided for information purposes only and should not be used for construction.<br>Aerial image acquired from Nearmap, dated 02.08.22.<br>McPherson Street has a posted speed limit of 50 km/h.<br>Swept path assessments completed at 10 km/h and 500mm clearance.<br>Design vehicle: 8.8m Medium Rigid Vehicle      Check Vehicle: 8.8m Medium Rigid Vehicle | DESIGNED<br>Sadeepth | PAPER SIZE<br>A3   | CLIENT<br>RICHARD CROOKES CONSTRUCTIONS | DOCUMENT INFORMATION<br>SWEPT PATH ASSESSMENT   |               |
|  | APPROVED BY<br>M.K   | DATE<br>23.11.2022 | PROJECT<br>2186                         |   |               |
|  | SCALE<br>1:1000      |                    | 28 MCPHERSON STREET, BANKSMEADOW        | FILE NAME<br>AG2186-02-v01.dwg  | SHEET<br>AG06 |
|  |                      |                    |   | <br>Suite 17.02, Level 17, 1 Castlereagh St<br>Sydney NSW 2000<br>info@asongroup.com.au |               |



# Appendix E. Driver Code of Conduct

## Drivers Code of Conduct

Safe Driving Policy for 28 McPherson Street, Banksmeadow Stage 1-5 Construction.

### Objectives of the Drivers Code of conduct

- To minimise the impact of earthworks on the local and regional road network;
- To minimise conflict with other road users;
- To minimise road traffic noise; and
- To ensure truck drivers use specified heavy vehicles routes between the Site and the sub-regional road network.

### Code of Conduct

All vehicle operators accessing the site must:

- Take reasonable care for his or her own personal health and safety;
- Not adversely, by way of actions or otherwise, impact on the health and safety of other persons;
- Notify their employer if they are not fit for duty prior to commencing their shift;
- Obey all applicable road rules and laws at all times;
- In the event an emergency vehicle behind your vehicle, pull over and allow the emergency vehicle to pass immediately;
- Obey the applicable driving hours in accordance with legislation and take all reasonable steps to manage their fatigue and not drive with high levels of drowsiness;
- Obey all on-site signposted speed limits and comply with directions of traffic control supervisors in relation to movements in and around temporary or fixed work areas;
- Ensure all loads are safely contained / restrained, as necessary;
- Drive over devices – located at the site's access – to vibrate off and wash off any loose material attached to heavy vehicles;
- Operate their vehicles in a safe and professional manner, with consideration for all other road users;
- Hold a current Australian State or Territory issued driver's licence;
- Notify their employer or operator immediately should the status or conditions of their driver's license change in any way;
- Comply with other applicable workplace policies, including a zero tolerance of driving while under the influence of alcohol and/or illicit drugs;
- Not use mobile phones when driving a vehicle or operating equipment. If the use of a mobile device is required, the driver shall pull over in a safe and legal location prior to the use of any mobile device;
- Advise management of any situations of which you know, or think, may present a threat to workplace health and safety;
- Drive according to prevailing conditions (such as during inclement weather) and reduce speed, if necessary; and
- Have necessary identification documentation at hand and ready to present to security staff on entry and departure from the Site, as necessary, to avoid unnecessary delays to other vehicles.



## 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; and
  - 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; and / or
  - If you damage property other than your own.
- As soon as reasonably practical, report all incident details to your manager.

## Road Traffic Noise

Generating excessive noise is governed by legislation and is an offence. Heavy trucks generate a higher level of noise than light vehicles. The amenity of surrounding road users/residents is to be maintained as far as practical during the construction process.

Vehicles traveling to, from and within the site shall not create unreasonable or unnecessary noise or vibration to minimise interference to adjoining building operations.

No tracked vehicles will be permitted or required on any paved roads.

All heavy vehicle operators are required to adhere to the following during the course of their duty:

- If possible, minimise road traffic noise by not using engine brakes near residences and built up areas.
- All vehicles must be fitted with audible reversing alarms. These are essential for the safety of all personnel. Reversing alarms are however the source of potential noise complaints from neighbouring residents so all drivers should be aware of this and try to minimise reversing when possible.
- Avoid loading and unloading of materials / deliveries outside of daytime hours.
- Compounds and work areas should be designed to as one-way to minimise the need for vehicles to reverse.
- Trucks should not idle near to residential receivers.
- Stationary sources of noise, such as generators, should be located away from sensitive receivers.
- Project personnel, including relevant sub-contractors, to acquaint themselves on noise and vibration requirements and the location of sensitive receivers during inductions and toolbox talks.
- Delivery vehicles should be fitted with straps rather than chains for unloading, wherever possible.
- Truck drivers should avoid compression braking as far as practicable.
- Where night-time works are required, trucks should use broadband reversing alarms.

## Appendix L Remediation Action Plan



Orica Australia Pty Ltd  
Remediation Action Plan

28 McPherson Street  
Banksmeadow, NSW

15 May 2019

54709/119224 Rev 0

JBS&G

Orica Australia Pty Ltd  
Remediation Action Plan

28 McPherson Street  
Banksmeadow, NSW

15 May 2019

54709/119224 Rev 0  
JBS&G

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## Abbreviations

| Term    | Definition  |
|---------|---|
| ACM     | Asbestos Containing Material (eg fibre cement sheet)                    |
| AF/FA   | Asbestos fibres/friable asbestos  |
| AHD     | Australian Height Datum   |
| APM     | Australian Paper Manufacturers Limited                                  |
| BGCP    | Botany Groundwater Cleanup Project                                      |
| bgl     | Below ground level  |
| bgs     | Below ground surface  |
| BIP     | Botany Industrial Park  |
| BTEX    | Benzene, toluene, ethylbenzene and xylenes                              |
| B(a)P   | Benzo(a)pyrene  |
| CEMP    | Construction Environmental Management Plan                              |
| CHCs    | Chlorinated Hydrocarbons  |
| COCs    | Contaminants of concern   |
| COPCs   | Contaminants of potential concern                                       |
| CGS     | Characteristic gas situation  |
| CSM     | Conceptual site model   |
| DP      | Deposited Plan  |
| DQIs    | Data quality indicators   |
| DQOs    | Data Quality Objectives   |
| EDC     | 1,2-dichloroethane  |
| EMP     | Environmental Management Plan   |
| ENM     | Excavated Natural Material  |
| EnRiskS | Environmental Risk Sciences Pty Ltd                                     |
| EPA     | Environment Protection Authority  |
| GDA     | Geocentric Datum of Australia   |
| GILs    | Groundwater investigation levels  |
| GSV     | Gas screening value   |
| GTP     | Groundwater Treatment Plant   |
| Ha      | Hectare   |
| HCB     | Hexachlorobenzene   |
| HCBD    | Hexachlorobutadiene   |
| HHRA    | Human Health Risk Assessment  |
| HIL     | Health-based investigation level  |
| JBS&G   | JBS&G Australia Pty Ltd   |
| LOR     | Limit of Reporting  |
| MGA     | Map grid of Australia   |
| NATA    | National Association of Testing Authorities                             |
| NSW     | New South Wales   |
| OCPs    | Organochlorine pesticides   |
| OPPs    | Organophosphorus pesticides   |
| PAHs    | Polycyclic aromatic hydrocarbons  |
| PARCC   | Precision, accuracy, representativeness, comparability and completeness |
| PCA     | Primary Containment Area  |
| PCBs    | Polychlorinated biphenyls   |
| PID     | Photo-ionisation detector   |
| PPE     | Personal protective equipment   |
| PQL     | Practical Quantitation Limit  |
| QA/QC   | Quality Assurance/Quality Control                                       |
| RAP     | Remedial Action Plan  |
| RPD     | Relative Percentage Difference  |
| RSL     | Regional Screening Level  |
| SAQP    | Sampling, Analysis and Quality Plan                                     |
| SEAR's  | Secretary's Environmental Assessment Requirements                       |
| SSD     | State Significant Development   |
| SVCH    | Semi-volatile chlorinated hydrocarbons                                  |
| TCE     | Trichloroethylene (trichloroethene)                                     |

|       |   |
|-------|---|
| TPH   | Total Petroleum Hydrocarbons                |
| TRH   | Total Recoverable Hydrocarbon               |
| UCL   | Upper confidence limit                      |
| UFP   | Unexpected finds protocol                   |
| URS   | URS Australia Pty Ltd                       |
| USEPA | United States Environment Protection Agency |
| UST   | Underground storage tank                    |
| VCHs  | Volatile chlorinated hydrocarbons           |
| VENM  | Virgin Excavated Natural Material           |
| VMP   | Voluntary Management Proposal               |
| VOC   | Volatile organic compound                   |
| WWC   | Woodward-Clyde Pty Ltd                      |

## 1. Introduction and Background

### 1.1 Introduction

JBS&G Australia Pty Ltd (JBS&G) was engaged by Orica Australia Pty Ltd (Orica, the client) to prepare a Remediation Action Plan (RAP) for part Lot 9 in DP 1205673, located at 28 McPherson Street, Banksmeadow, NSW (the site). The site location and site layout are shown on **Figures 1 and 2**, respectively.

Further this report is also to form part of an Environmental Impact Statement for the development of a warehousing and distribution facility on the subject site. Specifically, the report addresses the Secretary's Environmental Assessment Requirements (SEARs) for State Significant Development (SSD 9691) covering *Contamination, including:*

- *assessment of the extent and nature of any contamination of the soil, groundwater and soil vapour including the potential risks to human health and the environmental receptors near the site*
- *a remediation action plan (RAP) detailing the measures that will be undertaken to remediate and manage any contamination identified at the site*
- *the engagement of a Site Auditor accredited under the Contaminated Land Management Act 1997 NSW Site Auditor Scheme - a Section B Site Audit Statement and Site Audit Report prepared by a NSW Site Auditor, certifying site suitability for the intended use subject to the implementation of an appropriate RAP.*

JBS&G (2015) has previously completed validation of remediation works undertaken for identified soil contamination hotspots on a larger parcel of land (the former Orica Southlands estate), which included the site. Validation was undertaken for non-volatile compounds to validate the site as suitable for commercial/industrial use, and for volatile compounds to validate the site as suitable for commercial/industrial use in an outdoor setting. JBS&G (2015) concluded that the soil contamination hotspots were successfully remediated. JBS&G (2015) reported that future development will require remediation to manage access to asbestos-impacted soil, volatile organic compound (VOC) impacted groundwater and provide measures for gas mitigation in buildings. It was known that asbestos was present on the site, however, no asbestos quantification had been completed to assess the requirements, if any, for managing asbestos in future site development. Similarly, while it was assumed that soil gas would be present at the site, no site-specific data was available.

JBS&G (2018) subsequently completed an asbestos and vapour assessment of the site that identified the presence of bonded and friable asbestos in concentrations exceeding applicable assessment criteria. It was recommended that a Remediation Action Plan (RAP) be prepared to manage potential risks from asbestos containing material (ACM) and friable asbestos/asbestos fines (FA/AF) in soils, and potential risks from soil vapour and ground gas, to render the site suitable for commercial/industrial development of the site. It was also concluded that a long-term Environmental Management Plan (EMP) will be required for on-going management of the identified contaminants in soil, soil vapour/gas and groundwater.

It is noted that the site is impacted by flooding and the proposed development will require building on a suspended slab with a large open void beneath. The presence of a large open void will provide a passive venting system for gas mitigation into buildings. The proposed development plans, including architectural and civil plans, are provided in **Appendix B**.

This RAP has been prepared in accordance with the requirements of NSW Environment Protection Authority (EPA) endorsed guidelines.

## 1.2 Background

A summary of the historical land use activities and site layout prior to the preparation of URS (2008a) was provided in a report on Further Contaminated Soil/Fill Delineation Investigation prepared by Golder Associates (Golder 2011). Relevant information, with respect to the decision rules provided in **Table 4.1**, and potential for migration of contaminants from the site, provided in Golder (2011), is presented below:

*Southlands is an undeveloped parcel of land owned by Orica. Orica purchased the site in 1980 from Australian Paper Manufacturers Limited (APM) (<http://www.oricabotanytransformation.com>). The site is divided by Springvale Drain and Nant Street, into two blocks, Blocks 1 and 2. Springvale Drain is a north to south trending man-made drainage feature and surface water conduit. Nant Street is an unsealed roadway adjacent to Springvale Drain that provides access to Southlands from the McPherson Street site entrance to the Qenos Pty Ltd (Qenos) tank farm, located to the north of Southlands.*

*Groundwater beneath Southlands and the up-gradient Botany Industrial Park (BIP) is contaminated with chlorinated hydrocarbons (CHCs) as a result of historical BIP manufacturing activities. Orica is now responsible for managing the groundwater contamination and has established the Botany Groundwater Cleanup Project to hydraulically contain the contaminated groundwater to prevent it from entering Botany Bay and to treat the groundwater to usable standard at a Groundwater Treatment Plant (GTP). Various infrastructure, including above ground pipe lines, monitoring wells and groundwater extraction bores, associated with the Botany Groundwater Cleanup Project are located on Southlands. These are principally located along the McPherson Street site Boundary and the western margin of Springvale Drain. Groundwater is extracted and is pumped via pipelines to the GTP located on BIP to the north east of Southlands.*

The site is the last remaining portion of what had been known as Southlands, to be developed. Other areas of the former Southlands were redeveloped in the last 5 years for commercial/industrial use.

An EPA Accredited Site Auditor has been engaged by Orica to review the RAP and to provide the Section B Site Audit Statement and Site Audit Report, as required by the SEARs.

## 1.3 Objectives

The objective of this RAP is to document the procedures and standards to be followed in order to manage the risks posed by contaminated soil and groundwater and associated vapours/gas, to make the site suitable for the proposed commercial/industrial land use, while ensuring the protection of human health and the surrounding environment.

Further the RAP is aimed at addressing the SEARs as required for SSD 9691 for the staged development of the subject site comprising:

- a suspended concrete platform above the flood detention basin to support warehouse buildings and hardstand / parking areas; and
- construction of two warehouse buildings for the storage and distribution of general merchandise including goods arriving from Port Botany.

## 2. Site Background

### 2.1 Site identification

The location of the site is shown in **Figure 1**, and site layout is shown in **Figure 2**. The site details are summarised in **Table 2.1** and described in more detail in the following sections.

**Table 2.1: Summary Site Details**

|   |   |
|---|---|
| <b>Lot/DP</b>   | Part Lot 9 in DP 1205673  |
| <b>Address</b>  | 28 McPherson Street, Banksmeadow  |
| <b>Local Government Authority</b>   | Bayside Council   |
| <b>MGA Coordinates (GDA 94 - MGA56) of approximate centre of the site</b> | E: 335680<br>N: 6242175   |
| <b>Site Zoning</b>  | IN1 – General Industrial under State Environmental Planning Policy (Three Ports) 2013 |
| <b>Previous Use</b>   | The site has been subject to historical sand/peat mining and subsequent filling.      |
| <b>Proposed Use</b>   | Commercial/industrial landuse   |
| <b>Site Area</b>  | Approximately 41 000 m <sup>2</sup>   |

### 2.2 Site Description

Current access to the site is via Nant Street, which adjoins the western boundary of the site and is accessed off McPherson Street. Access to Nant Street is via locked, steel security gate. The site is secured with an approximately 1.8 m high chain wire mesh fence. Access onto the site is via a locked gate near the northern extent of the Nant Street boundary. The site is vacant land, which is utilised as compensatory flood storage. The site surface has a maintained vegetation cover.

Underground infrastructure (access road, pipeline, extraction and monitoring wells) associated with the Botany Groundwater Cleanup Project (BGCP) is located in a gravel road at the southern end of the site.

### 2.3 Surrounding Land Use

The site surroundings are described under the following headings.

#### North

The site is located to the south west of a Detector Dog Facility (Department of Agriculture, Border Force, Federal Police). Beyond the Detector Dog Facility is Botany Industrial Park (BIP), separated by the Sydenham – Botany Goods Railway Corridor. Several businesses have chemical manufacturing and distribution facilities in the BIP.

A Qenos Pty Ltd (Qenos) owned tank farm facility known as the Nant Street Tank Farm is located immediately to the north of the Border Force facility. A former Tank Farm (now demolished) operated by Mobil is located to the north west of the site. Underground pipelines leading to the tank farms are present in Nant Street.

Located approximately 0.4 km due west of the former Mobil Terminal is another chemical business, Nuplex Industries (Aust) Pty Ltd. Nuplex has frontage on Stephen Road.

## **West**

The western boundary of the site is formed by Nant Street. Beyond Nant Street is Springvale Drain and warehouses recently constructed on land that formed Stage 1 of the Southlands development and now owned by Goodman, comprising warehousing facilities. A chemical manufacturing facility owned by Solvay Interlox Pty Ltd (Solvay) is located to the west of Stage 1/Block 2, separated by Floodvale Drain. Beyond Solvay, is an industrial estate.

## **South**

McPherson Street forms the southern boundary of the site. Beyond McPherson Street, there is a shipping container storage facility operated by Toll. Beyond the Toll holding facility to the south is a commercial/industrial estate.

## **East**

The Detector Dog Facility and a new 8 unit warehousing facility (currently under construction) are present to the east of the site. These facilities were constructed on land that formed Stage 2 of the Southlands development. Beyond these facilities is a narrow strip of land owned by Orica associated with the BGCP. The Sydenham to Botany railway line is located beyond this land with a waste transfer facility located beyond the rail line.

## **2.4 Topography, Geology and Hydrogeology**

Detailed descriptions of site topography, geology and hydrogeology are provided in the Orica Conceptual Site Model (CSM) (Orica 2017). A summary is presented in the following sections.

### **2.4.1 Topography**

The site is located on an area of former sand dunes and coastal swamps within the Botany Basin. The local topography generally slopes down towards the south west and Penrhyn Estuary, from a relative high point of 20 m Australian Height Datum (AHD) at the eastern side of BIP, down to elevations of less than 4 m AHD at and to the south of Southlands (WWC 1996a).

The Southlands property (of which the site is part) formed part of an extensive low lying (<4 m AHD) area to the west of BIP, which was formerly referred to as Veterans Swamp, prior to construction of the Springvale and Floodvale Drains during the 1940s (WWC 1996a). The drains were designed to assist in the drainage of the former swamp and both discharge into Botany Bay via Penrhyn Estuary, which was formed by the reclamation of the Port Botany Container Terminal area.

### **2.4.2 Local Geology**

#### **Botany Basin**

The Botany Basin occupies an area of approximately 80 square km and lies to the south of the city of Sydney. It is bounded by Centennial Park to the north, Randwick and Matraville in the east, Alexandria and Rockdale to the west and Kurnell Peninsula to the south (WWC 1996b).

Quaternary sediments in the basin reach thicknesses of up to 80 m. The sediments were deposited on a surface eroded into the Hawkesbury Sandstone and the thickest sediments infill palaeodrainage features incised into that surface. One such feature, the "Lakes Valley Palaeochannel" has been inferred by geophysics and confirmed by drilling (WWC 1996a) to lie to the west of the BIP / Southlands area.

The Quaternary sediments generally comprise predominantly unconsolidated to semi-consolidated permeable sands, interspersed with discrete layers of low permeability peat and peaty sands (WWC 1996a).



### **2.4.3 Local Hydrogeology**

The site is located on the Botany Sands which contains a system of unconfined and semi-confined unconsolidated aquifers with varying yields that are referred to as the Botany Aquifer. They are interconnected vertically via leakage through the confining peaty layers (WWC 1996b).

The site is located within the Botany Basin Groundwater Extraction Exclusion Area, where groundwater is known or suspected to be contaminated by CHCs and groundwater extraction is prohibited.

### 3. Summary of Previous Remediation Works and Additional Assessments

The validation report (JBS&G 2015a) detailed the remediation works undertaken at the site to remove areas of soil contamination as identified in the Block 2 RAP (JBS&G 2014a) and further delineated by JBS&G (2014b). **Table 3.1**, as extracted from the validation report (JBS&G 2015) summarises the locations areas identified in the Block 2 RAP (JBS&G 2014a) that required remediation. It is noted that the table includes some locations that are not located on the site. All locations described in **Table 3.1** were successfully remediated.

**Table 3.1: Summary of Areas Remediated during Site Works**

| Sampling Location                        | Contaminant of Concern | Location    |
|--|------------------------|-------------|
| GETRS06 (Area 3)                         | Mercury                | On-site     |
| TP31 (Area 4)                            | Lead                   | On-site     |
| GETP38 (Area 8)                          | TRH                    | Not on-site |
| TP14 (Area 5)                            | TRH                    | Not on-site |
| TP127 (Area 7)                           | Lead                   | Not on-site |
| TP81, TP82, GEHA54 and GEHA 55 (Area 10) | TRH                    | On-site     |
| GETP25 (Area 11)                         | TCE                    | Not on-site |
| GETP31 (Area 11)                         | VCHs                   | Not on-site |
| TP105 (Area 11)                          | VCHs                   | Not on-site |
| TP29 (Area 11)                           | VCHs                   | Not on-site |
| TP37 (Area 11)                           | VCHs                   | Not on-site |
| GEHA32 (Area 11)                         | TRH                    | Not on-site |
| HA01 and HA02 (Area 11)                  | HCB                    | Not on-site |
| GETP23 (Area 11B)                        | TRH                    | Not on-site |

Based on the approach for remedial excavations set out in the RAP (JBS&G 2014a), all remedial areas were suitably validated based on either delineation sampling results (JBS&G 2014b) where the excavation had not intercepted groundwater, or, where the remedial excavation had intercepted groundwater, it was considered to have been advanced to the extent practicable and therefore appropriately remediated.

JBS&G (2015a) concluded that, provided future site development incorporates remediation measures to manage access to asbestos-impacted soil, impacted groundwater and measures for gas mitigation in buildings, and an appropriate plan is implemented to manage exposure to the remaining contamination issues, it is considered that the site can be made suitable for commercial and industrial landuse.

#### 3.1 Asbestos Quantification, Soil Vapour and Ground Gas Assessment

JBS&G (2018) reported results of asbestos quantification at one hundred locations, and soil vapour and ground gas assessment at six locations at the site. The results of the asbestos quantification indicated the presence of ACM and/or FA/AF at twenty locations exceeding the commercial/industrial criteria. Soil vapour sampling indicated the presence of 1,1-dichloroethane at one location and elevated carbon dioxide at three locations exceeding applicable criteria. It was concluded that ACM and FA/AF in soil, and CHCs and carbon dioxide in soil vapour/gas, and impacted groundwater pose a human health risk to potential, future site receptors. It was recommended that a RAP be prepared to manage potential risks from the identified contaminants to render the site suitable for commercial/industrial development of the site.

#### 3.2 Human Health Risk Assessment Revision (EnRiskS 2019)

The site formed part of a larger parcel of land previously referred to as Southlands, which comprised two parcels of land referred to as Block 1, which included the site, located to the east of Springvale Drain and Nant Street and Block 2, located to the west of Springvale Drain and Nant Street. In 2008, URS Australia Pty Ltd (URS) completed a Human Health Risk Assessment (HHRA) (URS 2008b) for the proposed staged development of the Southlands property. A HHRA (EnRiskS 2013) was

subsequently prepared by Environmental Risk Sciences (EnRiskS) to address potential risk issues associated with development of Block 2 Southlands. Following completion of remediation works on Block 1, as reported by JBS&G (2015), development of part of Block 1 for commercial/industrial use was proposed. EnRiskS subsequently completed a HHRA (EnRiskS 2015) to address human health risks specific to development of Block 1 based on development plans that included a large flood detention basin (the site), that was open space, adjacent to Nant Street, with commercial/industrial warehouses on the remainder of Block 1.

The HHRA (EnRiskS 2015) did not include assessment of commercial/industrial development on the site, therefore, EnRiskS (2019) was undertaken to assess human health risks issues specifically relevant to the proposed development of the flood detention basin, based on building construction on a suspended slab with a large open void beneath.

Based on the information available at the time EnRiskS (2015) was conducted, EnRiskS (2019) identified the following risk issues that may warrant further consideration in relation to the proposed site development:

- Direct contact with soil;
- Inhalation of vapours that may be derived from the migration of volatile contaminants in shallow groundwater beneath the site into the proposed buildings (i.e. vapour intrusion);
- Inhalation of vapours that may migrate onto Lot 9 from the presence of volatile chemicals in surface water within Springvale Drain, located on the western side of Nant Street; and
- Exposure to hazards associated with landfill gas in the subsurface beneath the site and other areas of former Block to the east.

EnRiskS (2019) noted that based on the proposed development there will be no potential for any direct contact with groundwater or flood water. In addition, EnRiskS (2019) acknowledged that an appropriate management plan would be implemented to manage risk to construction and other intrusive maintenance workers from exposure to subsurface contamination on the site, and these potential exposures were not considered in EnRiskS (2019).

The HHRA revision (EnRiskS 2019) was based on historical site data and the following additional data that were not available at the time EnRiskS (2015) was completed:

- Proposed development plans prepared by Axis Architectural, dated January 2018;
- Soil vapour data and sample locations relevant to sampling works completed by JBS&G (2018); and
- Groundwater and surface water data available to September 2018, provided by Golder Associates.

Based on review of available data, EnRiskS (2019) concluded that:

*On the basis of the review undertaken in relation to the proposed development of Lot 9 of Southlands Block 1, which comprises a commercial/industrial development on a raised concrete slab over the flood detention basin, and the available data in relation to contamination, there are no human health risk issues of concern. On this basis, there are no requirements to design and implement any risk management/mitigation measures for the proposed development. It is noted that should the proposed development change, then the assessment of risks to human health may need to be revised.*

#### 4. Remediation Requirement

As summarised in **Section 3**, remediation of contamination soil hotspots has previously been undertaken at the site. Due to the presence of ground gases (primarily carbon dioxide), dissolved phase chlorinated hydrocarbon groundwater plumes, and chlorinated hydrocarbon soil vapour, gas mitigation is required to prevent vapour intrusion for buildings proposed to be constructed on the site. It is noted that gas mitigation will be achieved in the proposed development by construction of a building on a suspended slab with a large open void beneath. The presence of a large open void will provide a passive venting system for gas mitigation into buildings. Remediation will be also required to manage asbestos in soil.

## 5. Remediation/Management Methodology

### 5.1 Remediation Requirement/Objective

The remediation requirement/objective for the site is the same as stated in Section 4.2 of URS (2008a). That is, the objective for the proposed remediation works is to remove or manage risk posed to future site occupants by making the site suitable for the proposed commercial/industrial land use. Following the completion of the hotspot remediation and validation works (JBS&G 2015), the results of asbestos quantification and soil vapour/ground gas monitoring works (JBS&G 2018), and on the basis that access to groundwater is managed/excluded, the following require remediation/management:

- asbestos in fill material;
- ground gases (carbon dioxide);
- potential vapour intrusion of volatile chlorinated hydrocarbons.

#### 5.1.1 Guidance Framework

The approach adopted in this RAP is consistent with the preferred hierarchy of options for site clean-up and/or management provided in NEPC (2013), which are listed as follows:

- on-site treatment so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level;
- off-site treatment of excavated soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level, after which the soil is returned to the site; or

if the above are not practicable,

- consolidation and isolation of the soil on-site by containment within a properly designed barrier; and
- removal of contaminated soil to an approved site or facility, followed where necessary, by replacement with appropriate material;

or

- where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

With respect to in-situ management of contamination via an Environment Management Plan (EMP), NSW EPA (2017) states that:

*An EMP can be an effective means of ensuring the environment is protected, users of the site are not exposed to contamination remaining on site and the site remains suitable for the proposed use when:*

- *complete remediation of contamination affecting an area is not practicable (for example low levels of contamination under a concrete slab)*
- *contaminants are being capped or contained on site*
- *remediation is likely to cause a greater adverse impact than would occur if the site were left undisturbed.*



### 5.1.2 Asbestos Management Options

Asbestos impacted soils are widespread across the site, and require specific consideration in the development of a remediation strategy for the site.

The 'Code of Practice: How to Manage and Control Asbestos in the Workplace' (Safe Work Australia (SWA) 2011) provides practical guidance for persons conducting a business or undertaking on how to manage risks associated with asbestos and ACM at the workplace and thereby minimise the incidence of asbestos-related disease.

The code of practice (SWA 2011) provides general guidance on ways to minimise or eliminate risk of exposure to asbestos and recommends following a risk management process involving:

- Identifying whether asbestos or ACM is at a workplace;
- Including them in the asbestos register;
- Assessing the risk of exposure; and
- If necessary, implementing appropriate control measures.

The Code (SWA 2011) also provides the following hierarchy of controls that must be considered with respect to managing the risks associated with asbestos:

- Eliminating the risk (i.e. asbestos removal).
- Substituting the risk (isolation of asbestos by applying engineering controls).
- Using administrative controls.
- Using personal protection equipment (PPE).

The 'Management of Asbestos in the Non-Occupational Environment' (EnHealth 2005) provides guidance on the application of controls in residential areas. EnHealth (2005) presents the view that buried asbestos (left undisturbed) does not present a risk to health, rather the risks depend on the potential for disturbance and generation of airborne asbestos which may be inhaled.

EnHealth (2005) notes the following in relation to land contaminated with asbestos:

- It is impractical to propose that a site can be free of asbestos fibres. Risk assessment and management is required before sites can be declared acceptable for unrestricted use;
- No site criteria values were recommended as there was insufficient and unreliable data; and
- Health risks from ACM in soil will depend on the potential for asbestos fibres to be disturbed, become airborne and be inhaled.

Specific management options EnHealth (2005) presents include:

- Isolation of the soil by covering with a properly designed barrier;
- Choosing a less sensitive land use;
- Leaving contaminated material in situ providing there is no immediate danger to the environment or community; and
- Removing contaminated soil to an approved site or facility.

EnHealth (2005) acknowledges the removal of ACM fragments mixed with other fill involves the excavation and disposal of considerable amounts of other material and, in many situations, is not economical.

### 5.1.3 Discussion of Asbestos Management Options

Brief discussions of the appropriateness of each of the remediation options listed in the preferred hierarchy of options in NEPC (2013), are provided below.

Asbestos at the site has been identified as being present in both a bonded and friable form and is widespread across the site (JBS&G 2018). From review of asbestos management options provided in SWA (2011) and EnHealth (2005) it is considered that the preferred two remediation options provided in the NEPC (2013) are not applicable to asbestos in soil at the site. That is, there are no on-site or off-site treatment technologies available which destroy or reduce the hazards to an acceptable level, other than screening/picking/sorting. Further, since fill material present at the site has been identified to contain asbestos fibres or asbestos fines, it is considered that removal of asbestos fibres from the fill material would not be achievable. These options are not applicable due to the nature of the asbestos present in the fill and therefore the remediation would not be achieved.

Of the secondary preferred remediation options, it is considered that asbestos impact may be addressed by the excavation of all fill materials considered to potentially contain asbestos impact. However, excavation and off-site disposal is considered to be:

- not economically viable due to the large quantity of fill materials at the site; and
- impracticable because impacted fill is located both above and beneath groundwater at the site and excavation beneath the groundwater is impracticable.

Consolidation and isolation of the soil on-site by containment within a properly designed barrier is considered to be the most appropriate remediation option for asbestos-impacted fill at the site. This remediation option will minimise soil disturbance and therefore public risk and, therefore, as noted in Section 4.11 of Schedule B1 (NEPC 2013), is a preferred remediation option for asbestos.

## 5.2 Gas Mitigation

Taking into consideration the highest concentration of carbon dioxide (13% v/v) recorded in soil vapour (JBS&G 2018) and assuming a flow rate of 1 L/hour, noting that no flow was recorded in the soil vapour points, a gas screening value (GSV) of 0.2 was calculated as set out in NSW EPA (2012). As per the modified Wilson and Card classification provided in Table 6 of EPA (2012), a GSV of <0.7 L/hr provides a low risk characteristic gas situation (CS) of 2. Table 7 of EPA (2012) provides a required gas protection guidance value of 1 for large commercial (warehousing) and industrial buildings where there is a CS of 2. Table 8 in EPA (2012) provides scores for various protection measures for gas mitigation, with a rating of 4 for an undercroft, which is equivalent to the large open void that will be part of the proposed building design for the site. Therefore, a sub-slab void is considered suitable for gas mitigation into the proposed building at the site.

## 5.3 Factors Potentially Affecting Contaminant Migration

Two variations for preliminary concept piling designs have been provided for the proposed development. A copy of the concept piling designs is provided in **Appendix C**. These piling design variations are based on either:

- Groups of 5 x 300 mm diameter driven timber piles concrete capped at ground level as a base for concrete columns on an approximately 11.5 m spacing to support construction of a suspended, 250 mm thick concrete slab building platform. The distance between the four outer piles in each five pile grouping and the centre pile is approximately 440 mm; or
- Single 300 mm diameter driven timber piles on an approximately 5 m spacing to support construction of a suspended, 300 mm thick concrete slab building platform.

It may be considered that piling has the potential to create preferred pathways for migration of contaminants in the vapour, dissolved and dense non aqueous-phase liquid (DNAPL) phases. The following sections address the potential for the proposed piling to affect migration of contamination present on the site in the vapour phase, dissolved liquid phase and DNAPL.

A report on a geotechnical assessment of the required piling depth for the proposed development was prepared by Pells Sullivan Meynink (PSM, 2019). A copy of the PSM report is provided in

**Appendix D.** PSM identified the following general subsurface conditions at the site:

- An upper layer of loose fill, peat and loose sands with a thickness of around 0 to 6 m; underlain by
- An intermediate layer comprising predominately dense sands with intercalated peat, sandy peat and peaty sand layers of between 10 and 20 m; underlain by
- A basal zone of clayey sand and sandy clay with discontinuous layers of gravel, peat and peaty clay.

The identified soil layers are underlain by sandstone bedrock.

From review of cone penetrometer tests (CPT), PSM (2019) estimated the depth to dense sand is around 5 to 6 m bgs. PSM expected that that driven timber piles may need to extend 3 to 4 m into the dense sand to achieve desired loads for the proposed development.

### 5.3.1 Potential for Vapour Migration due to Piling

The potential for vapour migration from piling has been considered in Wilson and Mortimer (2018). The focus of Wilson and Mortimer (2018) is to assess the potential impacts for ground gas migration related to piling through clay layers. It is noted that the site does not directly fit this scenario, however, the fundamental findings regarding the potential for an increase in ground gas migration from piling is applicable to the site soils.

The source of vapour impacts at the site are groundwater derived, with depth to groundwater between 1 to 2 m bgs with the upper layer of material (0-6 m bgs) comprising loose fill (PSM 2019). Therefore, vapour migration at the site is diffusion driven.

Wilson and Mortimer (2018) report that:

*If a pile is driven into a gas source that is not confined and gas is freely venting to atmosphere, then it should not form a preferential pathway even if an annulus develops around the pile.*

Wilson, S. and S. Mortimer (2018) also note that:

*Where the source of ground gas is a low generation material such as Alluvium, Made Ground and older landfill sites, flow through the ground to the underside of a building is usually driven by diffusion (i.e. based on a concentration gradient). In these ground conditions pressure driven flow only occurs when the gas reaches the underside of the floor slab and stack pressures occur. It is not relevant when considering migration up piles (unless the gas source is under pressure).*

Previous ground gas monitoring on adjoining land to the east indicated that ground gas is not pressure driven and positive pressure was only recorded in gas monitoring wells following rainfall events with sufficient rainfall to raise groundwater levels, pushing ground gas out of the unsaturated, overlying soils. The unsaturated zone on the site is limited to a metre or less and, therefore, there will be limited soil gas driven out of the unsaturated zone during periods of rising groundwater levels. Taking into consideration that soil vapour migration at the site is diffusion driven and the proposed development will not be slab on ground construction, pressure driven flow

of soil vapour into buildings cannot occur. Therefore, piling required for site development will not affect soil vapour migration.

### 5.3.2 Potential Effects of Piling on Dissolved Phase Contamination

On the same basis (such as the increase in density of soil/sand around the pile) that piling does not result in significant migration of ground gas/vapour it is also unlikely to result in the redistribution of contaminated groundwater in the subsurface.

In addition to the above, it is noted that a detailed assessment of the interaction of shallow groundwater and Springvale Drain was presented JBS (2013). The assessment presented the following summary:

- *“Prior to operation of the Groundwater Treatment Plant (GTP) groundwater that discharged into the drain was characterised by relatively high dissolved CHC concentrations. The elevated CHC concentrations were a result of the upward flow of deep groundwater into the shallow aquifer that subsequently discharged into the drain.*
- *Operation of the GTP has resulted in changes to the pattern of groundwater flow near Springvale Drain. During GTP operation groundwater flow downward from the shallow aquifer into the deep aquifer. In addition, when water levels are below the invert of the drain relatively clean surface water enters the aquifer and creates a freshwater lens (this process also occurs beneath the depressions on Block 1). The combination of these two processes has resulted in significant decreases in CHC concentrations in shallow groundwater adjacent to Springvale Drain.*
- *In contrast to the period prior to GTP operation elevated shallow groundwater levels at Southlands no longer result in the discharge of highly contaminated groundwater into Springvale Drain. Discharged water is now characterised by relatively low CHC concentrations...”*

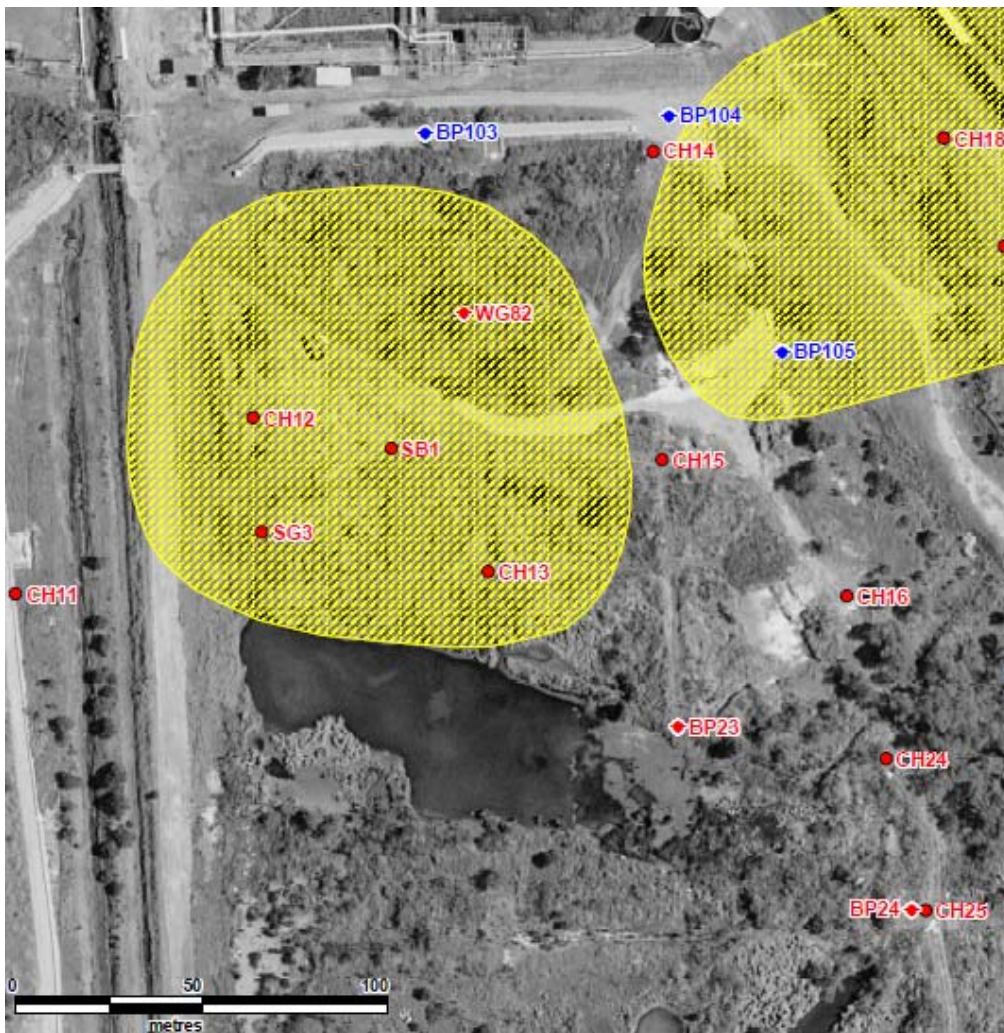
Recent groundwater data collected as part of the GTP groundwater and surface monitoring program (Golder 2017) confirms that concentrations of chlorinated hydrocarbons in groundwater collected from depths shallower than 12 m below ground level at the site remain low (<10 mg/L). While deeper groundwater at the site is characterised by higher contaminant concentrations the current levels (of the order of 20 to 100 mg/L) are substantially lower than those historically reported (>1000 mg/L)

As vertical hydraulic gradients at the site have been demonstrated to be downwards and concentrations of contaminants in shallow groundwater are lower than those in the deeper system piling (to any depth) will not result in unacceptable changes to the distribution of dissolved phase contamination at the site.

### 5.3.3 Potential Effects of Piling on DNAPL Distribution

Detailed assessments of the distribution of dense non-aqueous phase liquid (DNAPL) have been undertaken at the site. The figure below has been taken from URS (2006) and shows a summary of investigation locations WG82, CH12, CH13, SB1, SG3 and SG4) where DNAPL has been positively identified.





At locations on the site, DNAPL was observed (as liquid or as positive dye tests) at the following depths;

- WG82 – from 13 to 14 m (positive dye test) and at 21.5 m (liquid in drilling mud);
- CH12 – from 23.9 to 24.0 m (positive dye test);
- CH13 – from 21.85 to 21.9 m (positive dye test);
- SB1 (SG1) – from 21 to 23 m (liquid in pore water). An elevated soil concentration was also identified in a thin band at 10 m at this location although DNAPL was not directly observed;
- SG3 – from 21 to 24 m (based on soil concentrations); and
- SG4 - - at a thin band at 21 m and from 25.6 to 25.8 m (liquid in pore water).

As the positive identification of DNAPL is limited to significant depth (>13 m but typically at 21 m) and the pile design indicates that pile depths will be of the order of 10 m it is considered that the piling will have no significant effect on the distribution of DNAPL at the site.

#### 5.4 Preferred Remediation Approach

With consideration to established hierarchies for soil remediation options, and to the site-specific contaminants and proposed environmental setting, the preferred remediation strategy for the site comprises:

- On-site containment of fill materials impacted by bonded (i.e. ACM) and friable (asbestos fines) asbestos using marker and barrier layers across the site, with the exception of an



existing vegetation buffer along the eastern portion of the site that will be retained in its current state and secured with a fence to minimise access; and

- Management of potential soil vapour intrusion into buildings by construction of any buildings on a suspended slab with a large open void beneath, which will provide a passive venting system for gas mitigation into buildings.

## **5.5 Underground Services**

All existing services on the site will be located and surveyed, by suitably qualified contractors, in order to avoid intercepting services during remediation works and to enable incorporation of service and easement locations into the long-term EMP. Any new services to be installed on the site will be installed on the underside of the suspended slab or in the void to minimise disturbance of the barrier layer

## **5.6 Barrier System**

Although the site has been subject to previous site investigations and identified hotspots have been remediated, a barrier system is required to manage the asbestos in soils. An approach that is common to commercial industrial sites, the barrier will comprise at minimum a marker layer separating potentially impacted soils from a physical barrier layer. With the exceptions of an existing vegetated batter along the northern, eastern and southern sides of the site, a barrier layer will be located in all areas of the site. The barrier requirements are discussed in the following sections.

### **5.6.1 Marker Layer**

A marker layer comprising a bright orange geotextile, such as bidim or similar geotextile approved by the Site Auditor, is to be installed prior to placement of the barrier layer.

### **5.6.2 Physical Barrier**

To minimise any potential off-site disposal of soils and to retain the required flood capacity of the site, the physical barrier requirements across the site will be based upon future accessibility of site areas. The following four areas, as shown on **Figure 3**, have been identified based on barrier layer requirements:

- A 0.1 m barrier layer will be required beneath the suspended slab across the undercroft. The barrier layer in this area will comprise a porous material, to allow infiltration of detained floodwater, that will be required to be stable for capping purposes and to provide vehicular access. Alternatively, a layer of stabilised roadbase or similar material may be placed over most areas, with placement of porous materials over selected areas evenly distributed across the site to allow infiltration of detained floodwater. This area will be secured with fencing to prevent casual access.
- A 3 m wide emergency vehicle access road adjacent the northern and eastern sides of the proposed building platform. A minimum 0.1 m barrier layer is required in this area. It will comprise a compacted roadbase material or similar that will provide a stable vehicular accessway. Because this area will be for emergency access, including a potential emergency exit path for site workers, it cannot be locked to prevent casual access. Therefore, the capping material in this accessway will require stabilisation with a bituminous spray seal to prevent access to the underlying material.
- An approximately 5 m wide Orica easement along the western boundary of the site that will be landscaped. It is intended that this area is left in its current state without marker or barrier layers, and access will be restricted by secured fencing. The 10 m wide strip of land along the southern McPherson Street frontage will be subdivided and maintained in Orica ownership.

- An approximately 7 m wide strip of vegetated batter is present along the northern and eastern boundaries of the site, and approximately 10 m wide Orica easement along the southern boundary of the site. It is intended that those areas be left in their current state without marker or barrier layers. Access to these areas will be restricted by secured fencing. The 10 m wide strip of land along the southern, McPherson Street frontage will be subdivided and maintained in Orica ownership as it contains infrastructure associated with Orica's hydraulic containment system.

It is noted there are two surface stormwater entry points on the eastern boundary of the site as shown on **Figure 3**. The ground surface in these areas will be treated with appropriate erosion control measures.

### 5.6.3 Erosion Control

Two surface water drainage points from adjoining land to the east, enter along the eastern boundary of the site. Detailed drawings for erosion control at these discharge points will need to be prepared by the developer for review and approval by the Auditor.

## 5.7 Vapour/Gas Mitigation System

The site provides flood storage capacity, which must be retained for any proposed site development. Therefore, any buildings constructed on-site necessitates construction on a suspended slab with an undercroft, which will provide a passive venting system for gas mitigation into buildings. The design for the proposed development provides an undercroft with a clearance of between 1.5 and 2.5 m across the construction area. Orica have required, generally a 2.5m clearance across most of the undercroft.

It is understood that building construction on a suspended slab will require pile foundations installed on approximately 10 m spacings and that material will be imported to site to form a platform for the piling rig, also forming the physical barrier.

## 5.8 Waste Classification and Off-Site Disposal of Soils

During remediation works, confirmation of waste classification will be completed as necessary to ensure material is removed and disposed of from the site appropriately. Soils to be disposed off-site shall require a waste classification in accordance with NSW EPA (2014). **Table 6.2** summarises the sampling density for offsite disposal of soil.

All fill materials at the site are considered to contain asbestos. Therefore, any fill material to be disposed off-site is to be classified as Special Waste (asbestos waste). Additional analysis will be required for other Contaminants of Potential Concern (COPCs) to provide adequate waste classification.

Surplus soils from the site will be disposed off-site to a facility licensed to accept the waste.

## 5.9 Backfilling of Excavations and Barrier Layer

Materials used to level the site prior to placement of the marker layer can be sourced from on-site materials above the groundwater level. Any materials used to form the barrier layer shall be imported from off-site. It is anticipated that reinstated soils will need to meet compaction standards suitable for the proposed redevelopment of the site as specified by the project geotechnical consultants or structural engineer. Where vegetation is required to be grown in the area of fill placement, the soils will also need to be suitable for use as growing medium. Material to be imported onto the site is required to be either virgin excavated natural material (VENM) or considered suitable for beneficial reuse, such as material compliant with an appropriate EPA waste exemption approval (e.g., excavated natural material (ENM)). ENM shall not be used as a component of topsoils unless expressly approved by the site auditor.

The site history of the proposed VENM source will be reviewed and the source area will be inspected. The site history review and inspection will assess whether any activities (historic or current) undertaken at the site may potentially have caused contamination of the source material.

Appropriate documentation of the VENM or ENM classification of any imported material will be required prior to receipt on site, and will require inclusion in the Validation Report.

#### **5.10 Validation**

Validation sampling and analyses will be conducted to verify any unexpected finds have been appropriately remediated and to verify materials imported to form the barrier layer are suitable for use at the site.

The requirements for validation sampling are detailed in **Section 6**.

#### **5.11 Unexpected Finds**

The possibility exists for residual hazards to be present at the site. Environmental sampling is based on chemical analytes identified as a potential concern during a documented process of reviewing historical site activities. However, ground conditions between sampling points may vary, and further hazards may arise from unexpected sources and/or in unexpected locations. Typical examples of unexpected finds may include underground storage tanks (USTs), buried drums, industrial residues etc.

As a precautionary measure to ensure the protection of the workforce and surrounding community, should any of the abovementioned items be identified (or any other unexpected potentially hazardous substance), the procedure summarised in the Flow Chart provided in **Appendix A**, shall be followed.

An enlarged version of the unexpected finds protocol (UFP), suitable for use on site, should be posted in the Site Office and referred to during the Site-Specific Induction by the Principal Contractor.

The sampling strategy for each “unexpected find” shall be designed by a suitably qualified environmental consultant. The strategy will, however, be aimed at determining the nature of the substance – that is, is it hazardous and, if so, at what concentrations might it pose an unacceptable risk to human health or the environment.

The sampling frequency of the identified substance / materials shall meet the minimum requirements of NSW EPA (1995). Reference shall be made to EPA (1995) as required to derive statistically valid sampling strategies for validation on the unexpected find area, including use of Section 4.2 of that document to determine the required number of validation samples for each unexpected find area.

## 6. Validation Plan

### 6.1 Data Quality Objectives

Data quality objectives (DQOs) have been developed for the validation assessment, as discussed in the following sections.

#### 6.1.1 State the Problem

Validation of remediation works undertaken at the site indicate that, with the exception of asbestos in soil, the areas of contaminated soil have been successfully remediated in accordance with the RAP (JBS&G 2014a). The asbestos-impacted fill and potential vapour intrusion risk, from soil and groundwater, into buildings to be constructed on the site require remediation/management in order to make the site suitable for the proposed commercial/industrial landuse.

The potential impacts from these contaminants will be the basis for an Environmental Management Plan to be prepared for the site.

#### 6.1.2 Identify the Issue

Based on the decision-making process for assessing urban redevelopment sites detailed in EPA (2017), the following decisions must be made:

- Are there any unacceptable risks to likely future onsite receptors from soil?
- Are there any impacts of chemical mixtures?
- Are there any aesthetic issues?
- Is there any evidence of, or potential for, migration of contaminants from the site?
- Is a site management strategy required?
- Is the site suitable for the proposed commercial/industrial landuse?

While not strictly tied to the validation program, the following decision is also required to assess the adequacy of the remediation works as a whole:

- Have the surplus materials, if any, removed from site been disposed to a landfill lawfully licensed to receive such material?

#### 6.1.3 Identify Inputs to the Decision

The inputs to the decisions are:

- Physical observations, including visual and olfactory results during site activities;
- The results of previous investigations (**Section 3**);
- Soil analytical data from any imported fill;
- Soil analytical data for waste classification purposes for materials requiring off-site disposal; and
- Waste disposal documentation for surplus materials disposed off-site.

#### 6.1.4 Define the Study Boundaries

The site is shown **Figure 2**. With the exception of the existing vegetated batters in the northern and eastern extents of the site, the lateral extent of the remediation works for the barrier and marker layers will cover the site. Gas mitigation measures will comprise building construction on a raised platform to incorporate an undercroft, which will be open on all sides. The vertical extent of remediation works will be limited to the thickness of the barrier layer.

### **6.1.5 Develop a Decision Rule**

#### **Imported Fill**

Importation of soils will be required to form the barrier layer. Imported fill will either be accompanied by a letter classifying the material as VENM or ENM, or specially exempted imported soils/materials will be sampled as per the requirements set out in **Table 6.2** and compared against selected validation criteria provided in **Table 6.4**.

#### **Gas Mitigation Controls**

Construction on a suspended slab with an undercroft is proposed for the site. The construction method will provide a suitable passive venting system for gas mitigation into site buildings as reported in **Section 5.2**.

### **6.2 Decision Rules**

The decision rules adopted to answer the decisions identified in **Section 6.1.5** are summarised in **Table 6.1**.



**Table 6.1 Summary of Decision Rules**

| Decision Required to be Made  | Decision Rule  |
|---|--|
| 1. Are there any unacceptable risks to future on-site receptors from any residual soil contamination?   | At the completion of remediation works, asbestos in fill will remain across the site. Furthermore, impacted soil and groundwater underlying the site has the potential to generate vapours/ground gases that could potentially impact occupants of future site buildings. Control measures will be required to manage these risks.<br>If the required control measures have been installed, the decision is No.<br>If the required control measures have not been installed, the decision is Yes.  |
| 2. Are there any chemical mixtures?   | Is there more than one group of contaminants present which increase the risk of harm?<br>If there is, the decision is Yes.<br>Otherwise, the decision is No.   |
| 3. Are there any aesthetic issues?  | If there are any unacceptable odours or soil discolouration, the decision is Yes.<br>Otherwise, the decision is No.  |
| 4. Is there any evidence of, or potential for, migration of contaminants from the Site?   | As noted in <b>Section 1</b> , impacted groundwater located beneath the site is associated with upgradient contamination that is the responsibility of Orica. What is known as the Primary Containment Area (PCA), a line of groundwater extraction wells, is located along the southern boundary of the site and is used for groundwater remediation works being undertaken as part of Orica's Botany Groundwater Cleanup Project. Therefore, off-site migration is an issue that does not require assessment at the site as this issue is being managed by Orica under an agreed Voluntary Management Proposal (VMP).  |
| 5. Is a site management strategy required?  | Was the answer to any of the above decisions Yes?<br>If Yes, a site management strategy is required.<br>If No, a site management strategy is not required.<br>The requirement for site management can typically be precluded by remediation of the areas of environmental impact that causes a site decision to be yes. However, it is noted that potential asbestos-impacted materials remain on site and impacted soil and groundwater on-site has the potential to generate vapour/ground gases that could potentially impact occupants of future site buildings. Therefore, the site will require a management strategy.   |
| 6. Were imported materials validated as being suitable for use on the site?   | Fill/soil analytical data will be collected at the frequency specified in <b>Table 6.2</b> and compared against validation criteria provided in <b>Table 6.4</b> .<br>Statistical analysis of the data in accordance with relevant guidance documents will be undertaken, where appropriate, to facilitate the decisions.<br>If the material fails the criteria, the decision is No.<br>If the material meets the criteria, the decision is Yes.   |
| 7. Were the excavated surplus fill and soils appropriately classified and disposed off-site to a facility licensed to accept the classified waste or lawfully allowed to receive such material? | Fill/soil analytical data will be compared against EPA (2014) criteria. Statistical analysis of the data in accordance with relevant guidance documents will be undertaken, where appropriate, to facilitate the decisions (as detailed above).<br>Documentation from the operation receiving the material including the dates, tonnage and classification of the accepted material will be required to facilitate the decision.<br>If the statistical criteria stated above are satisfied, the decision is Yes, and if receipts are provided recording the disposal of material to an off-site licensed facility, the decision is Yes.<br>If the material fail the criteria, and no disposal receipts are provided, the answer is No. |
| 8. Is the Site suitable for commercial/industrial land use?   | The data obtained for the Site will be used to make an assessment of site suitability as per the decision making process set out in Appendix A of NSW EPA Guidelines for the NSW Site Auditor Scheme (3rd Edition)(EPA, 2017).   |

### 6.2.1 Specify Limits of Decision Error

This step is to establish the decision maker's tolerable limits on decision errors, which are used to establish performance goals for limiting uncertainty in the data. Data generated during this project must be appropriate to allow decisions to be made with confidence.

Specific limits for this project have been adopted in accordance with the appropriate guidance from the NSW EPA, NEPC 2013, appropriate data quality indicators (DQIs used to assess quality assurance / quality control) and standard procedures for field sampling and handling provided in other Australian state and federal guidance documents.

### 6.2.2 Optimise the Design for Obtaining Data

The purpose of this step is to identify a resource-effective field investigation sampling design that generates data that are expected to satisfy the performance criteria, as specified in the preceding steps of the DQO Process. The output of this step is the sampling design that will guide development of the field sampling and analysis plan. This step provides a general description of the activities necessary to generate and select data collection designs that satisfy decision performance criteria.

Validation data are required to be collected to verify:

- The effectiveness of the remediation works;
- Any contaminated soils retained on-site have been appropriately contained and managed;
- Any materials imported to backfill excavations, if required, or form the barrier layer are suitable for the proposed site use; and
- The condition of the site is suitable for the proposed future use.

The proposed soil sampling program is outlined in **Table 6.2**.

### 6.3 Summary of Proposed Validation Sampling and Analyses

The proposed validation sampling and analytical program is outlined in **Table 6.2**.

**Table 6.2 Soil Validation Sampling Program**

| Item   | Sampling Frequency    |  |   | Analytes  |
|--|-----------------------|--|---|---|
|  | Excavation floors     | Excavation Walls                                     | Materials   |   |
| Waste Classification for Materials Requiring Off-Site Disposal | Not applicable (N/A)  | N/A  | 1 / 100m <sup>3</sup>   | Heavy metals (arsenic, cadmium, chromium, nickel, lead, mercury - total and leachable)<br>TRH<br>PAHs (total and leachable)<br>VCH<br>SVCH<br>Presence of asbestos containing materials |
| Unexpected finds   | 1 / 25 m <sup>2</sup> | 1 / 5 m (from each distinct horizon / material type) | N/A   | As appropriate, depending on the location and characteristics of the unexpected find  |
| Imported Soils (VENM)  | N/A                   | N/A  | 1 / 250 m <sup>3</sup><br>Minimum 7 samples per distinct material per source site to enable calculation of 95%UCL <sub>avg</sub> concentrations | Heavy metals – (arsenic, cadmium, chromium, copper, nickel, lead, zinc, mercury)<br>TRH/BTEX<br>PAHs<br>OCPs/OPPs/PCBs<br>Asbestos  |
| Imported Soils (ENM)   | N/A                   | N/A  | As per the NSW EPA current Excavated Natural Material Order and Exemption   | As per the NSW EPA current Excavated Natural Material Order and Exemption   |

95%UCL<sub>avg</sub> – 95% upper confidence limit of the average concentration

### Sampling Rationale

The sampling and analytical regime presented in **Table 6.2** is based on the following rationale:

- Soil sampling frequencies indicated are the minimum required. The soil data as generated by all data sets will be assessed, where appropriate, in accordance with Procedure B in Contaminated Sites Sampling Design Guidelines, NSW EPA, September 1995 (EPA 1995) to

ensure that an appropriate number of samples are obtained in order to show that the average concentration of each of the contaminants is below the adopted limits. Hence, the final adopted sampling regime will meet the requirements outlined in EPA 1995; and

- Imported material sampling frequencies exceed the minimum 1 composite sample requirement outlined in EPA 1995, and are based on having sufficient data to generate reliable 95%UCLavg concentrations. Procedure B (EPA 1995) will also be used to confirm that an appropriate number of samples have been obtained from each source type / material type to enable comparison against the appropriate criteria.

### **Sampling Methodology**

Samples shall be collected by appropriately trained and experienced personnel from:

- Near surface depths of excavation walls and bases;
- Materials representative of stockpiled materials for waste classification purposes; and
- Materials representative of any VENM or ENM identified as potentially suitable for importation as fill.

Samples shall generally be collected using a hand trowel or equivalent, which will be thoroughly decontaminated using phosphate-free detergent and distilled water between each sampling location. Where deeper samples are required within large excavations, embankments or stockpiles, samples shall be collected using an excavator or equivalent. Samples shall be collected from the centre of the excavator bucket ensuring that no part of the sample has contacted the sides of the excavator bucket.

During the collection of soil samples, features such as seepage, discolouration, staining, odours and other indications of contamination will be noted on the field documentation. Soil samples will be screened on site during works using a photo-ionisation detector (PID) to assess the presence of volatile organic compounds (VOCs).

Collected soil samples will be immediately transferred to appropriate sample containers, that is, glass jars or plastic bags as required for asbestos analysis. Sample labels will record: job number; sample identification number; and date of sampling.

Sample containers will be transferred to a chilled ice box for sample preservation prior to and during shipment to the testing laboratory. A chain-of-custody (COC) form will be completed and forwarded with the samples to the testing laboratory.

Soil validation samples shall be analysed by a primary laboratory which shall be NATA accredited for the required analyses. The secondary (check) laboratory responsible for analysing a certain proportion and type of QA/QC samples shall also be NATA accredited for the required analyses. Both laboratories will also be required to meet the environmental consultant's own internal quality assurance requirements.

### **6.4 Validation of Soil Management (Marker and Barrier Layer) Areas**

With the exception of existing vegetated batters along the northern and eastern boundaries, an Orica easement along the western boundary and the Orica retained 10 m wide strip on the southern boundary, the site will be subject to placement of a barrier layer to prevent unforeseen access to impacted soils. Furthermore, a marker layer is to be installed between impacted fill materials and all areas where a barrier layer is to be placed. Therefore, the areas of marker and barrier layer installations will require the following validation information as prepared by a Registered Surveyor, for survey requirements:

- A location plan with co-ordinates relative to the lot boundaries;
- The levels in m AHD of the upper surface of the impacted fill materials;

- Daily inspections and photographic record by the environmental consultant to record when and where the marker layer has been installed; and
- The levels in m AHD of the finished barrier layer surface.

The survey information shall be used to document the thickness of the barrier layer across the site as specified in **Section 5.5.2**.

An Environmental Management Plan (EMP) will be prepared documenting the presence of the impacted material and the management measures required to ensure the long-term protection of human health. Appropriate notation on planning certificate and/or title will be made, documenting the presence of the EMP and impacted materials.

## 6.5 Quality Assurance / Quality Control

The pre-determined DQIs established for the validation program are discussed below in relation to precision, accuracy, representativeness, comparability and completeness (PARCC parameters), and are shown in **Table 6.3**.

- **Precision** - measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD)<sup>1</sup> of duplicate samples.
- **Accuracy** - measures the bias in a measurement system. The accuracy of the laboratory data generated during this study is a measure of the closeness of the analytical results obtained by a method to the 'true' value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards.
- **Representativeness** –expresses the degree to which sample data accurately and precisely represents a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- **Comparability** - expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to collect samples; ensuring analysing laboratories use consistent analysis techniques and reporting methods.
- **Completeness** – is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal requires there are sufficient valid data generated during the study.

---


$$RPD(\%) = \frac{|C_o - C_d|}{C_o + C_d} \times 200$$

1

Where C<sub>0</sub> is the analyte concentration of the original sample  
C<sub>d</sub> is the analyte concentration of the duplicate sample

**Table 6.3: Summary of Data Quality Indicators for Validation Program**

| Data Quality Objective  | Frequency            | Data Quality Indicator                                     |
|---|----------------------|--|
| Precision   |                      |  |
| Blind duplicates (intra-laboratory)                                 | 1 / 20 samples       | <50% RPD <sup>1</sup>                                      |
| Split duplicates (inter-laboratory)                                 | 1 / 20 samples       | <50% RPD <sup>1</sup>                                      |
| Trip blank (when sampling for volatiles)                            | 1 / day              | <Limit of reporting (LOR)                                  |
| Rinsate blank (if sampling equipment used)                          | 1 / day              | <LOR   |
| Trip spike (when sampling for volatiles)                            | 1 / day              | >70%   |
| Accuracy  |                      |  |
| Surrogate spikes  | All organic analytes | 70-130%  |
| Matrix spikes   | 1 / 20 samples       | 70-130%  |
| Representativeness  |                      |  |
| Sampling appropriate for media and analytes                         | All media / analytes | -  |
| Laboratory blanks   | 1 per lab batch      | <LOR   |
| Samples extracted and analysed within holding times.                | All samples          | 14 days for organics, 28 days for mercury, metals 6 months |
| Comparability   |                      |  |
| Standard operating procedures for sample collection & handling      | All Samples          | All samples  |
| Standard analytical methods used for all analyses                   | All Samples          | All samples  |
| Consistent field conditions, sampling staff and laboratory analysis | All Samples          | All samples  |
| Limits of reporting appropriate and consistent                      | All Samples          | All samples  |
| Completeness  |                      |  |
| Sample description and COCs completed and appropriate               | All Samples          | All samples  |
| Appropriate documentation   | All Samples          | All samples  |
| Satisfactory frequency and result for QC samples                    | All QA/QC samples    | 95%  |
| Data from critical samples is considered valid                      | All samples          | Critical samples valid                                     |

(1) If the RPD between duplicates is greater than the pre-determined data quality indicator, a judgement will be made as to whether the excess is critical in relation to the validation of the data set or unacceptable sampling error is occurring in the field.

## 6.6 Soil Validation Criteria

Based on the proposed commercial/industrial use, and in accordance with the decision process for assessment of urban redevelopment sites (EPA 2017), concentrations of contaminants in the soil will be compared against health investigation levels for commercial/industrial land use (HIL D) and other criteria adopted for the site (**Table 6.4**). The HILs (NEPC 2013) were adopted for use in screening site soil data in EnRiskS (2015) and have subsequently been adopted as soil validation criteria. Note that the criteria provided for volatile compounds are for outdoor areas only, as adopted in the hotspot validation report (JBS&G 2015). Noting that soil remediation works have been completed at the site (JBS&G 2015), and that the proposed development will require building on a suspended slab with a large open void beneath, soil criteria for volatile compounds for potential vapour intrusion into buildings are not relevant and have not been provided in **Table 6.4**.

Any material imported to site will require to be assessed as suitable for the proposed commercial/industrial use.

**Table 6.4: Soil Validation Criteria**

| Constituent                             | Validation Criteria <sup>1</sup>                       |  |
|---|--|--|
|   | Commercial/<br>Industrial Landuse<br>HIL-D (NEPC 2013) | Industrial Criteria Relevant to VOCs<br>– Outdoor Areas Only (mg/kg) |
| <b>Metals and Metalloids</b>            |  |  |
| Arsenic                                 | 3000 <sup>N</sup>                                      | -  |
| Cadmium                                 | 900 <sup>N</sup>                                       | -  |
| Chromium (VI)                           | 3600 <sup>N</sup>                                      | -  |
| Copper                                  | 240000 <sup>N</sup>                                    | -  |
| Nickel                                  | 6000 <sup>N</sup>                                      | -  |
| Lead                                    | 1500 <sup>N</sup>                                      | -  |
| Zinc                                    | 400000 <sup>N</sup>                                    | -  |
| Mercury (inorganic)                     | 730 <sup>N</sup>                                       | -  |
| <b>TRH and BTEX</b>                     |  |  |
| TRH C <sub>6</sub> – C <sub>10</sub>    | 700 <sup>*</sup>                                       | -  |
| TRH >C <sub>10</sub> -C <sub>16</sub>   | 1000 <sup>*</sup>                                      | -  |
| TRH >C <sub>16</sub> -C <sub>34</sub>   | 3500 <sup>*</sup>                                      | -  |
| TRH >C <sub>34</sub> -C <sub>40</sub>   | 10000 <sup>*</sup>                                     | -  |
| benzene                                 | -  | 54 <sup>U</sup>  |
| ethylbenzene                            | -  | 21000 <sup>UT</sup>  |
| xylene                                  | -  | 2700 <sup>U</sup>  |
| <b>Polycyclic Aromatic Hydrocarbons</b> |  |  |
| Benzo(a)pyrene (TEQ)                    | 40 <sup>N</sup>  | -  |
| Total PAHs                              | 4000 <sup>N</sup>                                      | -  |
| <b>Chlorinated Hydrocarbons</b>         |  |  |
| vinyl chloride                          | -  | 17 <sup>U</sup>  |
| cis-1,2-dichloroethane                  | -  | 2000 <sup>U</sup>  |
| 1,2-dichloroethane                      | -  | 22 <sup>U</sup>  |
| trichloroethane                         | -  | 20 <sup>U</sup>  |
| 1,1,2-trichloroethane                   | -  | 6.8 <sup>U</sup>   |
| tetrachloroethane                       | -  | 410 <sup>U</sup>   |
| 1,1,2,2-tetrachloroethane               | -  | 28 <sup>U</sup>  |
| Chloroform                              | -  | 1100 <sup>UT</sup>   |
| Hexachlorobutadiene                     | 620 <sup>UT</sup>                                      | -  |
| Hexachlorobenzene                       | 80   | -  |

N = NEPC HIL D (1999 amended 2013)

\* = NEPC 2013 Management limits – commercial and industrial

U = USEPA RSL for industrial soil, based on a carcinogenic risk level of 1x10<sup>-5</sup> (consistent with NEPM guidance)

T = Criteria adopted based on threshold dose-response relationship as relevant to the nature of the COPC evaluated

TEQ = Toxicity equivalence quotient

## 6.7 Validation Reporting

### 6.7.1 Validation Report

At the completion of the remedial works, a validation report will be prepared in general accordance with OEHL (2011) and Schedule B(2) of NEPC (2013), documenting the works as completed.

This report will contain information including:

- Details of the remediation works conducted;
- Information demonstrating that the objectives of the RAP have been achieved, in particular the validation sample results for imported materials and assessment of the data against both the pre-defined DQOs and the remediation acceptance (validation) criteria;
- Information demonstrating compliance with appropriate regulations and guidelines;
- Full details of the source and classification of all imported materials;



- Any variations to the strategy undertaken during the implementation of the remedial works;
- Details of any environmental incidents occurring during the course of the remedial works and the actions undertaken in response to these incidents;
- Details on waste classification, tracking and off-site disposal;
- Clear statement of the suitability of the site that is the subject of the validation report, for the proposed use; and
- Other information as appropriate, including a draft or outline of the EMP that will apply to the site to address residual contamination issues.

The report will serve to document the remediation works for future reference.

#### **6.7.2 Ongoing Monitoring / Management**

The proposed remediation strategy for the site requires ongoing monitoring and management of all areas of the site to ensure the continued protection of human health and the environment. An EMP will be prepared to detail the ongoing management and monitoring requirements for the site. The EMP will need to be prepared and submitted to the Site Auditor and Appropriate Consent Authority for approval prior to any Site Audit Statement being issued for the site.

The EMP shall contain the following elements:

- A statement of the objectives of the EMP – i.e., to ensure continued suitability of the site after it has been remediated;
- Methodology for piling works and any in ground works;
- Description of the residual contamination issue(s) required to be managed, including the type of contamination and location on the site (including a plan prepared by a registered surveyor showing the location of the marker layer);
- Description of the environmental controls to manage the residual contamination issue(s), including as-built drawings of gas mitigation measures installed at the site, noting that the undercroft area is to remain open on all sides;
- Description of responsibilities for implementing various elements of the provisions contained in the EMP;
- Timeframe for implementing various elements of the provisions contained in the EMP;
- Health and safety requirements for potential future sub-surface activities;
- A program of review and audits;
- The provisions in the EMP are feasible (i.e., able to be implemented) and able to be legally enforceable (i.e., a mechanism exists, such as development consent conditions, to give the plan a basis in law); and
- The relevant consent authority is satisfied that the inclusion of a development consent condition relating to the implementation of the EMP is acceptable.

## 7. Site Management Plan – Remediation Works

### 7.1 Contact Persons

The remediation works shall be managed by the remediation contractor (to be advised).

Contact: To be advised

Phone: To be advised

Mobile: To be advised

Email: To be advised

### 7.2 Remediation Schedule and Duration

At this stage, the duration of the remediation works is unknown and will be subject to the remediation approach adopted by the remediation contractor.

### 7.3 Environmental Management

A site-specific Construction Environmental Management Plan (CEMP) shall be prepared for the construction phase for the proposed development and will need to consider how the required remediation works will be completed. The CEMP will require approval by the appointed Site Auditor and will need to consider the following:

- Removal of existing tree and shrubs by hand and placement of trees into a woodchipper feeding directly into a truck to ensure green waste is not impacted by site soils;
- Grubbing of tree roots, stumps and other vegetation not removed by hand, and separation of any material geotechnically unsuitable to remain on-site for off-site disposal, noting the material will potentially be mixed with asbestos-impacted soils;
- As noted in **Section 5.8**, imported materials will be required to form a base for a piling rig. The remediation contractor will need to consider the potential for cross contamination of any imported materials with the underlying asbestos-impacted soils and the need to minimise materials imported to site, noting that the barrier layer thicknesses specified in **Section 5.2.2** are based on minimum requirements to maintain required flood detention capacity of the site. Therefore, any materials imported to site and impacted by site soils are likely to require off-site disposal to install the required barrier layer and maintain flood capacity.

It is noted that potentially, piling could be completed under asbestos work conditions, which could potentially minimise materials imported to site to form a stable base for a piling rig.

In addition to the above, the CEMP should set out the requirements for environmental management during the works including:

- Management structure and responsibilities;
- Approval and licensing requirements;
- Environmental induction and training;
- Emergency contacts;
- Environmental incident response
- Implementation of the plan;
- Community consultation process; and
- Monitoring required during the works and the process for review of the CEMP, if required.

#### **7.4 Work, Health and Safety Plan**

All work is to be undertaken in accordance with the Site Health and Environmental Management Plan (Orica 2012) prepared for the Project.

## **8. Regulatory Approvals/Licensing**

### **8.1 Development Approval**

Remediation works will be development-specific, with passive vapour mitigation measures inherent to the proposed development of a suspended slab with an undercroft, which will require approval by the Site Auditor, and building development approval by the relevant planning consent authority prior to commencement of remediation works.

### **8.2 Protection of the Environment Operations Act 1997**

The proposed remediation/validation activities are not required to be licensed under the Protection of the Environment Operation Act 1997 since the works do not involve:

- treatment otherwise than by incineration and storage of more than 30 000 cubic metres of contaminated soil originating exclusively from the site, or
- disturbance of more than an aggregate area of 3 hectares of contaminated soil originating exclusively from the site.

### **8.3 Protection of the Environment Operations (Waste) Regulation 2005**

The regulations make requirements relating to non-licensed waste activities and waste transporting. The proposed works on the site will not be required to be licensed.

Section 42 of the Regulation stipulates special transportation, re-use or recycling requirements relating to asbestos waste and must be complied with regardless of whether the activity is licensed.

The requirements for the transportation of asbestos waste include:

- bonded asbestos material must be securely packaged at all times,
- friable asbestos material must be kept in a sealed container,
- asbestos-contaminated soils must be wetted down,
- all asbestos waste must be transported in a covered, leak-proof vehicle.

The requirements relating to the off-site disposal of asbestos waste are as follows:

- asbestos waste in any form must be disposed of only at a landfill site that may lawfully receive the waste,
- when asbestos waste is delivered to a landfill site, the occupier of the landfill site must be informed by the person delivering the waste that the waste contains asbestos,
- when unloading and disposing of asbestos waste at a landfill site, the waste must be unloaded and disposed of in such a manner as to prevent the generation of dust or the stirring up of dust,
- asbestos waste disposed of at a landfill site must be covered with VENM or other material as approved in the facility's Environment Protection Licence.

Section 48 of the Regulation requires that wastes are stored in an environmentally safe manner. It also stipulates that vehicles used to transport waste must be covered when loaded.

### **8.4 Waste Classification Guidelines (EPA 2014)**

All wastes generated shall be assessed, classified and managed in accordance with this guideline.

### **8.5 Bayside Council Requirements**

Site remediation works will need to consider Botany Bay Development Control Plan 2013 (Amendment 8), enforced 5/9/2017, Part 3K Contamination, where applicable.

## **8.6 Asbestos Removal Regulations and Code of Practice**

The removal and disposal of asbestos will be managed in accordance with the Work Health and Safety Act (2011) and Work Health and Safety Regulation (2017), "How to Safely Remove Asbestos: Code of Practice (SafeWork NSW 2016), the, NSW WorkCover Guidelines and the NSW EPA Waste Classification Guidelines (EPA 2014).

Excavation and removal of asbestos fibre-contaminated soils are required to be conducted by a Class A licensed contractor.

Before starting the affected works, the appointed contractor is required to obtain a site-specific permit approving the asbestos works from NSW WorkCover. A permit will not be granted without a current licence and the permit application must be made at least seven days before the work is due to commence.

## 9. Conclusion

Subject to the successful implementation of the measures detailed in this RAP and subject to the limitations in **Section 11**, it is considered that the site can be made suitable for the proposed commercial/industrial land-use.



## 10. References

- enHealth (2005) Management of Asbestos in the Non-Occupational Environment. Department of Health and Ageing
- EnRiskS 2013 Revised Human Health Risk Assessment, Southlands Development Project, Environmental Risk Sciences, Report Reference O/13/SDR001, 21 November 2013
- EnRiskS 2015 Revised Human Health Risk Assessment, Southlands Block 1 Development, Environmental Risk Sciences, Report Reference O/15/SDB1R001, B – Final, 28 July 2015
- EnRiskS 2019 Southlands Block 1 HHRA Revision: Development of Flood Detention Basin, Environmental Risk Sciences Pty Ltd, 9 January 2019
- EPA, NSW, 1995 Contaminated Sites Sampling Design Guidelines, EPA 95/59, September 1995
- EPA, NSW 2012 Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases, EPA 2012/0932, November 2012
- EPA, NSW, 2014 Waste Classification Guidelines. Part 1: Classifying Waste, NSW EPA, November 2014
- EPA, NSW, 2017 Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd Edition)
- Golder 2011 Further Contaminated Soil/Fill Delineation Investigation – Orica Southlands, Golder Associates Pty Ltd, 6 September 2011
- Golder 2017 Groundwater Treatment plant – September 2017 Biennial Groundwater and Surface water Monitoring Report, Golder Associates Australia Pty Ltd, ref 1786313\_001\_R\_RevA, dated 30 November 2017
- JBS 2013 Review of Groundwater-Surface Water Interaction at Springvale Drain, Southlands Development Site, Banksmeadow, NSW, JBS Environmental ref 42049-54480 dated 23 May 2013
- JBS&G 2014a Revised Remediation Action Plan, Block 2, Stage 1 Southlands Development, Banksmeadow, NSW, 42049-53373 (Rev 0), JBS&G Australia Pty Ltd, 30 January 2014
- JBS&G 2014b Delineation of Remediation Areas, Southlands, McPherson Street, Banksmeadow, NSW. 43499-57915, JBS&G Australia Pty Ltd, 24 July 2014
- JBS&G 2015 Soil Hotspot Validation Report, Block 1, Southlands, 28 McPherson Street, Banksmeadow, NSW. 43499-100797 (Rev A), JBS&G Australia Pty Ltd, 9 June 2015
- JBS&G 2018 Asbestos and Vapour Assessment, Lot 9 in DP 1205673, 28 McPherson Street, Banksmeadow, NSW. 54709-114803 (Rev A), JBS&G Australia Pty Ltd, 14 August 2018
- NEPC, 2013 National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1), National Environmental Protection Council
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- NSW EPA 2012. Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases, EPA 2012/0932, NSW EPA, November 2012
- NSW EPA 2014. Waste Classification Guidelines. Part 1: Classifying Waste, NSW EPA, November 2014
- NSW EPA 2017. Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme (3rd Edition), NSW EPA, October 2017

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Orica 2012 Orica Southlands Remediation and Development Site Health and Environmental Management Plan Document No. EN1591 Southlands Revision 0, Orica Australia Pty Ltd

Orica 2017 Conceptual Site Model Orica Botany, Version: Rev2, Orica Australia Pty Ltd, 20 September 2017

PSM 2019 Development Plan at Lot 9, McPherson Street, Banksmeadow – Geotechnical Assessment

SafeWork NSW 2016 Code of Practice How to Safely Remove Asbestos, September 2016

SWA 2011 Code of Practice: How to Manage and Control Asbestos in the Workplace' Safe Work Australia, 2011

URS 2006 WCIE4302 – Southern Plumes Source Area Delineation Investigation – February 2006, URS Australia Pty Limited, Project No. 43346038.07901 dated 26 June 2006

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URS 2008b Human Health Risk Assessment Southlands Remediation and Development Project, URS Australia Pty Ltd

WA DOH 2009 Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia Western Australian Department of Health May 2009

Wilson, S. and S. Mortimer 2018, Piled foundations and pathways for ground gas migration in the UK, Environmental Geotechnics, Published Online: November 2017

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WWC 1996b ICI Botany, Groundwater Stage 2 Survey. Contract S2/C3, Water/Soil Phase 2 Woodward-Clyde August 1996

## **11. Limitations**

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquires.

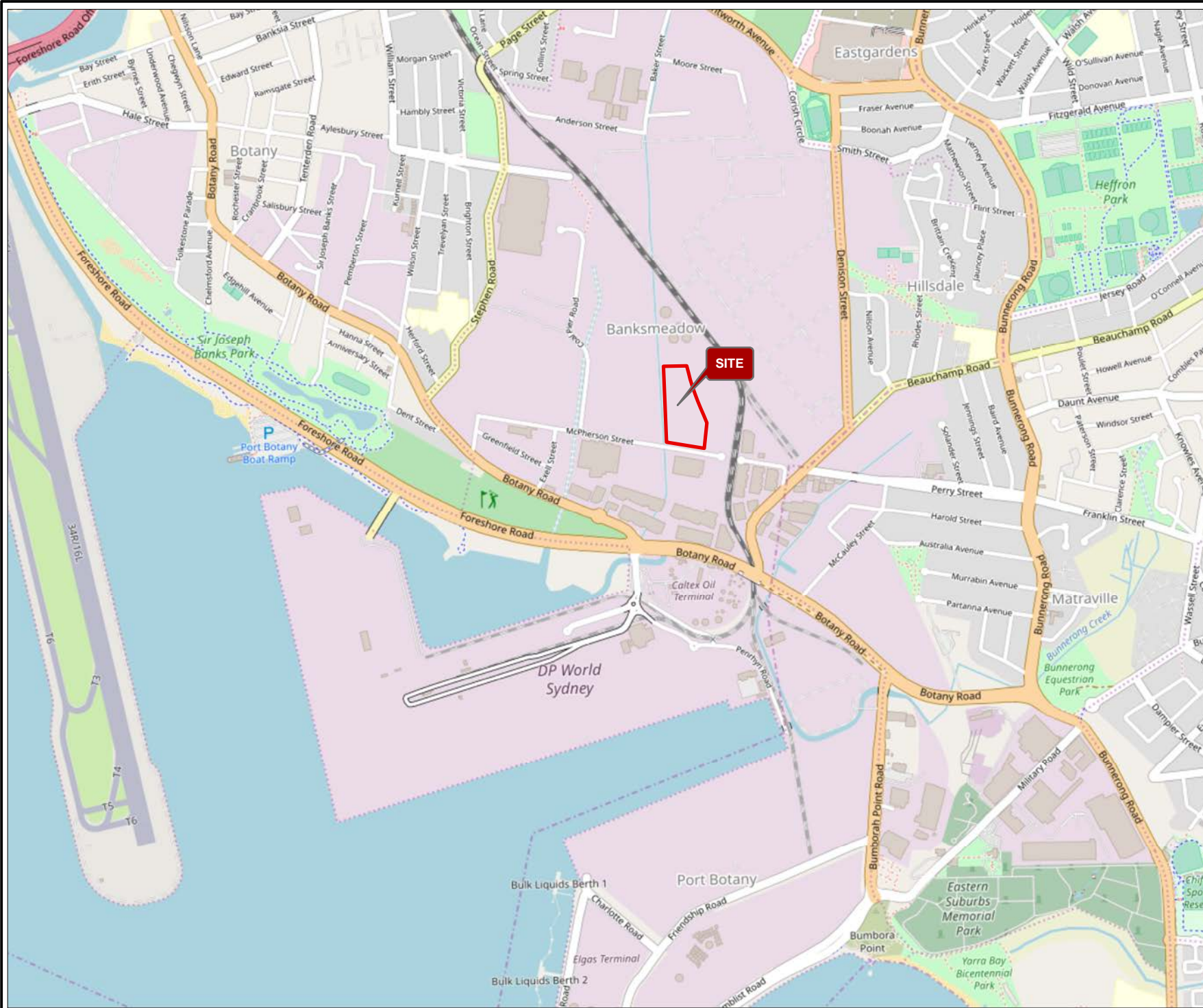
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

## Figures



**Legend:**  
Approximate Site Boundary



Job No:54709

Client: Orica

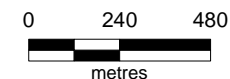
Version: R02 Rev A

Date: 18-Feb-2019

Drawn By: AV

Checked By: JDM

Scale 1:20,000



Coor. Sys. GDA 1994 MGA Zone 56

**Lot 9 DP 1205673  
Banksmeadow, NSW**

**SITE LOCATION**

**FIGURE 1**





**Legend:**

Approximate Site Boundary



Job No:54709

Client: Orica

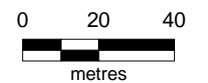
Version: R02 Rev A

Date: 18-Feb-2019

Drawn By: AV

Checked By: JDM

Scale 1:2,000



Coor. Sys. GDA 1994 MGA Zone 56

**Lot 9 DP 1205673  
Banksmeadow, NSW**

**SITE LAYOUT**

**FIGURE 2**





#### Legend:

- Approximate Site Boundary
- 0.1m Hardstand Barrier Layer
- 0.1m Sealed Hardstand Barrier Layer
- No Marker / Barrier Layer
- Surface Water Entry Points



Job No:54709

Client: Orica

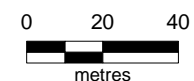
Version: R02 Rev A

Date: 18-Feb-2019

Drawn By: AV

Checked By: JDM

Scale 1:2,000



Coor. Sys. GDA 1994 MGA Zone 56

**Lot 9 DP 1205673  
Banksmeadow, NSW**

**PROPOSED DEVELOPMENT AND  
BARRIER LAYER REQUIREMENTS**

**FIGURE 3**

## **Appendix A Unexpected Finds Protocol**

**BE AWARE  
UNEXPECTED HAZARDS MAY BE PRESENT**



drums



asbestos



chemical bottles



odour

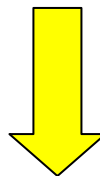


ash / slag



demolition waste

if you SEE or SMELL anything unusual



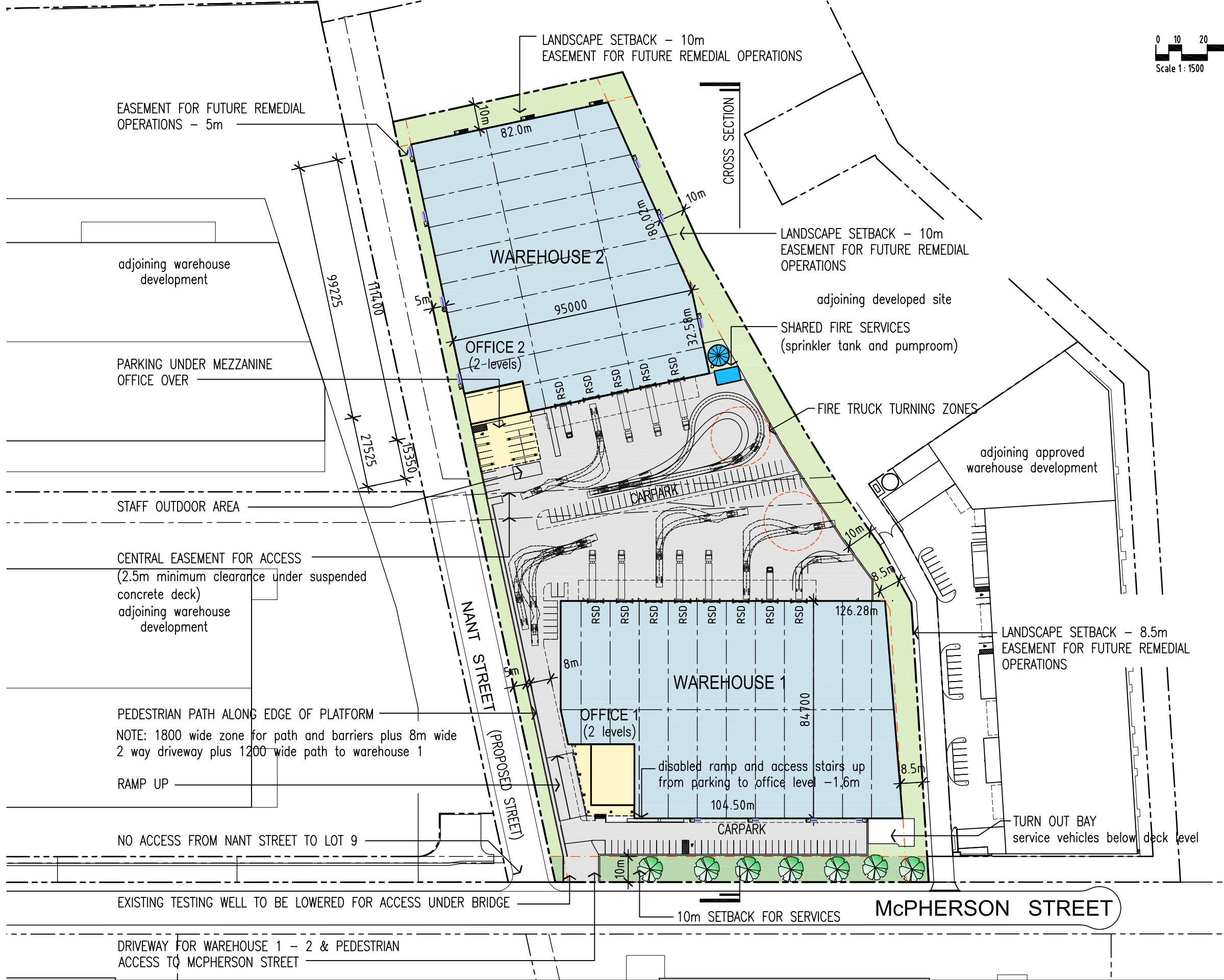
STOP WORK & contact the Site Foreman



do not restart working before the area has been  
investigated and cleared by an Environmental  
Consultant

## **Appendix B Proposed Development, Architectural and Civil Plans**





SCHEDULE OF AREAS

|  |               |
|--|---------------|
| SITE AREA  | 41 290 sqm    |
| SITE AREA - less 1 459 sqm for 10m front setback services zone to McPherson St.  | 39 831 sqm    |
| CONCRETE PLATFORM  | 34 130 sqm    |
| suspended concrete platform to support buildings & hardstand / parking areas above basin including crossover over easement to McPherson Street |               |
| BUILDING 1   |               |
| for services)  |               |
| WAREHOUSE 1  | 10 135 sqm    |
| OFFICE 1 - 2 storey  | 1 000 sqm     |
| 405 gnd floor + 595 first floor  |               |
| TOTAL BUILDING AREA  | 11 135 sqm    |
| AWNING 1 - 8m wide   | 740 sqm       |
| 59 carspaces including 1 disabled space provided on site for building 1  |               |
| BUILDING 2   |               |
| WAREHOUSE 2  | 9 645 sqm     |
| OFFICE 2 - 2 storey  | 1 000 sqm     |
| 280 gnd floor + 720 first floor  |               |
| TOTAL BUILDING AREA  | 10 645 sqm    |
| AWNING 1 - 8m wide   | 496 sqm       |
| 58 carspaces including 1 disabled space provided on site for building 2  |               |
| COUNCIL CARPARK REQUIREMENTS   |               |
| WAREHOUSE DISTRIBUTION AREA  | 1 CAR / 300m2 |
| OFFICE AREA  | 1 CAR / 40m2  |



PROPOSED WAREHOUSE DISTRIBUTION  
AND OFFICE DEVELOPMENT

ORICA AUSTRALIA

lot 9 McPherson Street, Banksmedow. NSW



AXIS ARCHITECTURAL

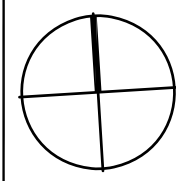
4 / 112 Cronulla Street, Cronulla NSW 2230

p + 02 9523 7858 / m + 0414 954 405

e + david@axisarchitects.com.au

AXIS ARCHITECTURAL Pty Ltd - ABN 18 086 853 376

Nominated Architect - David McDonald NSW ARB No. 7997



Drawing : SITE PLAN - OPTION 6  
NO ACCESS VIA NANT STREET

Scale : 1: 1500 @A3 Project No : 180101 Drawing No : SK - A 106 Issue : P4

Drawn : AA Date : Jan 2018



DEVELOPMENT APPLICATION DRAWINGS
PROPOSED WAREHOUSE DEVELOPMENT
WAREHOUSE/STORAGE/DISTRIBUTION

FOR: ORICA AUSTRALIA

ADDRESS: LOT 9 D.P.1205673
28 McPHERSON STREET
BANKSMEADOW, NEW SOUTH WALES

DATE: DECEMBER 2018

Table with 2 columns: DRAWING No., DRAWING NAME. Rows include COVER SHEET, STAGE 1 (PODIUM SLAB PLAN), STAGE 2 (SITE & GROUND FLOOR PLAN, etc.), and SECTIONS.

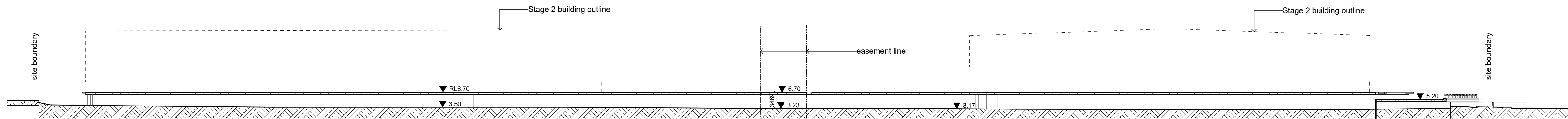
Table with 2 columns: AREA, AREA. Rows include SITE AREA (41 290 sqm), CONCRETE PLATFORM (34 130 sqm), BUILDING 1 (WAREHOUSE 1, OFFICE 2, etc.), BUILDING 2 (WAREHOUSE 2, OFFICE 2, etc.), and COUNCIL CARPARK REQUIREMENTS.



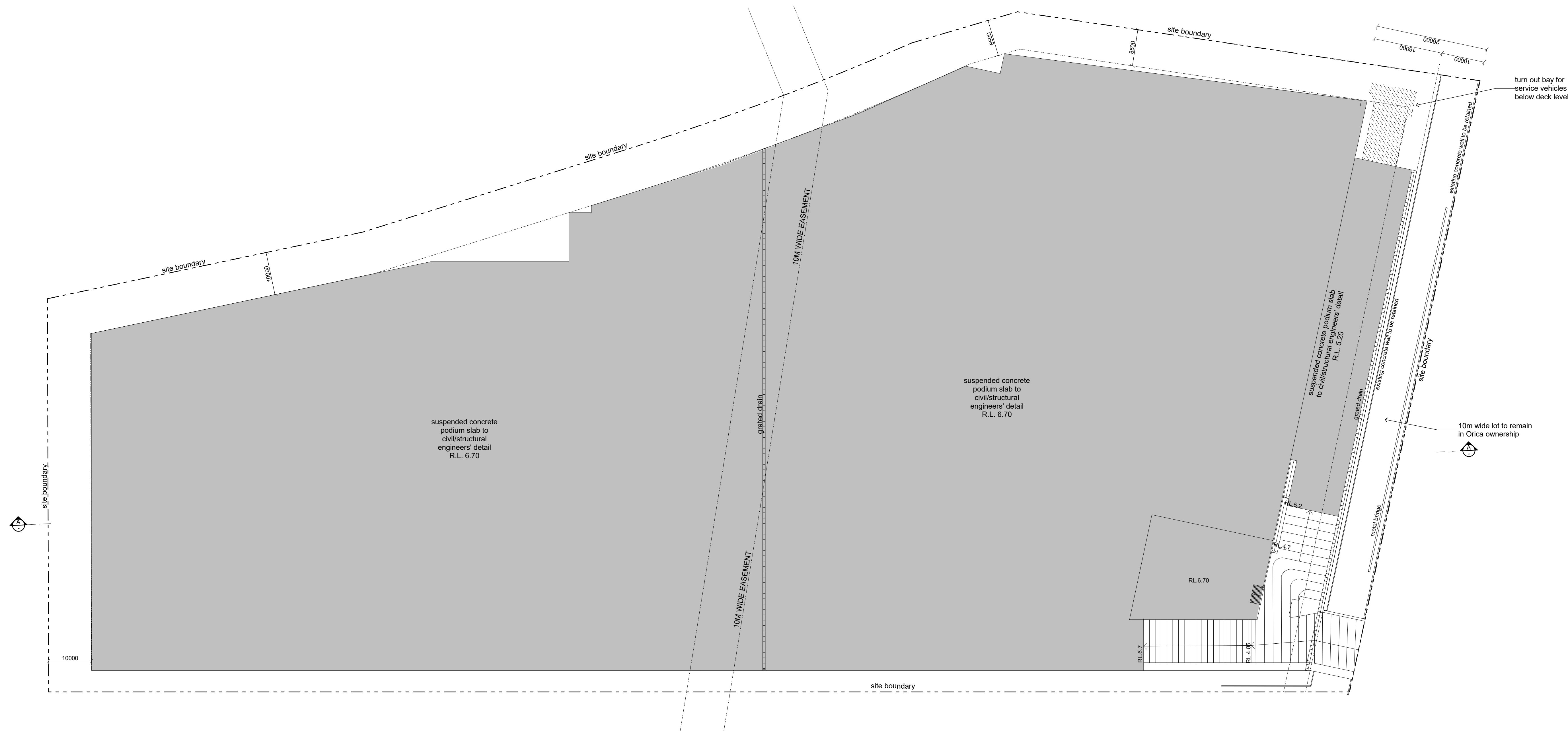
SITE LOCATION AND CONTEXT PLAN
(NTS)







SECTION AA  
Scale 1:500



PODIUM SLAB PLAN  
Scale 1:500

Notes

DO NOT SCALE OF DRAWING - DIMENSIONS & LEVELS TO BE VERIFIED PRIOR TO COMMENCEMENT OF WORK WITH FIGURED DIMENSIONS IN PREFERENCE TO SCALED DIMENSIONS.  
MATERIALS AND WORKMANSHIP TO BE IN STRICT ACCORDANCE WITH ALL RELEVANT S.A.A. STANDARDS, BCA AND LOCAL AUTHORITIES REQUIREMENTS.  
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Issue : Date : Amendment :

A 12/12/18 ISSUED FOR DEVELOPMENT APPLICATION

Project Manager :

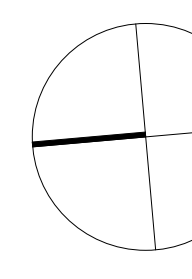
Project :

PROPOSED WAREHOUSE DEVELOPMENT  
WAREHOUSE/STORAGE/DISTRIBUTION  
28 McPherson Street, Banksmeadow, NSW



AXIS ARCHITECTURAL  
4 / 112 Cronulla Street, Cronulla NSW 2230  
p + 02 9523 7858 / m + 0414 954 405  
e + david@axisarchitects.com.au

AXIS ARCHITECTURAL Pty Ltd - ABN 18 086 853 376  
Nominated Architect - David McDonald NSW ARB No. 7997



Drawing :

PODIUM SLAB PLAN - STAGE 1

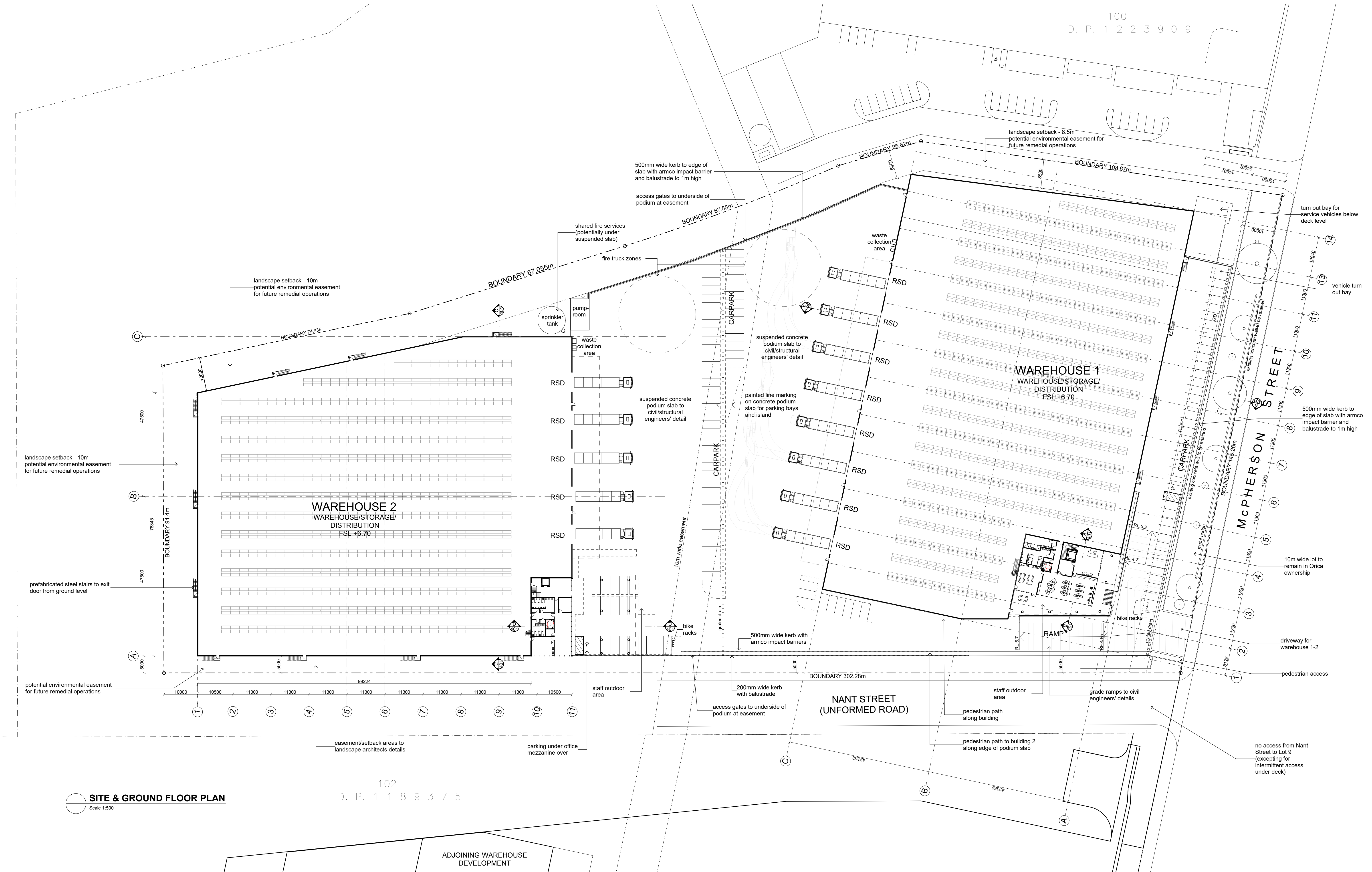
Drawn : RG  
Date : DEC 2018  
Scale : 1:500 @ A1

Project No :  
180101

Drawing No :  
DA / A 100

Issue :  
A





**SITE & GROUND FLOOR PLAN**  
Scale 1:500

Notes

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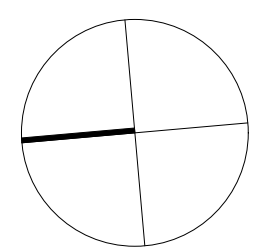
Issue : A 12/12/18  
Date :  
Amendment : ISSUED FOR DEVELOPMENT APPLICATION

Project Manager :

Project :

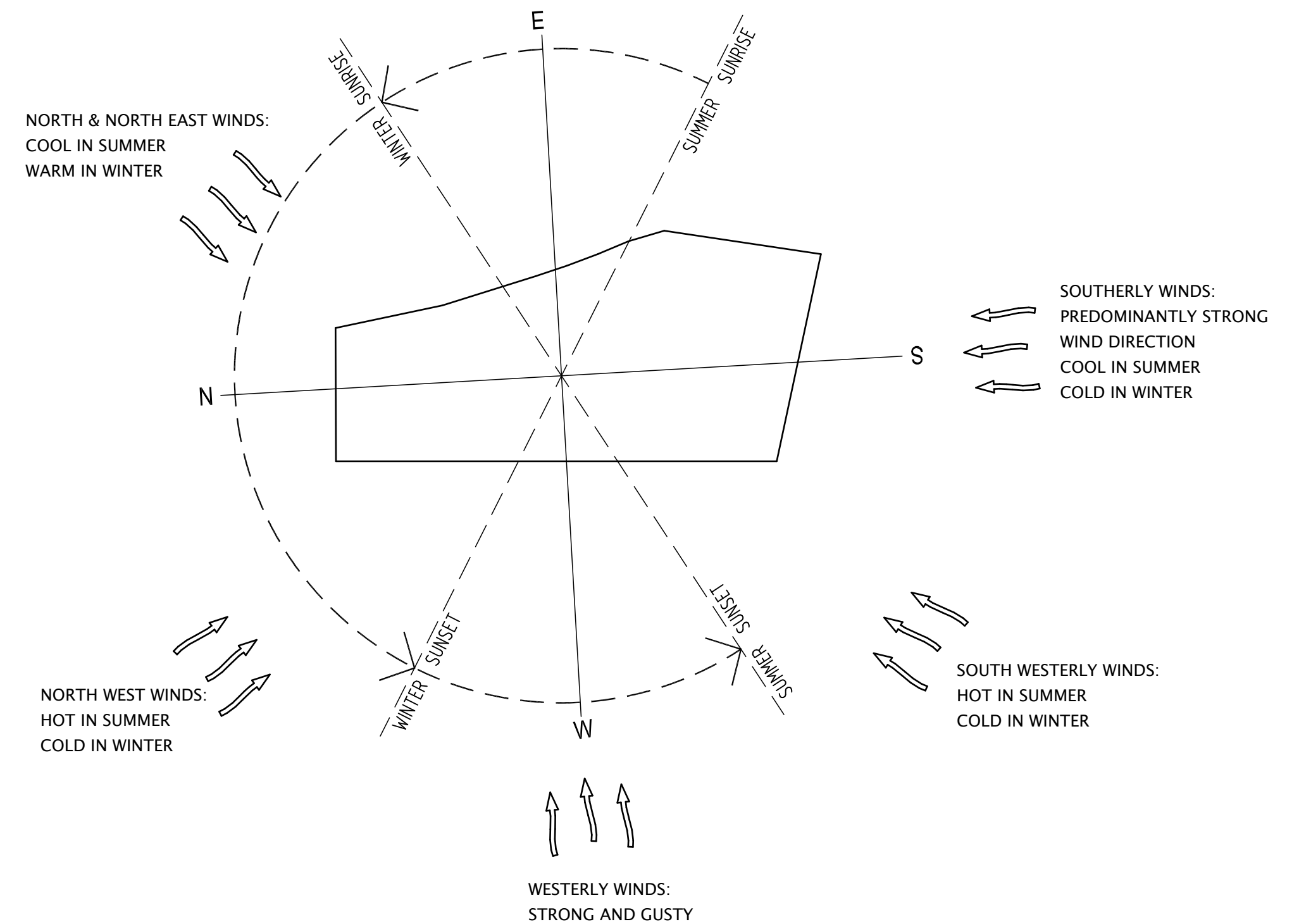
**PROPOSED WAREHOUSE DEVELOPMENT**  
**WAREHOUSE/STORAGE/DISTRIBUTION**  
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Nominated Architect - David McDonald NSW ARB No. 7997



|   |                     |                         |           |
|---|---------------------|-------------------------|-----------|
| Drawing : <b>SITE &amp; GROUND FLOOR PLAN</b> |                     |                         |           |
| Drawn : RG                                    | Project No : 180101 | Drawing No : DA / A 101 | Issue : A |
| Date : DEC 2018                               |                     |                         |           |
| Scale : 1:500 @ A1                            |                     |                         |           |





**SITE ANALYSIS PLAN**  
Scale 1:1000

Notes

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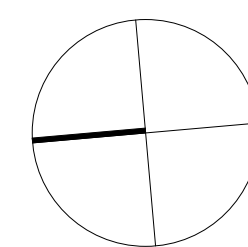
Issue :     Date :     Amendment :  
A   12/12/18     ISSUED FOR DEVELOPMENT APPLICATION

Project Manager :

Project :

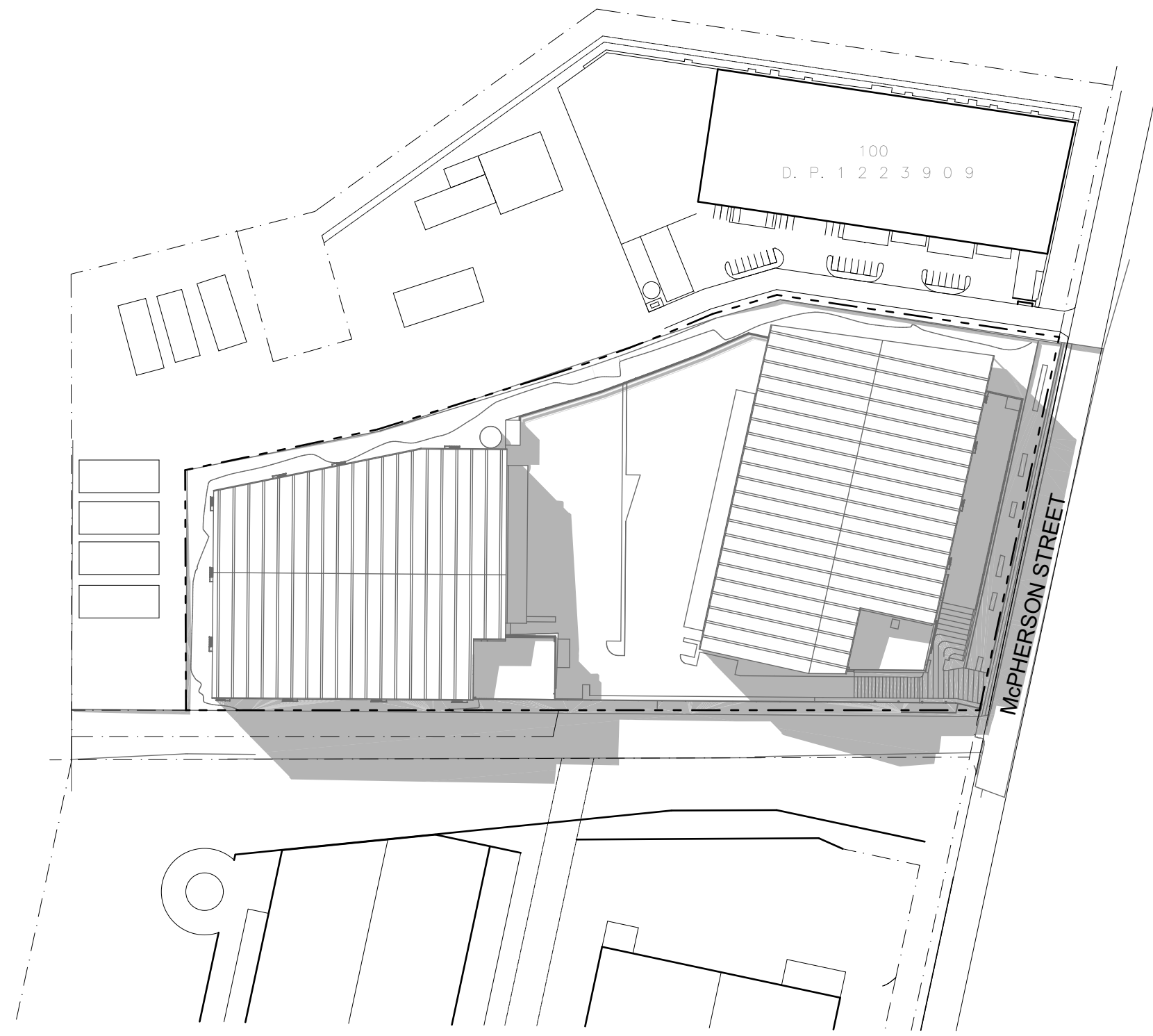
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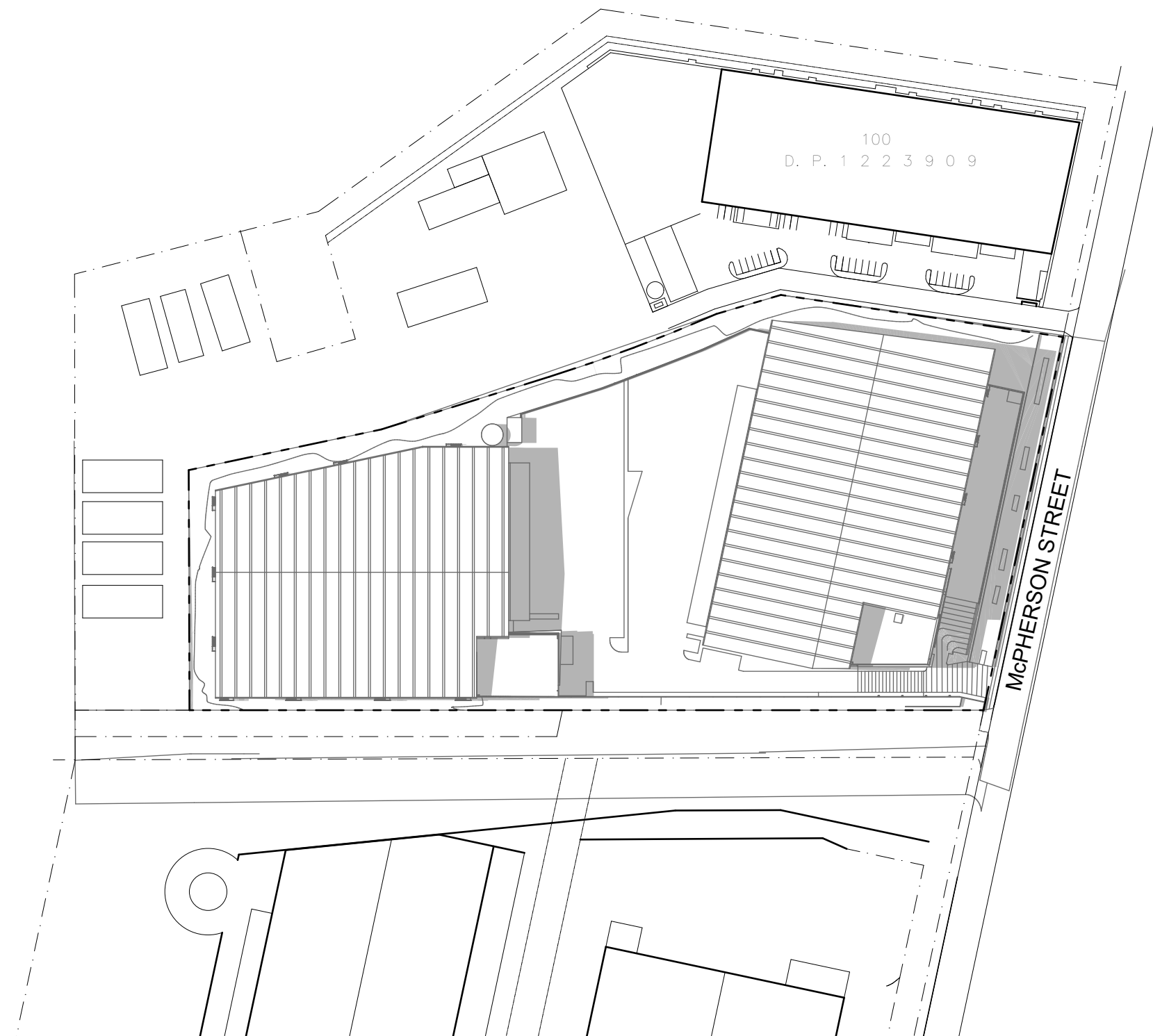


|  |                               |                                   |                     |
|--|-------------------------------|-----------------------------------|---------------------|
| Drawing :<br><b>SITE ANALYSIS</b>                    |                               |                                   |                     |
| Drawn : RG<br>Date : DEC 2018<br>Scale : 1:1000 @ A1 | Project No :<br><b>180101</b> | Drawing No :<br><b>DA / A 102</b> | Issue :<br><b>A</b> |

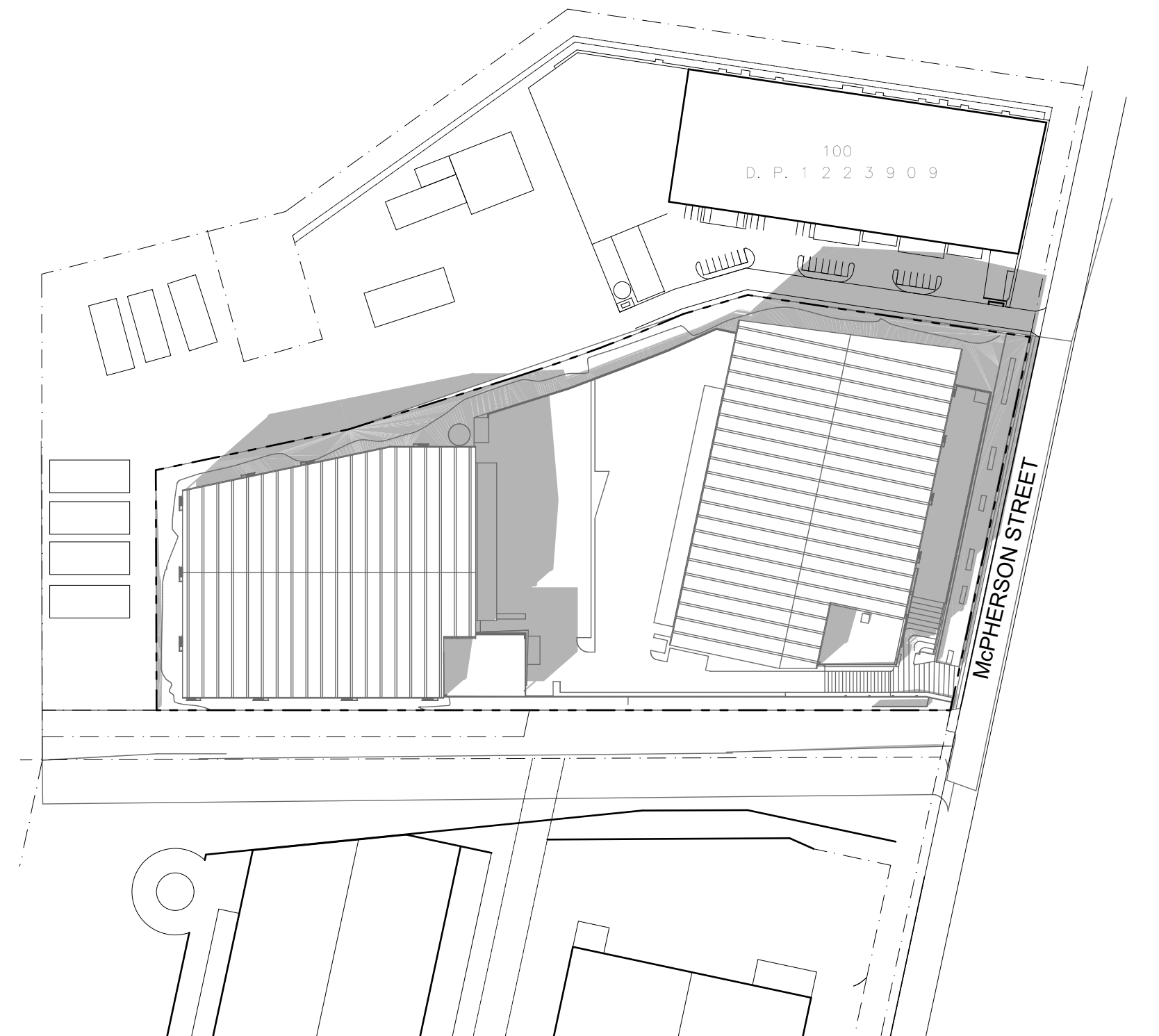




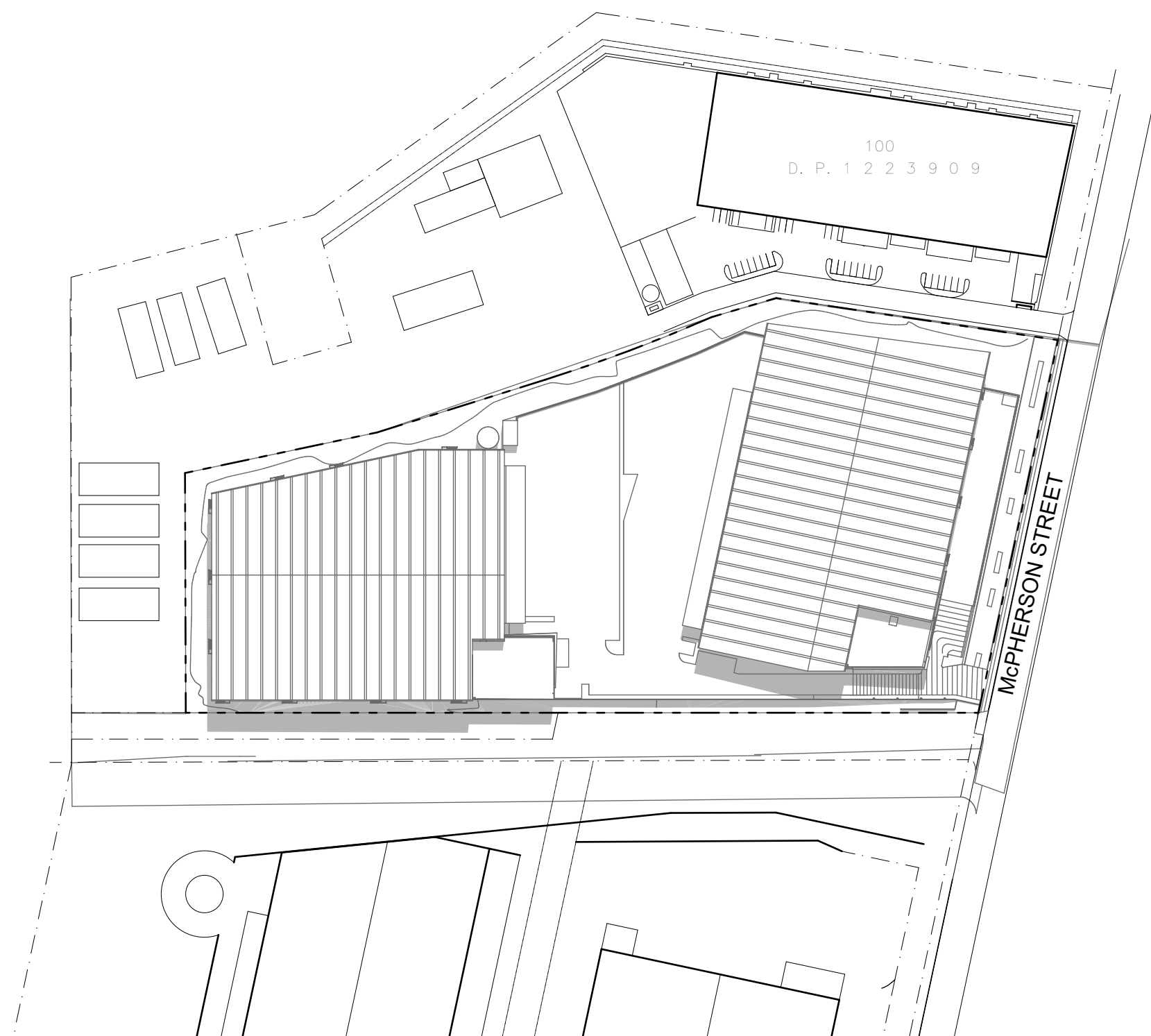
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1:2000



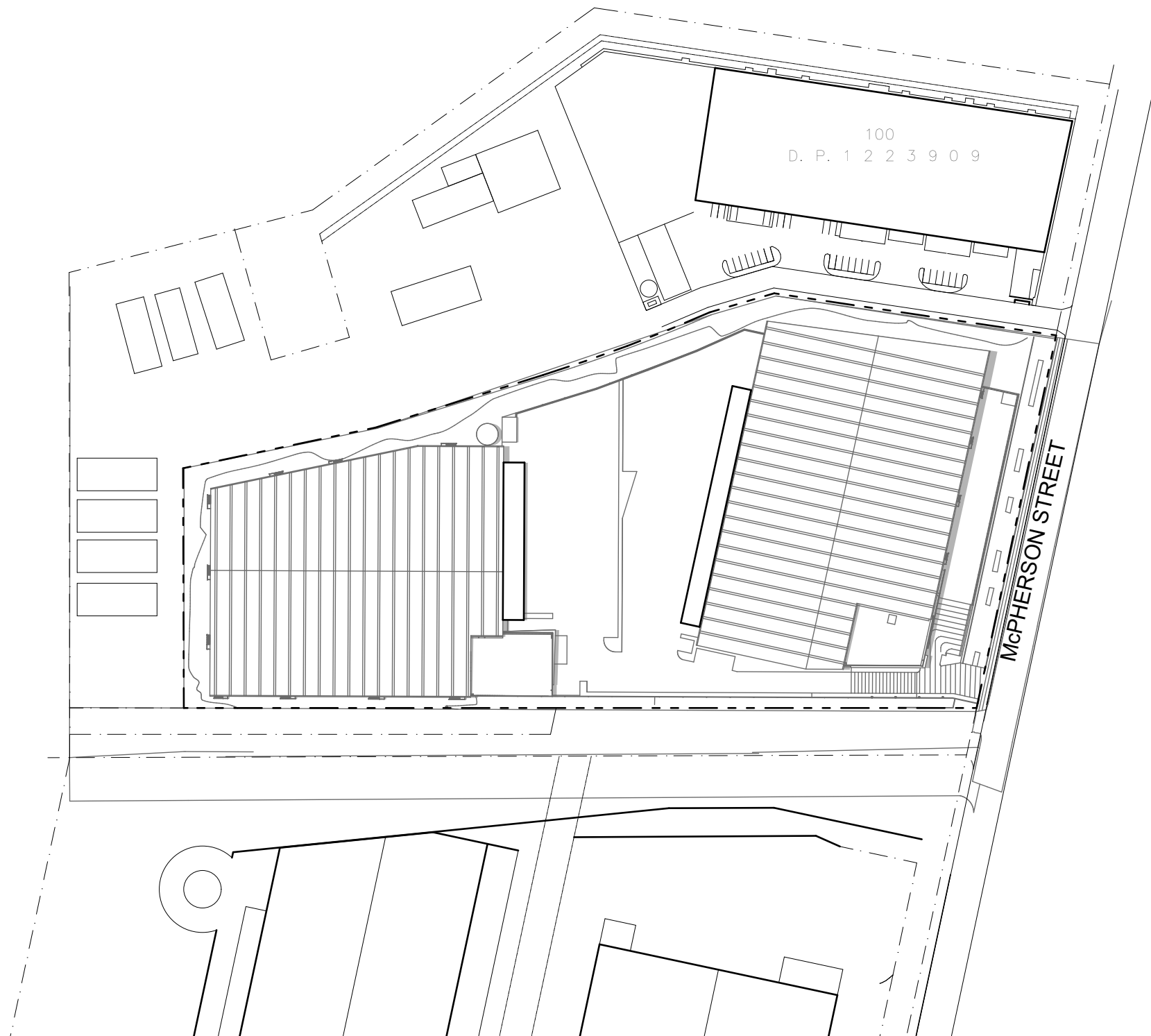
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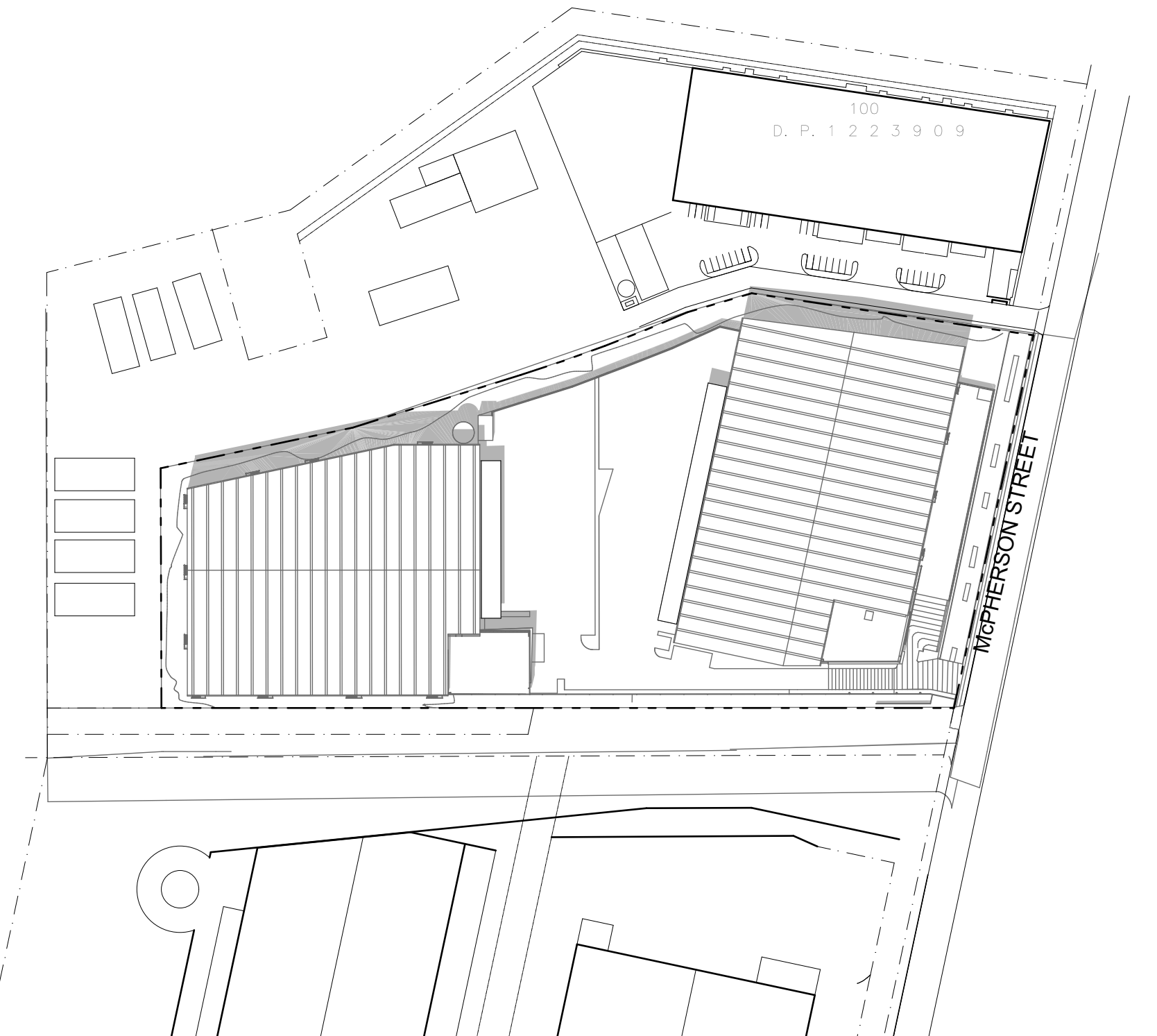
○ JUNE 21 - 3pm  
1:2000



○ DECEMBER 21 - 9am  
1:2000



○ DECEMBER 21 - 12pm  
1:2000



○ DECEMBER 21 - 3pm  
1:2000

Notes

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Project Manager :

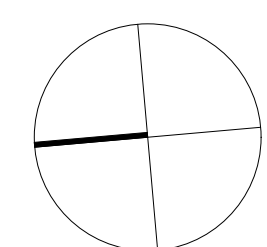
Project :

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WAREHOUSE/STORAGE/DISTRIBUTION  
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Nominated Architect - David McDonald NSW ARB No. 7997



Drawing :

SHADOW DIAGRAMS

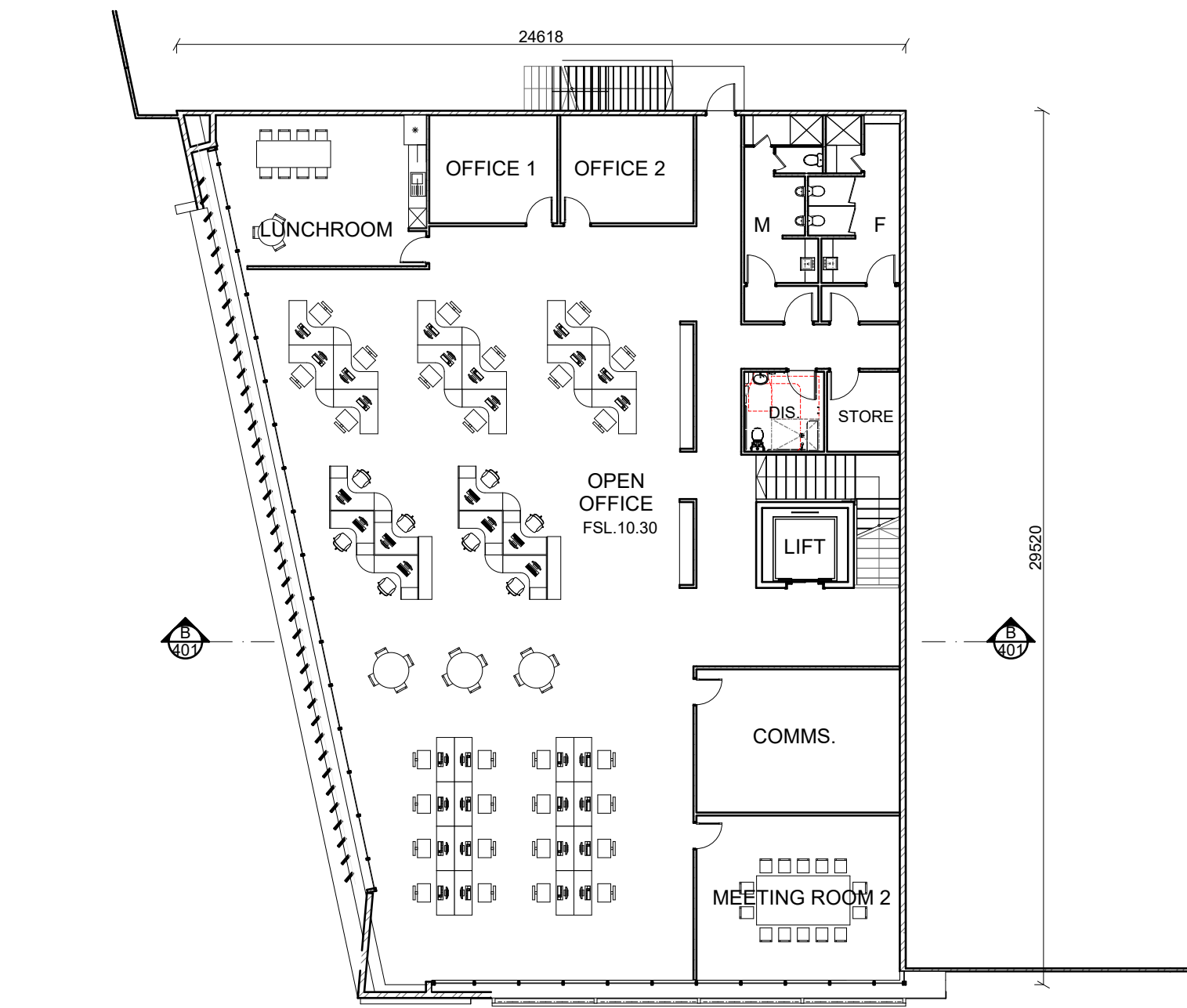
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Date : DEC 2018  
Scale : 1:2000 @ A1

Project No :  
180101

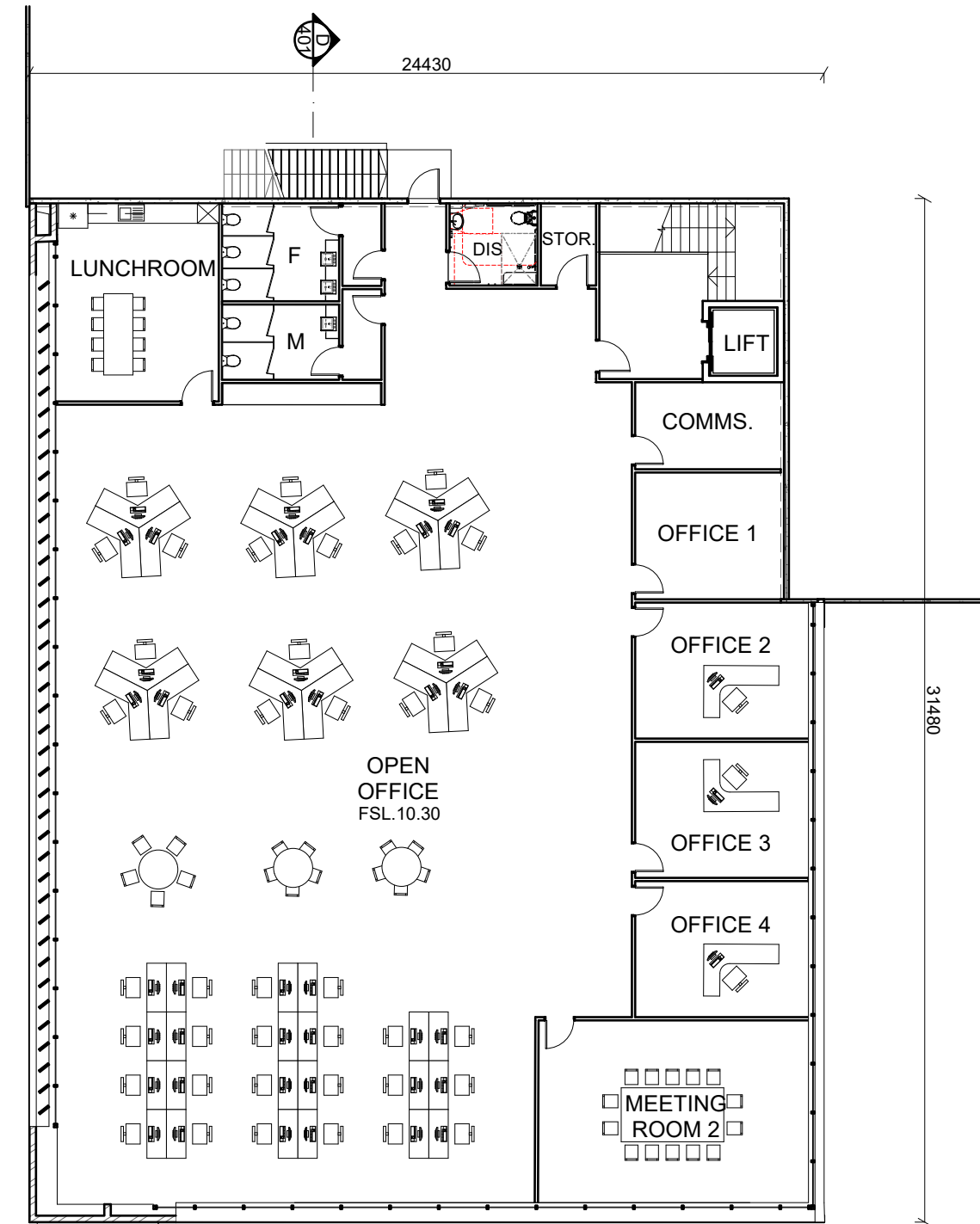
Drawing No :  
DA / A 103

Issue :  
A

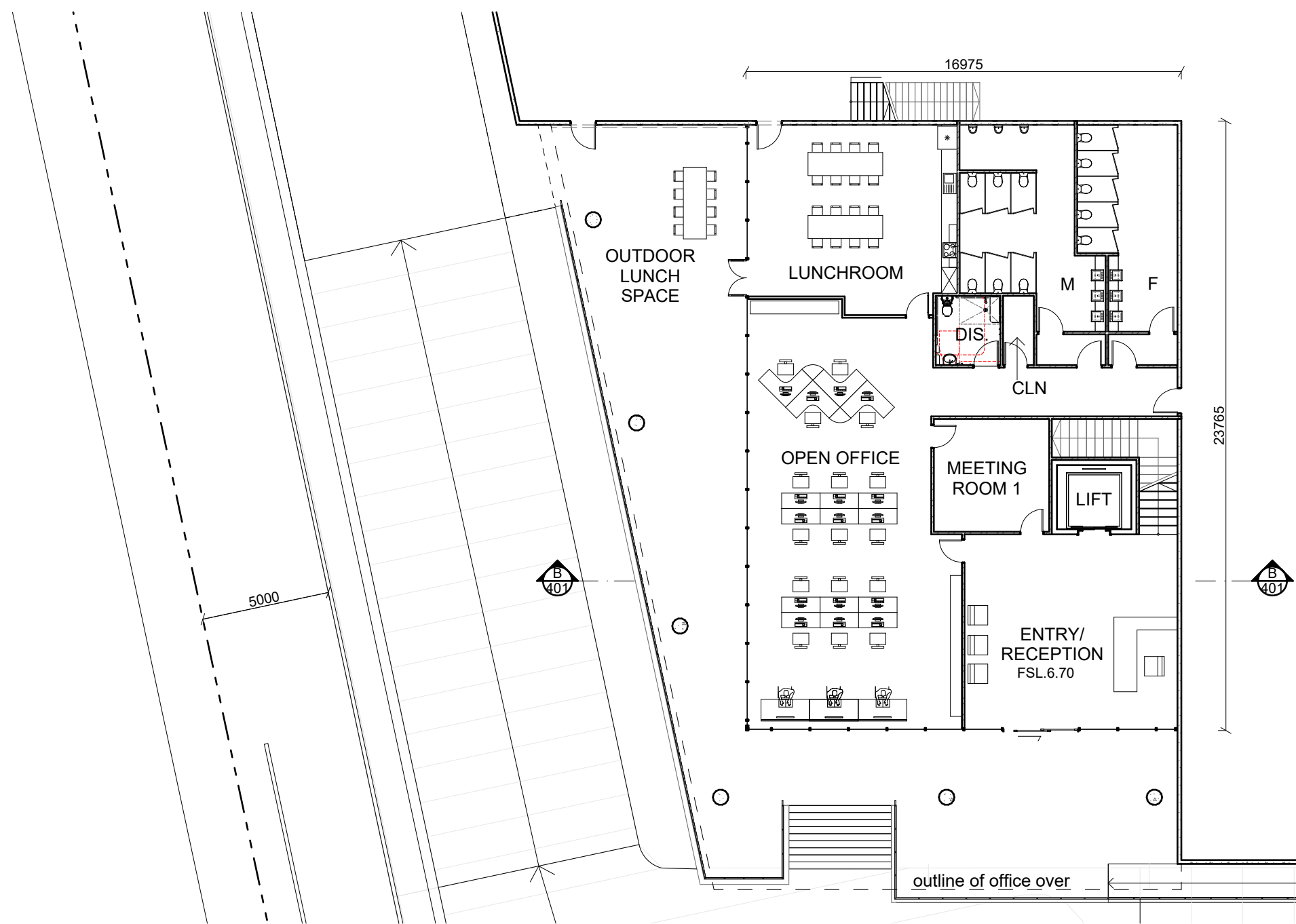




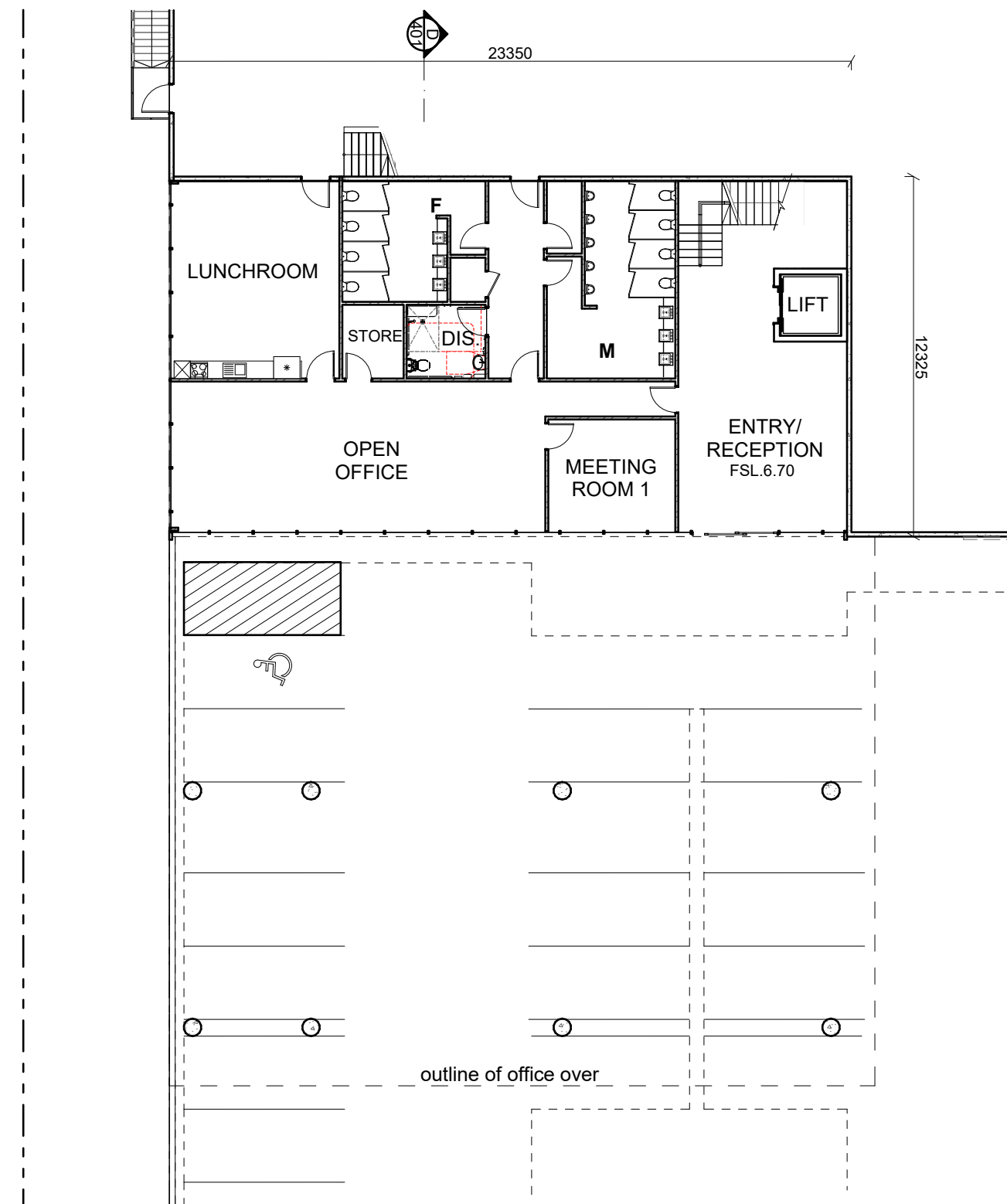
OFFICE 1 - FIRST FLOOR LAYOUT  
Scale 1:200



OFFICE 2 - FIRST FLOOR LAYOUT  
Scale 1:200



OFFICE 1 - GROUND FLOOR LAYOUT  
Scale 1:200



OFFICE 2 - GROUND FLOOR LAYOUT  
Scale 1:200

Notes

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Project Manager :

Project :

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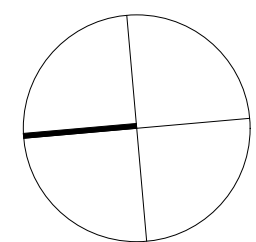
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Nominated Architect - David McDonald NSW ARB No. 7997



Drawing :

**OFFICE FLOOR PLANS**

|                    |                     |                         |           |
|--------------------|---------------------|-------------------------|-----------|
| Drawn : RG         | Project No : 180101 | Drawing No : DA / A 201 | Issue : A |
| Date : DEC 2018    |                     |                         |           |
| Scale : 1:200 @ A1 |                     |                         |           |



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Project :

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Nominated Architect - David McDonald NSW ARR No. 7997

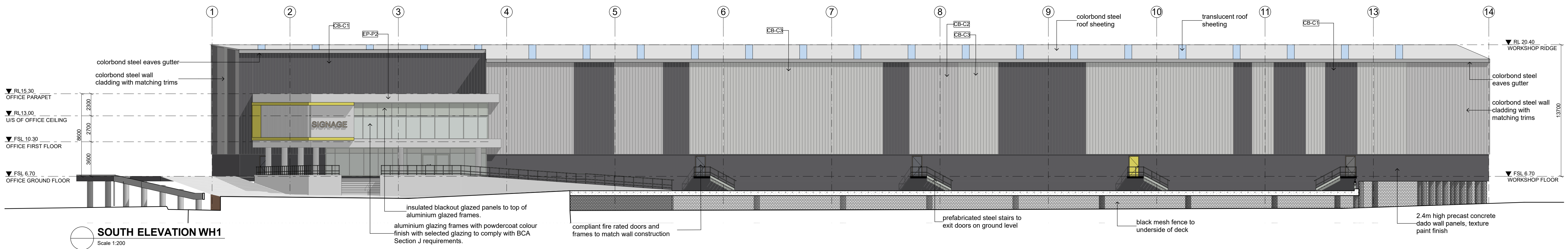


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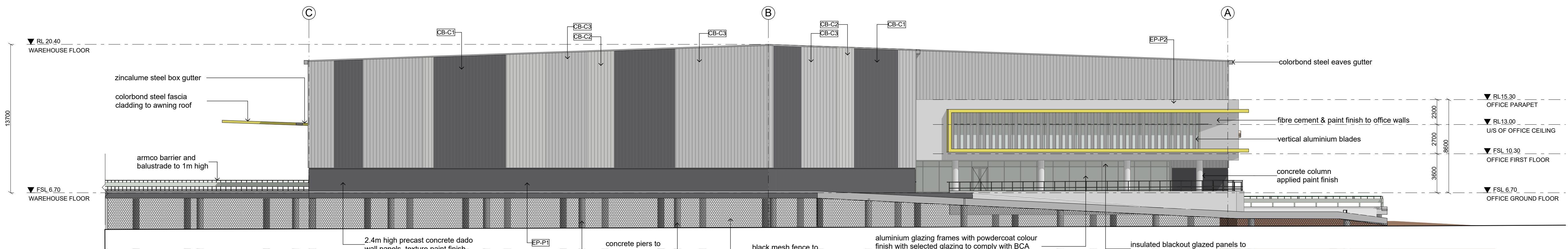
|              |        |
|--------------|--------|
| Project No : | 180101 |
|--------------|--------|

Drawing No :  
DA / A 202

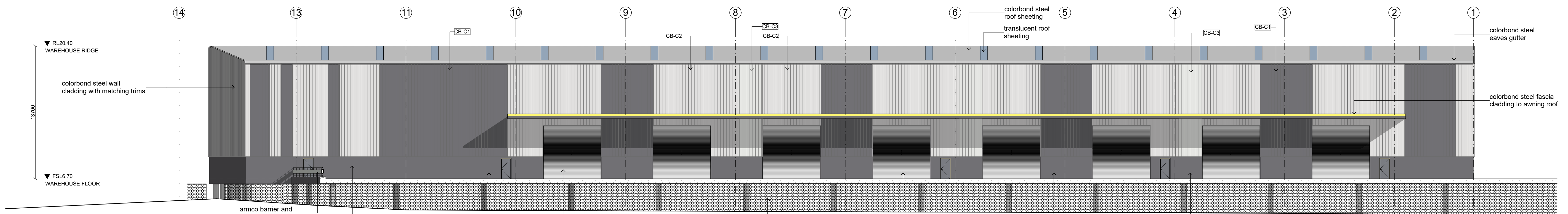




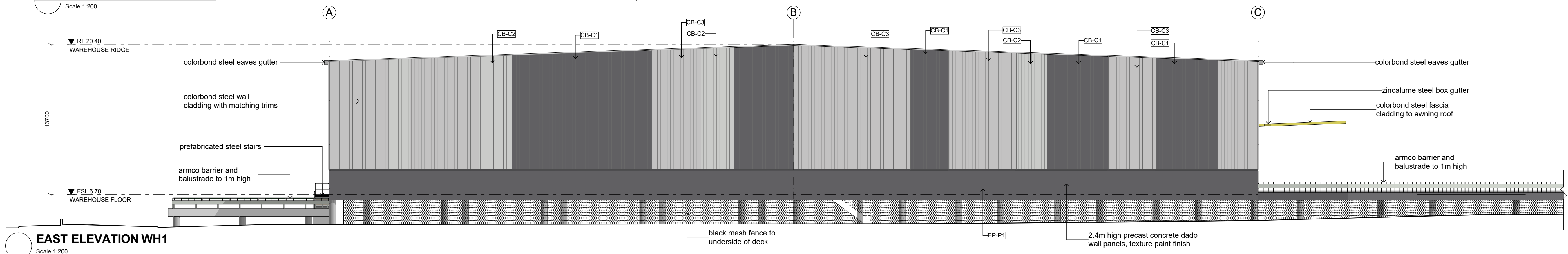
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Scale 1:200



**WEST ELEVATION WH1**  
Scale 1:200



**NORTH ELEVATION WH1**  
Scale 1:200



**EAST ELEVATION WH1**  
Scale 1:200

| EXTERNAL COLOUR SCHEDULE |  |
|--------------------------|--|
| COLORBOND COLOURS        |  |
|                          | CB-C1<br>Colorbond Steel - Monument          |
|                          | CB-C2<br>Colorbond Steel - Shale Grey        |
|                          | CB-C3<br>Colorbond Steel - Surfist           |
| EXTERNAL PAINT COLOURS   |  |
|                          | EP-P1<br>Paint finish - Dulux / Monument     |
|                          | EP-P2<br>Paint finish - Dulux / Lexicon Half |

Notes

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A    12/12/18    ISSUED FOR DEVELOPMENT APPLICATION

Project Manager :

Project :

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**WAREHOUSE/STORAGE/DISTRIBUTION**  
28 McPherson Street, Banksmeadow, NSW

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Nominated Architect - David McDonald NSW ARB No. 7997

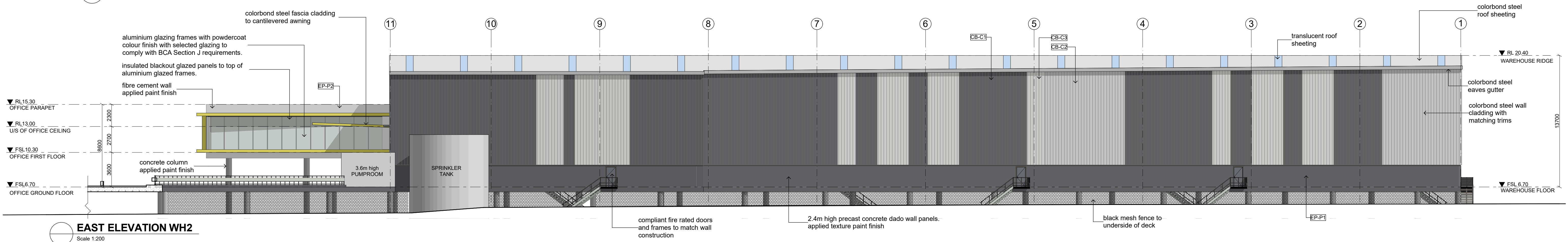
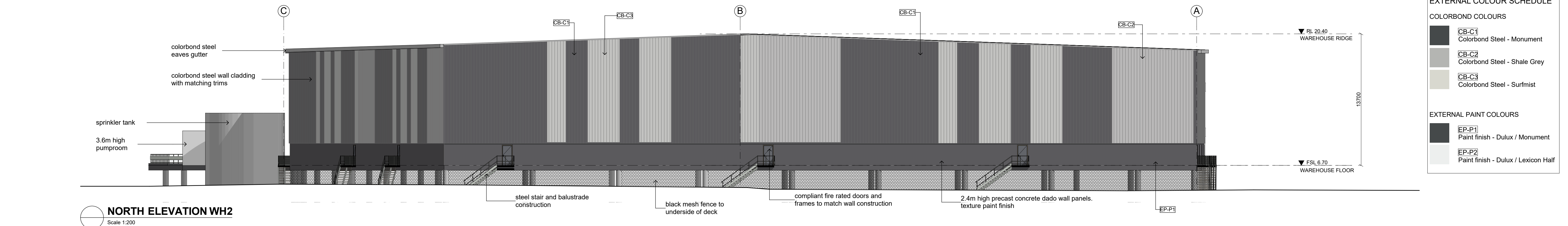
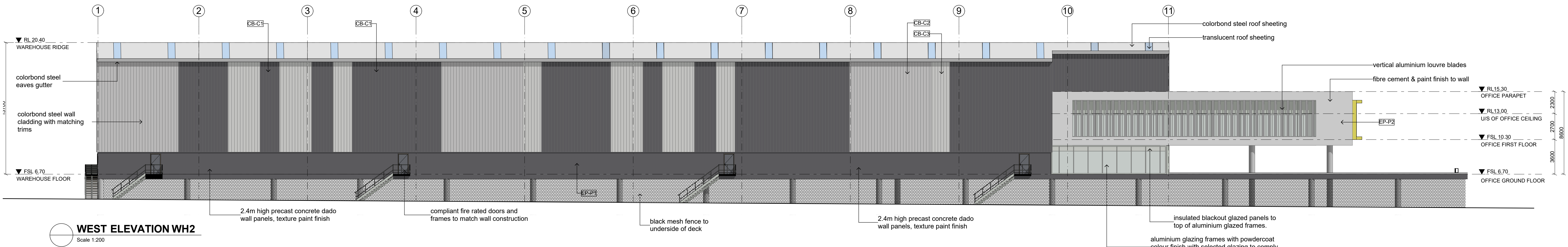
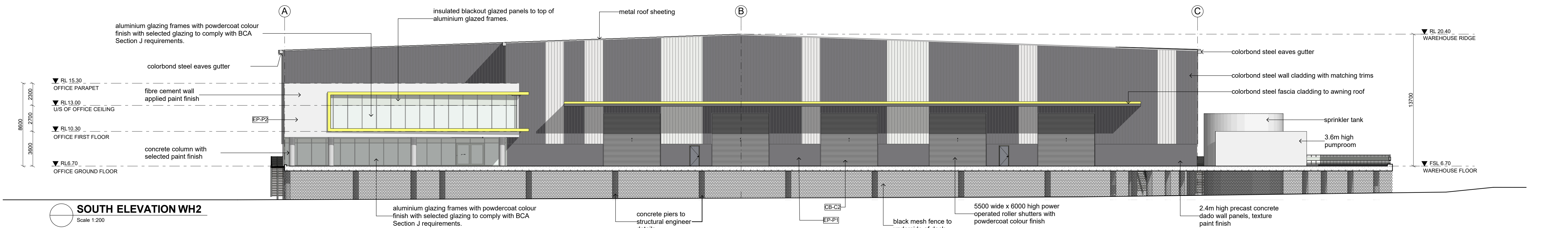


Drawing :

**WAREHOUSE 1 ELEVATIONS**

|                    |                     |                         |           |
|--------------------|---------------------|-------------------------|-----------|
| Drawn : RG         | Project No : 180101 | Drawing No : DA / A 301 | Issue : A |
| Date : DEC 2018    |                     |                         |           |
| Scale : 1:200 @ A1 |                     |                         |           |





| EXTERNAL COLOUR SCHEDULE |  |
|--------------------------|--|
| COLORBOND COLOURS        |  |
|                          | CB-C1<br>Colorbond Steel - Monument          |
|                          | CB-C2<br>Colorbond Steel - Shale Grey        |
|                          | CB-C3<br>Colorbond Steel - Surfmist          |
| EXTERNAL PAINT COLOURS   |  |
|                          | EP-P1<br>Paint finish - Dulux / Monument     |
|                          | EP-P2<br>Paint finish - Dulux / Lexicon Half |

Notes

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Project :

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Nominated Architect - David McDonald NSW ARB No. 7997

Drawing :

WAREHOUSE 2 ELEVATIONS

|                    |                     |                         |           |
|--------------------|---------------------|-------------------------|-----------|
| Drawn : RG         | Project No : 180101 | Drawing No : DA / A 302 | Issue : A |
| Date : DEC 2018    |                     |                         |           |
| Scale : 1:200 @ A1 |                     |                         |           |





PERSPECTIVE OF PROPOSED DEVELOPMENT



WESTERN VIEW OF PROPOSED DEVELOPMENT

Notes

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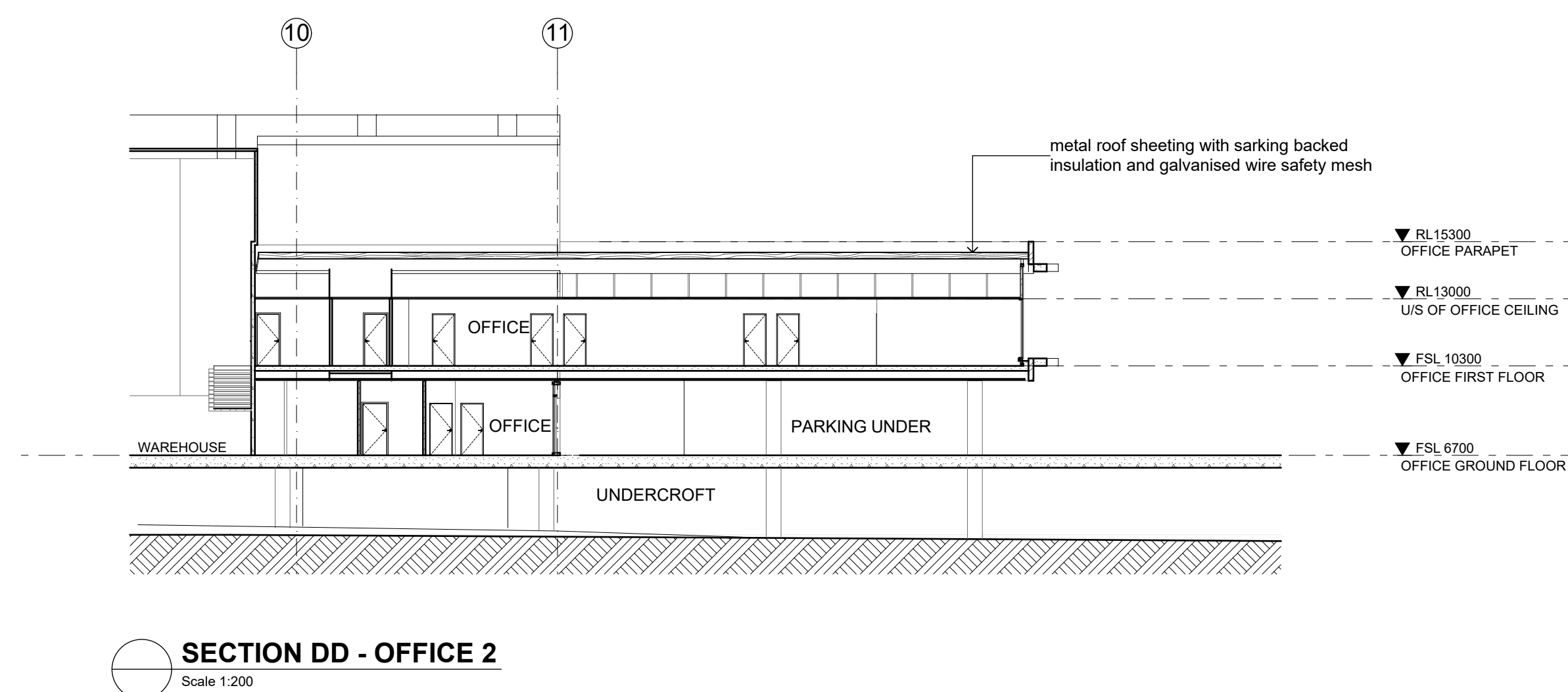
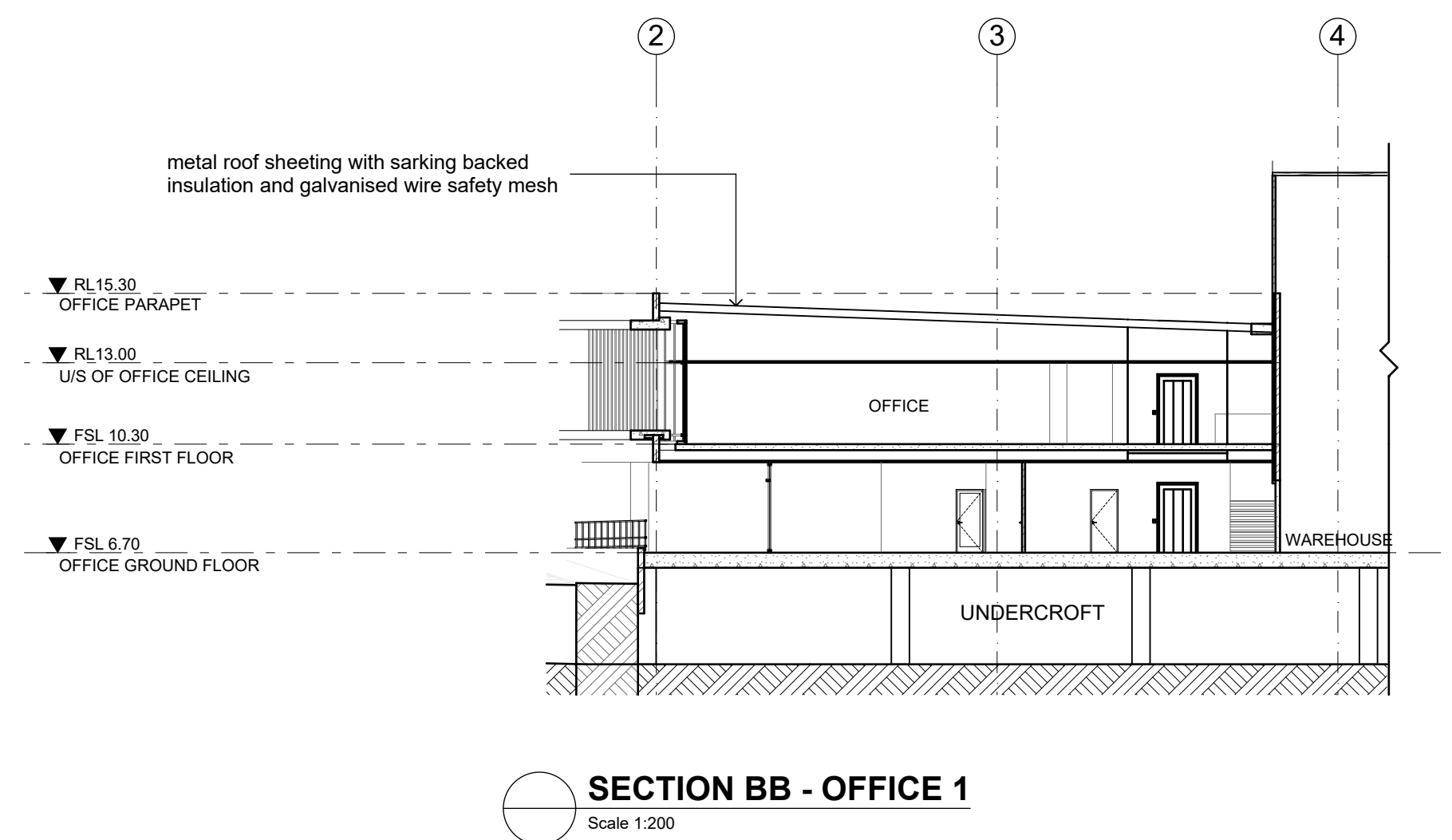
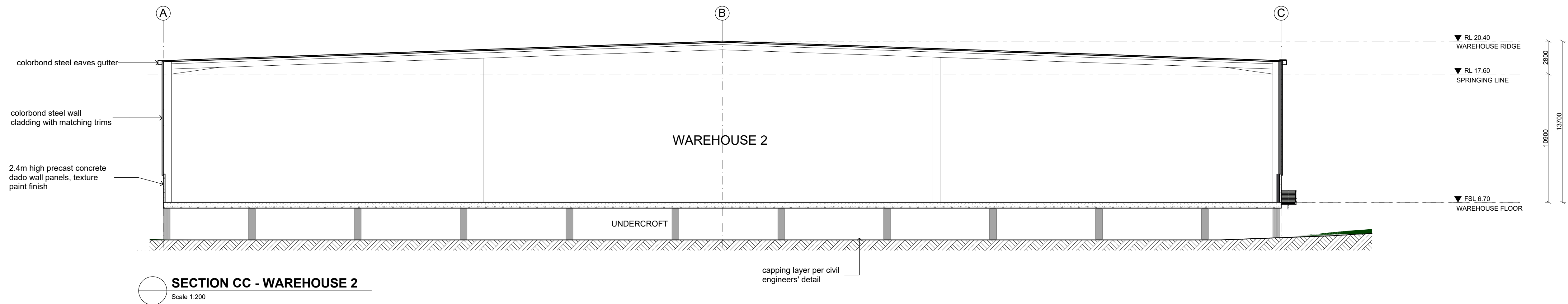
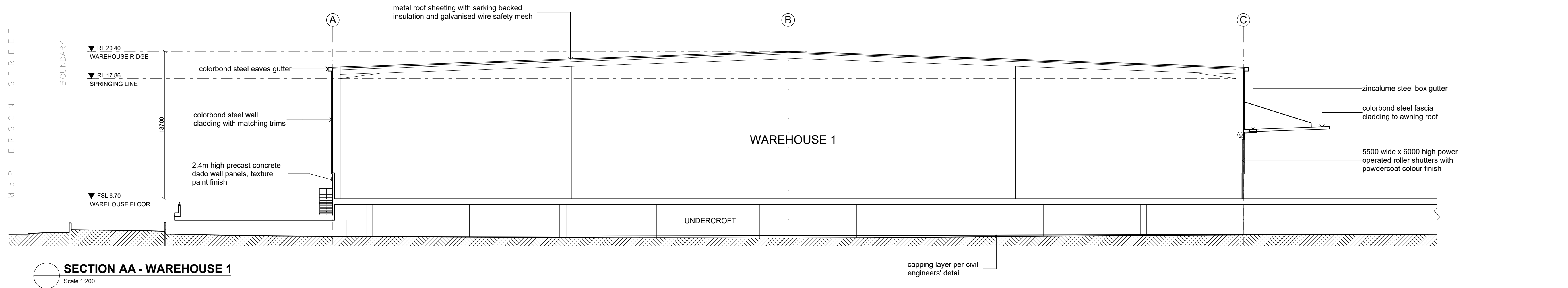


Drawing :

**PHOTOMONTAGES**

|                 |                     |                         |           |
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| Drawn : RG      | Project No : 180101 | Drawing No : DA / A 303 | Issue : A |
| Date : DEC 2018 |                     |                         |           |
| Scale : @A1     |                     |                         |           |





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Issue : Date : Amendment :

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Project :

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AXIS ARCHITECTURAL Pty Ltd - ABN 18 086 853 376  
Nominated Architect - David McDonald NSW ARB No. 7997



Drawing :

**SECTIONS**

Drawn : RG  
Date : DEC 2018  
Scale : 1:200 @ A1

Project No :  
180101

Drawing No :  
DA / A 401

Issue :  
A



PROPOSED WAREHOUSE  
DISTRIBUTION AND OFFICE DEVELOPMENT  
28 MCPHERSON ST, BANKSMEADOW  
CIVIL PACKAGE FOR SSD

DRAWING LIST

| DRAWING NO.    | DRAWING TITLE                             |
|----------------|---|
| C09349.12-DA10 | DRAWING LIST & GENERAL NOTES              |
| C09349.12-DA20 | EROSION & SEDIMENT CONTROL PLAN & DETAILS |
| C09349.12-DA30 | SITE PREPARATION PLAN                     |
| C09349.12-DA40 | STORMWATER KEY PLAN                       |
| C09349.12-DA41 | STORMWATER DRAINAGE PLAN -SHEET 1         |
| C09349.12-DA42 | STORMWATER DRAINAGE PLAN -SHEET 2         |
| C09349.12-DA45 | STORMWATER DRAINAGE DETAILS- SHEET 1      |
| C09349.12-DA51 | FINISHED LEVELS PLAN-SHEET 1              |
| C09349.12-DA52 | FINISHED LEVELS PLAN-SHEET 2              |



LOCALITY PLAN  
N.T.S

GENERAL NOTES:

- G1 THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- G2 ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT STANDARDS AUSTRALIA CODES AND WITH THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
- G3 ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. ENGINEER'S DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS. ENGINEER'S DRAWINGS ISSUED IN ANY ELECTRONIC FORMAT MUST NOT BE USED FOR DIMENSIONAL SETOUT. REFER TO THE ARCHITECT'S DRAWINGS FOR ALL DIMENSIONAL SETOUT INFORMATION.
- G4 DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED. TEMPORARY BRACING SHALL BE PROVIDED BY THE BUILDER TO KEEP THE WORKS AND EXCAVATIONS STABLE AT ALL TIMES.
- G5 UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.
- G6 ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH ACCEPTABLE SAFETY STANDARDS & APPROPRIATE SAFETY SIGNS SHALL BE INSTALLED AT ALL TIMES DURING THE PROGRESS OF THE JOB.

STORMWATER DRAINAGE NOTES:

- ALL STORMWATER WORKS TO BE COMPLETED IN ACCORDANCE WITH AUSTRALIAN STANDARD AS3500.3:2003 PLUMBING AND DRAINAGE, PART 3: STORMWATER DRAINAGE.
- THE MINOR (PIPED) SYSTEM HAS BEEN DESIGNED FOR THE 1 IN 20 YEAR ARI STORM EVENT AND THE MAJOR (OVERLAND) SYSTEM HAS BEEN DESIGNED FOR THE 1 IN 100 YEAR ARI STORM EVENT.
- ALL FINISHED PAVEMENT LEVELS SHALL BE AS INDICATED ON FINISHED LEVELS PLANS DA51 & DA52.
- PIT SIZES SHALL BE AS INDICATED IN THE SCHEDULE WHILE PIPE SIZES AND DETAILS ARE PROVIDED ON PLAN.
- EXISTING STORMWATER PIT LOCATIONS AND INVERT LEVELS TO BE CONFIRMED BY SURVEY PRIOR TO COMMENCING WORKS ON SITE.
- ALL STORMWATER PIPES Ø375 OR GREATER SHALL BE CLASS 2 (WITH HS2 SUPPORT) REINFORCED CONCRETE WITH RUBBER RING JOINTS UNLESS NOTED OTHERWISE.
- ALL PIPES UP TO AND INCLUDING Ø300 TO BE uPVC GRADE S8 UNO.
- PIPE CLASS NOMINATED ARE FOR IN-SERVICE LOADING CONDITIONS ONLY. CONTRACTOR IS TO MAKE ANY NECESSARY ADJUSTMENTS REQUIRED FOR CONSTRUCTION CONDITIONS.
- ALL CONCRETE PITS GREATER THAN 1000mm DEEP SHALL BE REINFORCED USING N12-200 EACH WAY CENTERED IN WALL AND BASE. LAP MINIMUM 300mm WHERE REQUIRED. ALL CONCRETE FOR PITS SHALL BE F'c 25 MPa. PRECAST PITS MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
- IN ADDITION TO ITEM 6 ABOVE, ALL CONCRETE PITS GREATER THAN 3000mm DEEP SHALL HAVE WALLS AND BASE THICKNESS INCREASED TO 200mm.
- PIPES SHALL BE LAID AS PER PIPE LAYING DETAILS. PARTICULAR CARE SHALL BE TAKEN TO ENSURE THAT THE PIPE IS FULLY AND EVENLY SUPPORTED. RAM AND PACK FILLING AROUND AND UNDER BACK OF PIPES AND PIPE FAUCETS, WITH NARROW EDGED RAMMERS OR OTHER SUITABLE TAMPING DETAILS.
- CONCRETE PIPES UNDER, OR WITHIN THE ZONE OF INFLUENCE OF PAVED AREAS SHALL BE LAID USING HS2 TYPE SUPPORT, AS A MINIMUM, IN ACCORDANCE WITH AS 3725. AGGREGATE BACKFILL SHALL NOT BE USED FOR PIPE BEDDING AND OR HAUNCH/SIDE SUPPORT.
- WHERE PIPE LINES ENTER PITS, PROVIDE 2m LENGTH OF STOCKING WRAPPED SLOTTED Ø100 uPVC TO EACH SIDE OF PIPE.
- ALL SUBSOIL DRAINAGE LINES SHALL BE Ø100 SLOTTED uPVC WITH APPROVED FILTER WRAP LAID IN 300mm WIDE GRANULAR FILTER UNLESS NOTED OTHERWISE. LAY SUBSOIL LINES TO MATCH FALLS OF LAND AND/OR 1 IN 200 MINIMUM. PROVIDE CAPPED (CLEANING EYE (RODDING POINT) AT UPSTREAM END OF LINE AND AT 30m MAX. CTS. PROVIDE SUBSOIL LINES TO ALL PAVEMENT/ LANDSCAPED INTERFACES, TO REAR OF RETAINING WALLS (AS NOMINATED BY STRUCTURAL ENGINEER) AND AS SHOWN ON PLAN.
- ALL PIPE GRADES 1 IN 100 MINIMUM UNO.
- PROVIDE STEP IRONS IN PITS DEEPER THAN 1000mm.
- MIN. 600 COVER TO PIPE OBVERT BENEATH ROADS & MIN. 400 COVER BENEATH LANDSCAPED AND PEDESTRIAN AREAS.
- PIT COVERS IN TRAFFICABLE PAVEMENT SHALL BE CLASS D 'HEAVY DUTY'. THOSE LOCATED IN NON-TRAFFICABLE AREAS SHALL BE CLASS B 'MEDIUM DUTY' UNO.
- PROVIDE CLEANING EYES (RODDING POINTS) TO PIPES AT ALL CORNERS AND T-JUNCTIONS WHERE NO PITS ARE PRESENT.
- DOWN PIPES (DP) TO BE AS PER HYDRAULIC ENGINEERS DETAILS WITH CONNECTOR TO MATCH DP SIZE U.N.O. ON PLAN. PROVIDE CLEANING EYE AT GROUND LEVEL.
- PIPE LENGTHS NOMINATED ON PLAN OR LONGSECTIONS ARE MEASURED FROM CENTER OF PITS TO THE NEAREST 0.5m AND DO NOT REPRESENT ACTUAL LENGTH. THE CONTRACTOR IS TO ALLOW FOR THIS.

ELECTRONIC INFORMATION NOTES:

- THE ISSUED DRAWINGS IN HARD COPY OR PDF FORMAT TAKE PRECEDENCE OVER ANY ELECTRONICALLY ISSUED INFORMATION, LAYOUTS OR DESIGN MODELS.
- THE CONTRACTOR'S DIRECT AMENDMENT OR MANIPULATION OF THE DATA OR INFORMATION THAT MIGHT BE CONTAINED WITHIN AN ENGINEER-SUPPLIED DIGITAL TERRAIN MODEL AND ITS SUBSEQUENT USE TO UNDERTAKE THE WORKS WILL BE SOLELY AT THE DISCRETION OF AND THE RISK OF THE CONTRACTOR.
- THE CONTRACTOR IS REQUIRED TO HIGHLIGHT ANY DISCREPANCIES BETWEEN THE DIGITAL TERRAIN MODEL AND INFORMATION PROVIDED IN THE CONTRACT AND/OR DRAWINGS AND IS REQUIRED TO SEEK CLARIFICATION FROM THE SUPERINTENDENT.
- THE ENGINEER WILL NOT BE LIABLE OR RESPONSIBLE FOR THE POSSIBLE ON-GOING NEED TO UPDATE THE DIGITAL TERRAIN MODEL, SHOULD THERE BE ANY AMENDMENTS OR CHANGES TO THE DRAWINGS OR CONTRACT INITIATED BY THE CONTRACTOR.

SITE PREPARATION NOTES:

- ALL EARTHWORKS SHALL BE COMPLETED GENERALLY IN ACCORDANCE WITH THE GUIDELINES SPECIFIED BY THE GEOTECHNICAL ENGINEER UNDER LEVEL 1 SUPERVISION.
- EXISTING LEVELS ARE BASED ON INFORMATION PROVIDED BY RYGATE SURVEYORS' TITLED PLAN SHOWING DETAIL AND PLAN LEVELS LOT 9 DP 1205673 NO.28 MCPHERSON STREET DATED 30.10.18.
- STRIP ANY TOP SOIL OR DELETERIOUS MATERIAL AND DISPOSE OF FROM SITE OR STORE AS DIRECTED.
- COMPLETE CUT TO FILL EARTHWORKS TO ACHIEVE THE REQUIRED LEVELS AS INDICATED ON THE DRAWINGS WITHIN A TOLERANCE OF +0mm/-10mm THROUGH BUILDING PADS/PAVEMENTS AND +0mm/-20mm ELSEWHERE.
- PREPARE STEEP BATTERS TO RECEIVE FILL BY CONSTRUCTING BENCHING TO FACILITATE FILL PLACEMENT AND COMPACTION.
- AREAS TO RECEIVE FILL (THAT ARE NOT ON BENCHED BATTERS) AND AREAS IN CUT SHALL BE PROOF ROLLED TO IDENTIFY ANY SOFT HEAVING MATERIAL. SOFT MATERIAL SHALL BE BOXED OUT AND REMOVED PRIOR TO FILL PLACEMENT. PROOF ROLLING TO BE INSPECTED BY A GEOTECHNICAL ENGINEER.
- SITE WON FILL SHALL BE COMPACTED IN MAXIMUM 300mm LAYERS AND TO DRY OR HLF DENSITY RATIOS (STANDARD COMPACTION) OF BETWEEN 98% AND 103%. THE PLACEMENT MOISTURE VARIATION OR HLF MOISTURE VARIATION SHALL BE CONTROLLED TO BE BETWEEN 2% DRY AND 2% WET.
- IMPORTED FILL SHALL BE COMPACTED IN MAXIMUM 300mm LAYERS AND TO DRY OR HLF DENSITY RATIOS (STANDARD COMPACTION) OF BETWEEN 98% AND 103%. THE PLACEMENT MOISTURE VARIATION OR HLF MOISTURE VARIATION SHALL BE CONTROLLED TO BE BETWEEN 2% DRY AND 2% WET.
- ALL ENGINEERED FILL PARTICLES SHALL BE ABLE TO BE INCORPORATED WITHIN A SINGLE LAYER. FURTHER, LESS THAN 30% OF PARTICLES SHALL BE RETAINED ON THE 375 MM SIEVE. ENGINEERED FILL SHALL BE ABLE TO BE TESTED IN ACCORDANCE WITH THE STANDARD COMPACTION METHOD (AS1289.5.1) OR HLF TEST METHOD (AS1289.5.1). THESE METHODS REQUIRE LESS THAN 20% RETAINED ON THE 375 MM SIEVE. WHERE BETWEEN 20% AND 30% OF PARTICLES ARE RETAINED ON THE 375 MM SIEVE THE ABOVE TEST METHODS SHALL STILL BE ADOPTED AND TEST REPORTS ANNOTATED APPROPRIATELY. THESE REQUIREMENTS SHOULD BE MET BY THE MATERIAL AFTER PLACEMENT AND COMPACTION.
- ALL THE EARTHWORKS UNDERTAKEN AND THE SUBGRADE CONDITION IN THE CUT AREAS (IN THE STATED PERIOD) ARE DOCUMENTED IN THE REPORTS AND HAVE BEEN UNDERTAKEN IN ACCORDANCE WITH THE SPECIFICATION.
- PRIOR TO ANY EARTHWORKS, EROSION CONTROL AS OUTLINED IN THE EROSION AND SEDIMENTATION CONTROL PLAN SHALL BE COMPLETED.
- EXISTING ROCK, IF ANY, SHALL BE REMOVED BY HEAVY ROCK BREAKING OR RIPPING.
- MATCH EXISTING LEVELS AT BATTER INTERFACE.
- CONTRACTOR TO MATCH EXISTING LEVELS AT THE INTERFACE OF EARTHWORKS AND EXISTING SURFACE AT BATTER LOCATIONS OR WHERE NO RETAINING WALLS ARE PRESENT. ANY DISCREPANCY BETWEEN DESIGN AND EXISTING LEVELS TO BE REFERRED TO THE ENGINEER FOR DIRECTION OR ADJUSTMENTS TO DESIGN LEVELS.

EROSION CONTROL NOTES

ALL CONTROL WORK INCLUDING DIVERSION BANKS AND CATCH DRAINS, V-DRAINS AND SILT FENCES SHALL BE COMPLETED DIRECTLY FOLLOWING THE COMPLETION OF THE EARTHWORKS.

- SILT FENCES AND SILT FENCE RETURNS SHALL BE ERECTED CONVEX TO THE CONTOUR TO POND WATER.
- HAY BALE BARRIERS AND GEOTEXTILE FENCES ARE TO BE CONSTRUCTED TO TOE OF BATTER, PRIOR TO COMMENCEMENT OF EARTHWORKS, IMMEDIATELY AFTER CLEARING OF VEGETATION AND BEFORE REMOVAL OF TOP SOIL.
- ALL TEMPORARY EARTH BERM, DIVERSION AND SILT DAM EMBANKMENTS ARE TO BE MACHINE COMPACTED, SEEDED AND MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED.
- CLEAR WATER IS TO BE DIVERTED AWAY FROM DISTURBED GROUND AND INTO THE DRAINAGE SYSTEM.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND PROVIDING ON GOING ADJUSTMENT TO EROSION CONTROL MEASURES AS REQUIRED DURING CONSTRUCTION.
- ALL SEDIMENT TRAPPING STRUCTURES AND DEVICES ARE TO BE INSPECTED AFTER STORMS FOR STRUCTURAL DAMAGE OR CLOGGING. TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE, APPROVED LOCATION.
- ALL FINAL EROSION PREVENTION MEASURES INCLUDING THE ESTABLISHMENT OF GRASSING ARE TO BE MAINTAINED UNTIL THE END OF THE DEFECTS LIABILITY PERIOD.
- ALL EARTHWORKS AREAS SHALL BE ROLLED ON A REGULAR BASIS TO SEAL THE EARTHWORKS.
- ALL FILL AREAS ARE TO BE LEFT WITH A BUND AT THE TOP OF THE SLOPE AT THE END OF EACH DAYS EARTHWORKS. THE HEIGHT OF THE BUND SHALL BE A MINIMUM OF 200mm.
- ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND HYDROMULCHED WITHIN 10 DAYS OF COMPLETION OF FORMATION.
- AFTER REVEGETATION OF THE SITE IS COMPLETE AND THE SITE IS STABLE IN THE OPINION OF A SUITABLY QUALIFIED PERSON ALL TEMPORARY WORK SUCH AS SILT FENCE, DIVERSION DRAINS ETC SHALL BE REMOVED.
- ALL TOPSOIL STOCKPILES ARE TO BE SUITABLY COVERED TO THE SATISFACTION OF THE SITE MANAGER TO PREVENT WIND AND WATER EROSION.
- ANY AREA THAT IS NOT APPROVED BY THE CONTRACT ADMINISTRATOR FOR CLEARING OR DISTURBANCE BY THE CONTRACTOR'S ACTIVITIES SHALL BE CLEARLY MARKED AND SIGN POSTED, FENCED OFF OR OTHERWISE APPROPRIATELY PROTECTED AGAINST ANY SUCH DISTURBANCE.
- ALL STOCKPILE SITES SHALL BE SITUATED IN AREAS APPROVED FOR SUCH USE BY THE SITE MANAGER. A 6m BUFFER ZONE SHALL EXIST BETWEEN STOCKPILE SITES AND ANY STREAM OR FLOW PATH. ALL STOCKPILES SHALL BE ADEQUATELY PROTECTED FROM EROSION AND CONTAMINATION OF THE SURROUNDING AREA BY USE OF THE MEASURES APPROVED IN THE EROSION AND SEDIMENTATION CONTROL PLAN.
- ACCESS AND EXIT AREAS SHALL INCLUDE SHAKE-DOWN OR OTHER METHODS APPROVED BY THE SITE MANAGER FOR THE REMOVAL OF SOIL MATERIALS FORM MOTOR VEHICLES.
- THE CONTRACTOR IS TO ENSURE RUNOFF FROM ALL AREAS WHERE THE NATURAL SURFACE IS DISTURBED BY CONSTRUCTION, INCLUDING ACCESS ROADS, DEPOT AND STOCKPILE SITES, SHALL BE FREE OF POLLUTANTS BEFORE IT IS EITHER DISPERSED TO STABLE AREAS OR DIRECTED TO NATURAL WATERCOURSES.
- THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SLOPES, CROWNS AND DRAINS ON ALL EXCAVATIONS AND EMBANKMENTS TO ENSURE SATISFACTORY DRAINAGE AT ALL TIMES WATER SHALL NOT BE ALLOWED TO POND ON THE WORKS UNLESS SUCH PONDING IS PART OF AN APPROVED ESCP / SWMP.

FINISHED LEVELS PLAN NOTES:

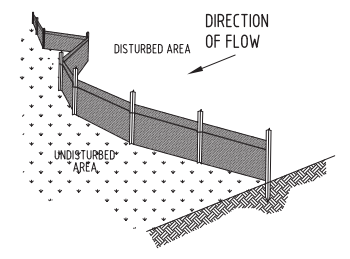
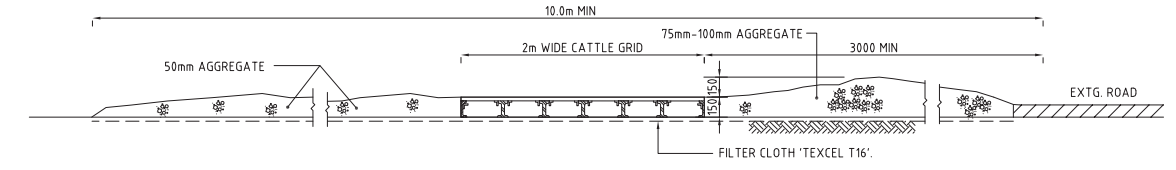
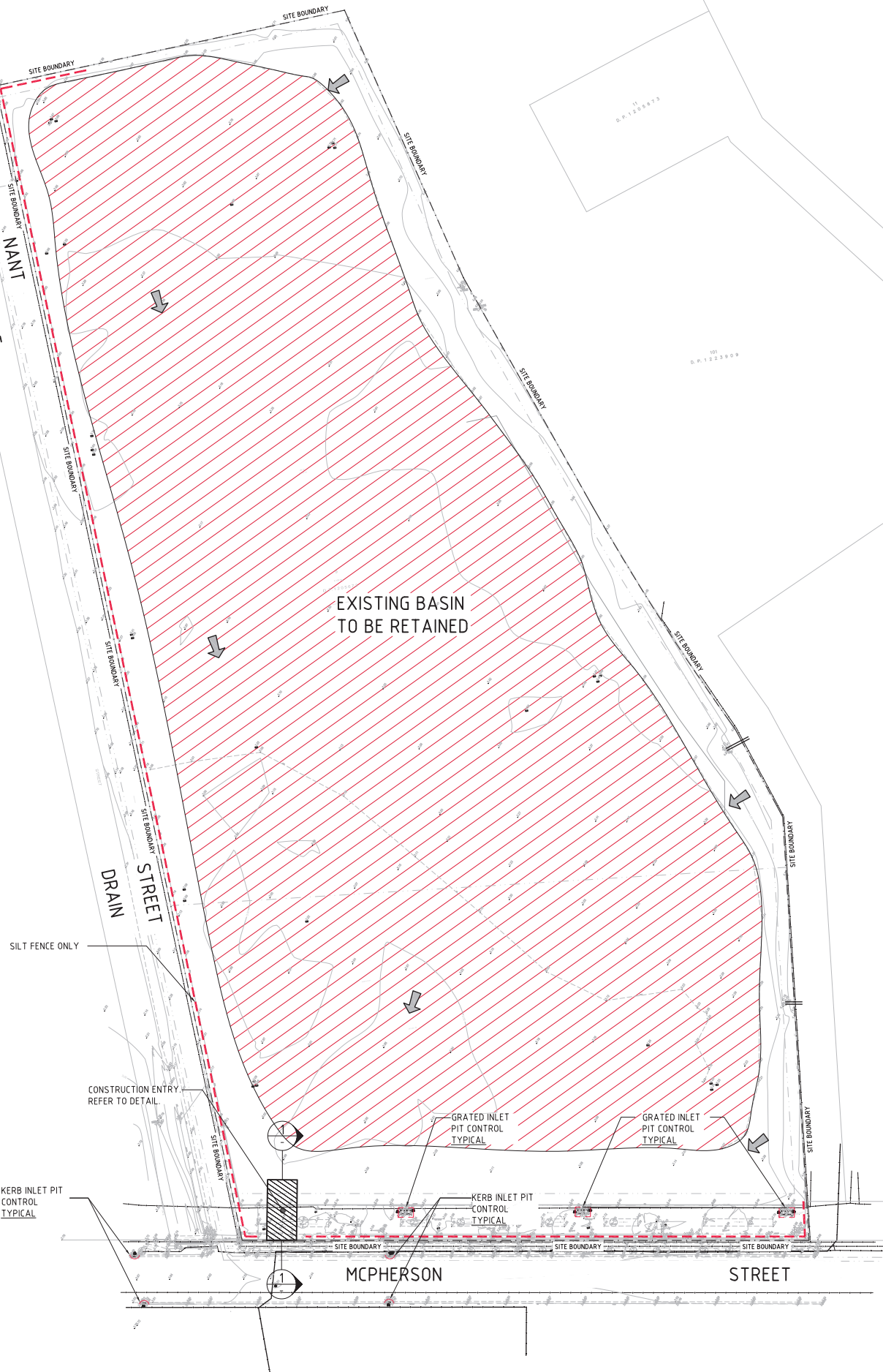
- LEVELS DATUM IS A.H.D.
- ALL CONTOUR LINES & SPOT LEVELS INDICATE FINISHED PAVEMENT LEVELS U.N.O. ON PLAN.
- THE MAJOR CONTOUR INTERVAL IS 0.5m
- THE MINOR CONTOUR INTERVAL IS 0.1m.
- MINIMUM PAVEMENT GRADE IS TO BE 1:100 (1%).
- MAXIMUM PAVEMENT GRADE IS TO BE 1:20 (5%) IN CARPARKING AREAS AND 1:25 (4%) ELSEWHERE.
- MAXIMUM RAMP GRADES ARE TO BE 1:12 (8.3%) U.N.O. ON PLAN. PROVIDE MINIMUM 3.0m LONG TRANSITION WHERE CHANGES GRADE EXCEED 1:20 (5%).
- PERMANENT BATTER SLOPES ARE TO HAVE A MAXIMUM GRADE OF 1V:3H.
- ALL BATTER SLOPE WITH GRADES AT OR EXCEEDING 1V:6H ARE TO BE TURFED IMMEDIATELY OR APPROPRIATE EROSION CONTROL IS TO BE PROVIDED TO THE SATISFACTION OF THE ENGINEER.
- ALL FOOTPATHS ARE TO FALL AWAY FROM THE BUILDING AT 2.5% NOMINAL GRADE.
- ALL PAVEMENTS ARE TO BE SET AT 50mm BELOW THE FINISHED FLOOR LEVEL OF THE WAREHOUSE AND OFFICE AREAS.

FOR INFORMATION ONLY

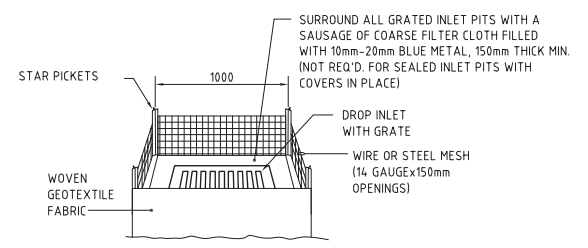
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| ISSUED FOR INFORMATION ONLY |  |  | 30.01.19 |  |  | B     |  |  | PROJECT     |  |  | PROPOSED WAREHOUSE<br>DISTRIBUTION AND OFFICE DEVELOPMENT<br>28 MCPHERSON ST, BANKSMEADOW NSW |  |  | Level 1, 8 Widdowall Street<br>Wahia Bay, Sydney NSW 2000<br>Tel: (02) 8551-7889 Fax: (02) 8541-3721<br>email: mail@costinroee.com.au |  |  | PRECISION   COMMUNICATION   ACCOUNTABILITY |  |  | DRAWING TITLE<br>DRAWING LIST AND GENERAL NOTES |  |  |
| AMENDMENTS                  |  |  | DATE     |  |  | ISSUE |  |  | DRAWING NO. |  |  | 9349.12-DA10  |  |  | ISSUE   |  |  | B  |  |  |   |  |  |



SPRINGVALE  
NANT



TYPICAL SILT FENCE DETAIL  
N.T.S.  
PROVIDE 1m RETURNS AT 30m INTERVALS.  
TYPICAL



GRADED INLET PIT FILTER DETAIL  
N.T.S.

**LEGEND:**  
PROVIDE 1m RETURNS TO SILT FENCE AT 30m MAX. INTERVALS.  
TYPICAL (N.S.O.P.)

← DENOTES DIRECTION OF OVERLAND FLOW  
- - - DENOTES SILT FENCE WITH CATCH DRAIN  
[ ] DENOTES GRADED INLET PIT FILTER

**NOTE:**  
NO SEDIMENTATION BASIN IS REQUIRED AS THE TOTAL DISTURBED AREA IS LESS THAN 2,500m². ALTERNATE METHODS HAVE BEEN EMPLOYED TO PROTECT THE RECEIVING WATERS.

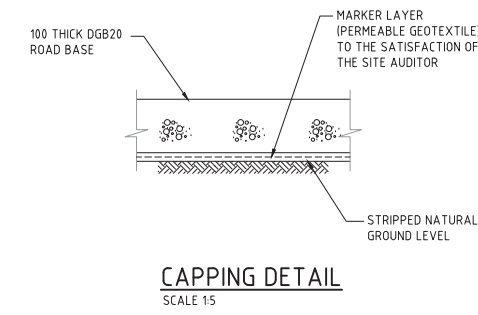
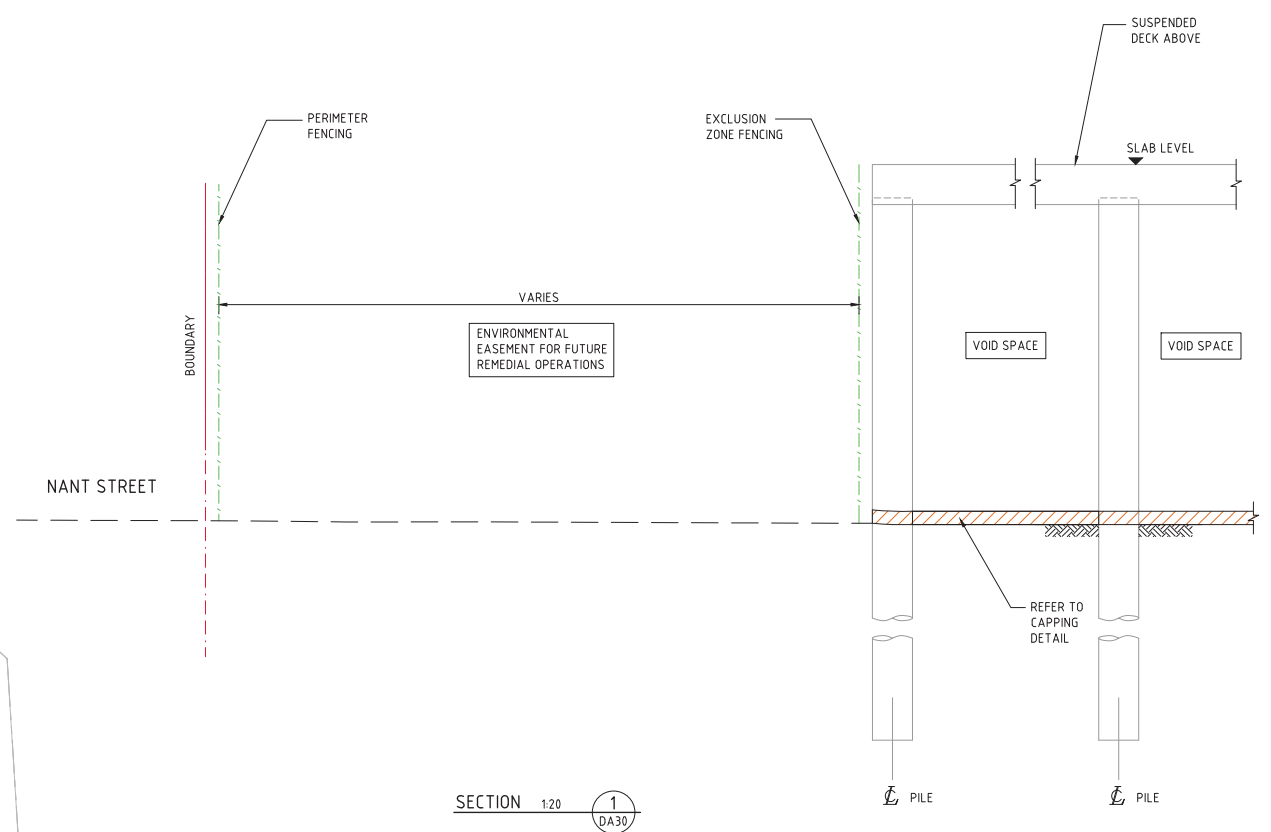
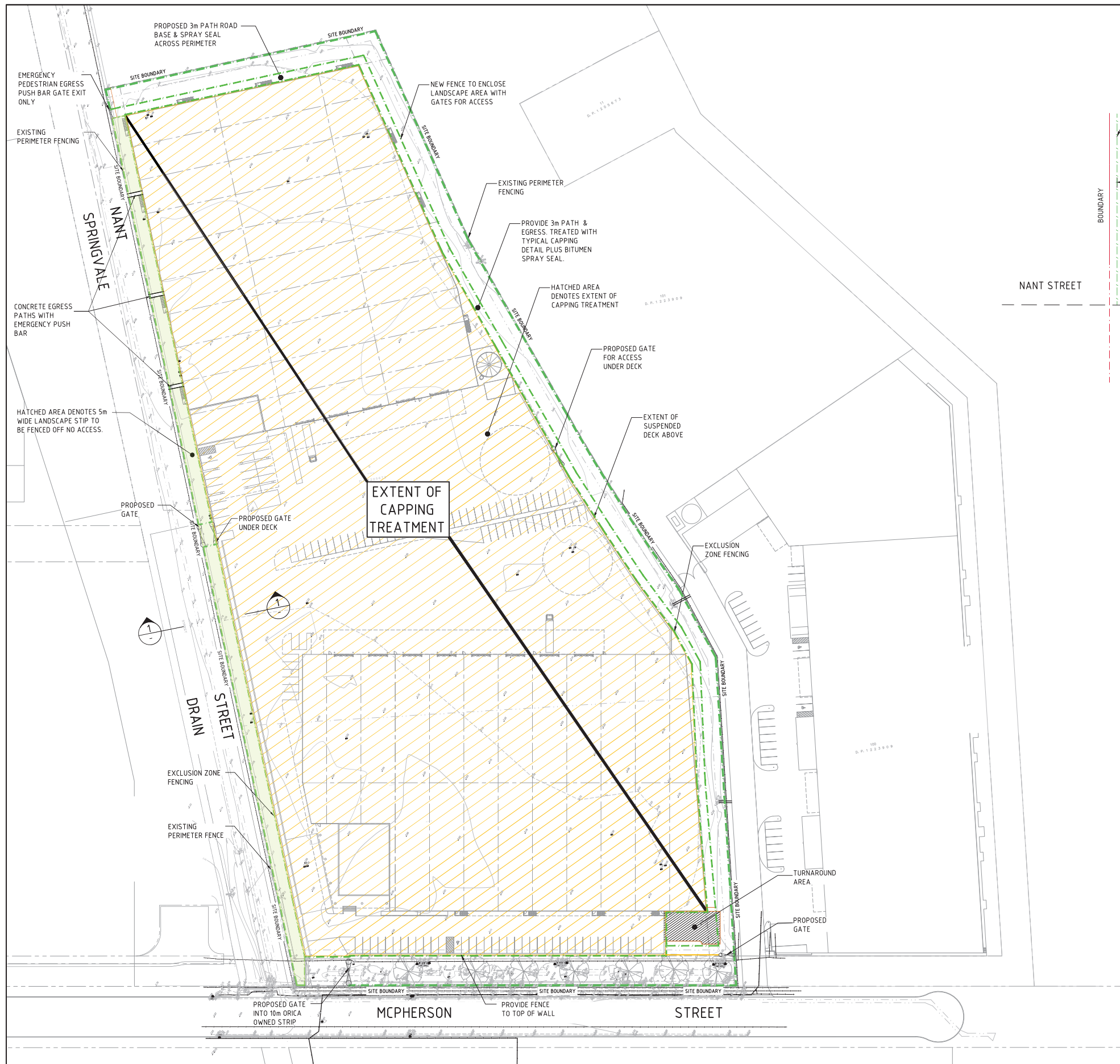
**NOTE:**  
REFER TO DRAWING C09349.12-DA10 FOR EROSION CONTROL NOTES.

EROSION AND SEDIMENT CONTROL PLAN & DETAILS  
1500

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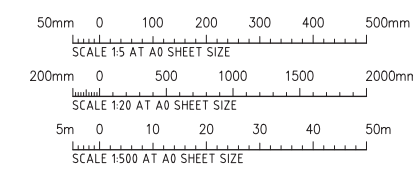
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| ISSUED FOR INFORMATION ONLY<br>30.01.19<br>B |  |  |  | ARCHITECT<br>AXIS |  |  |  | CLIENT<br>Costin Roe Consulting Pty Ltd.<br>Consulting Engineers<br>Level 1, 8 Windmill Street<br>Wahbi Bay, Sydney NSW 2000<br>Tel: (02) 8551-7899 Fax: (02) 8541-3721<br>email: mail@costinroe.com.au © |  |  |  | PROJECT<br>PROPOSED WAREHOUSE<br>DISTRIBUTION AND OFFICE DEVELOPMENT<br>28 MCPHERSON ST, BANKS MEADOW NSW |  |  |  | DRAWING TITLE<br>EROSION AND SEDIMENT CONTROL<br>PLAN & DETAILS |  |  |  |
| ISSUED FOR INFORMATION ONLY<br>30.11.18<br>A |  |  |  | DESIGNED<br>SM    |  |  |  | CHECKED<br>XC   |  |  |  | SCALE<br>A0 AS SHOWN  |  |  |  | PRECISION   COMMUNICATION   ACCOUNTABILITY                      |  |  |  |
| AMENDMENTS                                   |  |  |  | DATE              |  |  |  | DATE  |  |  |  | DATE  |  |  |  | DRAWING No 9349.12-DA 20  |  |  |  |
| DATE   |  |  |  | ISSUE             |  |  |  | DATE  |  |  |  | DATE  |  |  |  | ISSUE   |  |  |  |



- SITE PREPARATION NOTES:**
1. STRIP ANY TOPSOIL OR DELETERIOUS MATERIAL AND DISPOSE OFF FROM SITE OR STORE AS DIRECTED.
  2. EXISTING SUBGRADE TO BE PROOF ROLLED TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.
  3. INSTALL MARKER LAYER TO THE SATISFACTION OF THE SITE AUDITOR.
  4. PLACE ROAD BASE AS NOTED ON CAPPING DETAIL.
  5. FOLLOWING COMPLETION OF PILING WORKS, ROAD BASE TO BE BROKEN UP TO ALLOW FOR INFILTRATION TO BASE OF OPEN BASIN.

- LEGEND:**
- DENOTES EXTENT OF CAPPING TREATMENT
  - DENOTES EXTENT OF FENCED LANDSCAPED AREA (NO ACCESS)
  - DENOTES PERIMETER FENCING
  - DENOTES EXCLUSION ZONE FENCING
  - DENOTES GATES

**SITE PREPARATION PLAN**  
1:500



**FOR INFORMATION ONLY**

|   |  |  |                   |  |  |   |  |  |  |  |  |   |  |  |   |  |  |
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| ISSUED FOR INFORMATION ONLY<br>30.01.19<br>11.01.19<br>21.12.18<br>AMENDMENTS |  |  | ARCHITECT<br>OXIS |  |  | CLIENT<br>DBL Property Pty Limited<br>Development Managers and Property Advisors<br>Suite 5, Upper Ground Floor<br>410 Kent Street<br>Sydney NSW 2000<br>P: 02 9379 7882<br>M: 041 5016 886<br>E: info@dblproperty.com.au W: www.dblproperty.com.au |  |  | PROJECT<br>PROPOSED WAREHOUSE<br>DISTRIBUTION AND OFFICE DEVELOPMENT<br>28 MCPHERSON ST, BANKS MEADOW NSW<br>DESIGNED   DRAWN   DATE   CHECKED   SIZE   SCALE   CAD REF:<br>MW   SM   NOV '18   XC   A0   AS SHOWN   934.9.12-DA30 |  |  | CONSULTING ENGINEERS<br>Costin Roe Consulting Pty Ltd.<br>Level 1, 8 Windmill Street<br>Wahbi Bay, Sydney NSW 2000<br>Tel: (02) 8551-7699 Fax: (02) 8541-3721<br>email: mail@costinroe.com.au |  |  | DRAWING TITLE<br>SITE PREPARATION PLAN<br>DRAWING No 934.9.12-DA 30 |  |  |
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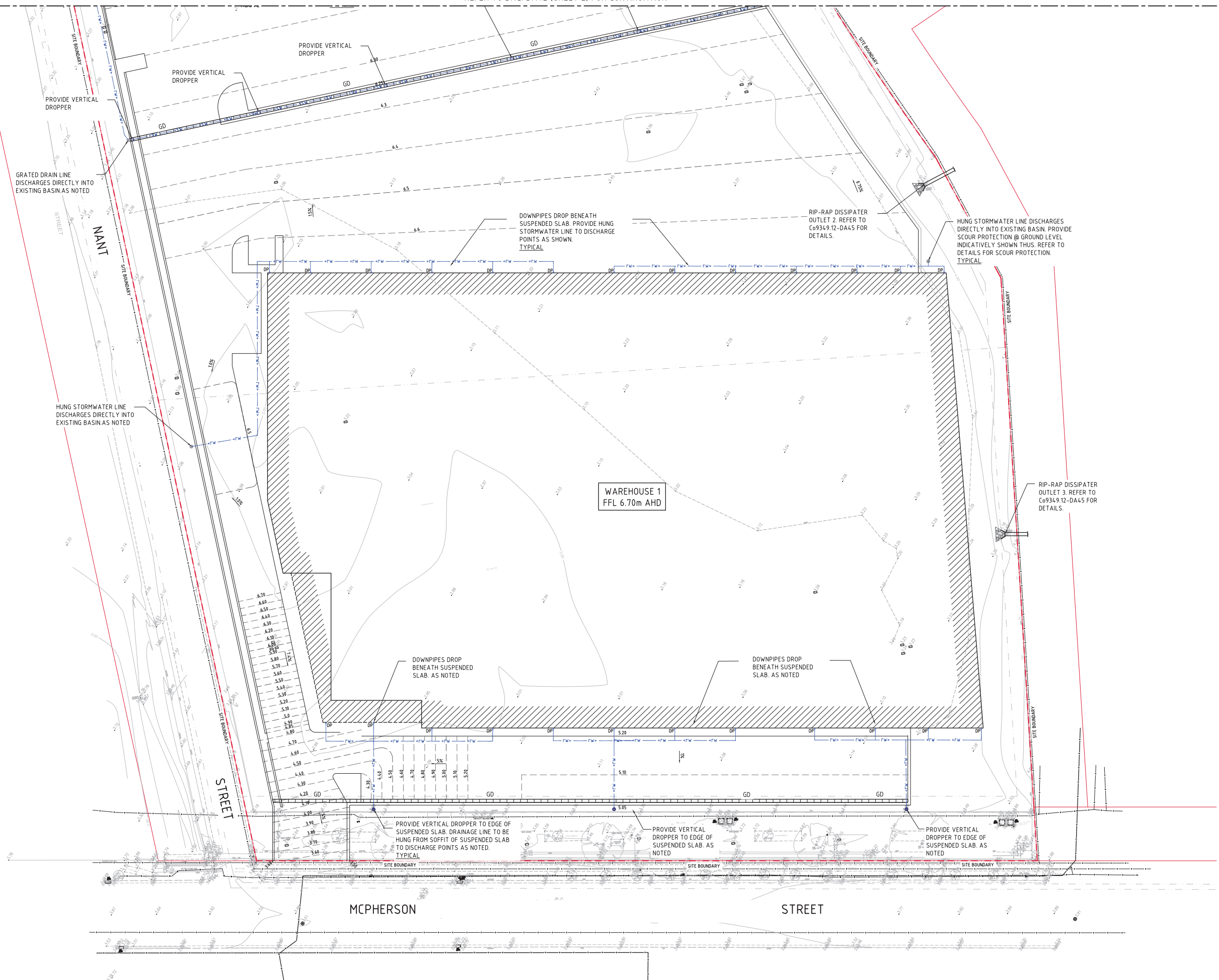




5m 0 10 20 30 40 50m  
SCALE 1:500 AT A0 SHEET SIZE

[illegible]

REFER TO DRG. DA42 (SHEET 2) FOR CONTINUATION



**LEGEND:**

LEVELS DATUM IS AHD.

EXISTING SITE LEVELS AND DETAILS BASED ON SURVEY INFORMATION TITLED PLANS SHOWING DETAIL AND PLAN LEVELS LOT 9 D.P. 1205673 NO.28 MCPHERSON STREET BY RYGATE SURVEYORS DATED 30.10.18

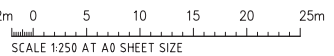
- DP - ROOFWATER DOWNPIPE (INDICATIVE)
- +60.00 - SPOT LEVEL
- 1% - PAVEMENT FALL DIRECTION AND GRADE
- FW - PROPOSED ROOFWATER LINE
- SW - PROPOSED STORMWATER LINE
- GRATED DRAIN
- DP - VERTICAL DROPPER
- DP - DRAIN TO EXISTING BASIN
- 50.00 - FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 - FINISHED PAVEMENT CONTOUR (MINOR)

**NOTE:**

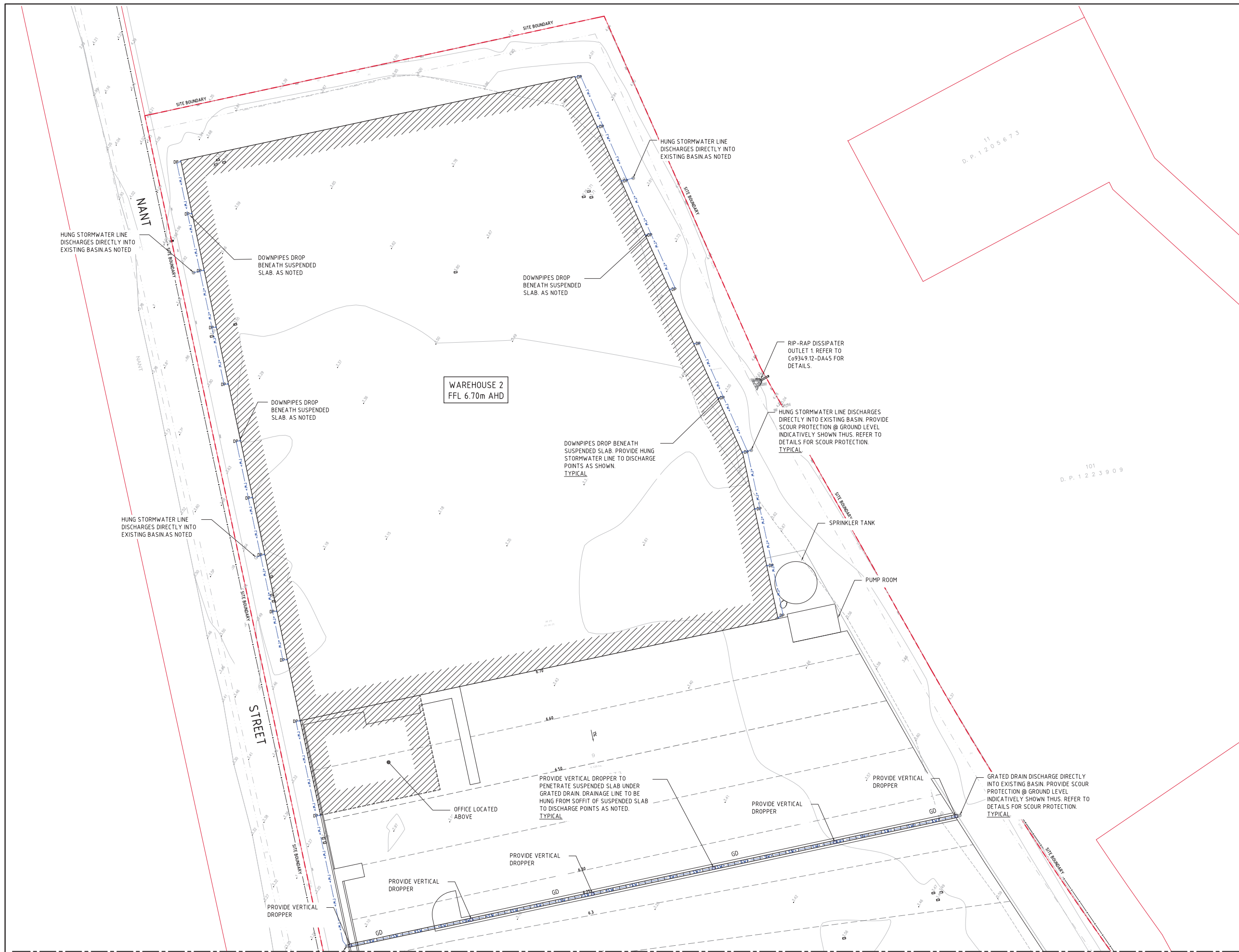
REFER TO DRAWING C09349.12-DA10 FOR STORMWATER NOTES.

**STORMWATER DRAINAGE PLAN SHEET 1**  
1:250

**FOR INFORMATION ONLY**



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| ISSUED FOR INFORMATION ONLY<br>30.01.19<br>B |  |  | ARCHITECT |  |  | CLIENT |  |  | PROJECT                      |  |  | Costin Roe Consulting Pty Ltd.<br>Consulting Engineers<br>Level 1, 8 Windmill Street<br>Wahah Bay, Sydney NSW 2000<br>Tel: (02) 8551-7000 Fax: (02) 8541-3721<br>email: mail@costinroe.com.au |  |  | DRAWING TITLE<br>STORMWATER DRAINAGE<br>PLAN SHEET 1 |  |  |
| AMENDMENTS                                   |  |  | DATE      |  |  | DATE   |  |  | DESIGNED (DATE)<br>SM NOV 18 |  |  | CHECKED (DATE)<br>XC  |  |  | SCALE<br>A0 AS SHOWN                                 |  |  |
| AMENDMENTS                                   |  |  | DATE      |  |  | DATE   |  |  | CADD REF:<br>9349.12-DA41    |  |  | PRECISION   COMMUNICATION   ACCOUNTABILITY  |  |  | DRAWING No<br>9349.12-DA 41                          |  |  |



**LEGEND:**

LEVELS DATUM IS AHD.

EXISTING SITE LEVELS AND DETAILS BASED ON SURVEY INFORMATION TITLED PLANS SHOWING DETAIL AND PLAN LEVELS LOT 9 D.P. 1205673 NO.28 MCPHERSON STREET BY RYGATE SURVEYORS DATED 30.10.18

- DP - ROOFWATER DOWNPIPE (INDICATIVE)
- SPOT LEVEL
- 1% - PAVEMENT FALL DIRECTION AND GRADE
- RW - PROPOSED ROOFWATER LINE
- SW - PROPOSED STORMWATER LINE
- GRATED DRAIN
- VERTICAL DROPPER
- DRAIN TO EXISTING BASIN
- 50.00 - FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 50.10 - FINISHED PAVEMENT CONTOUR (MINOR)

**NOTE:**

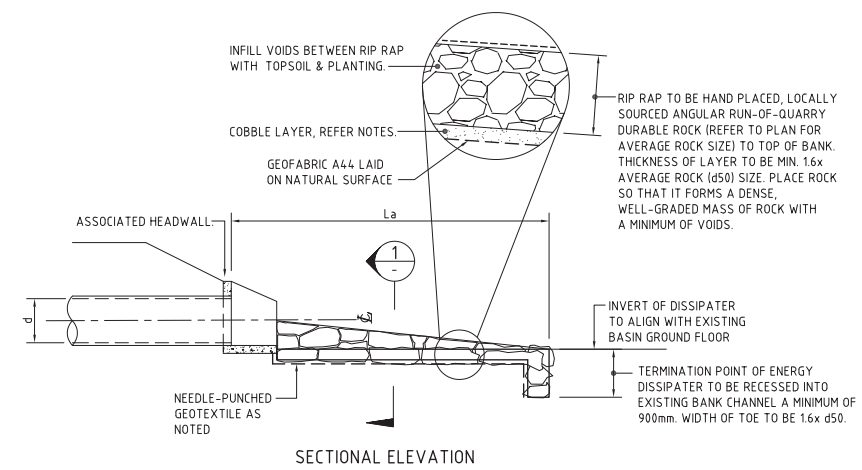
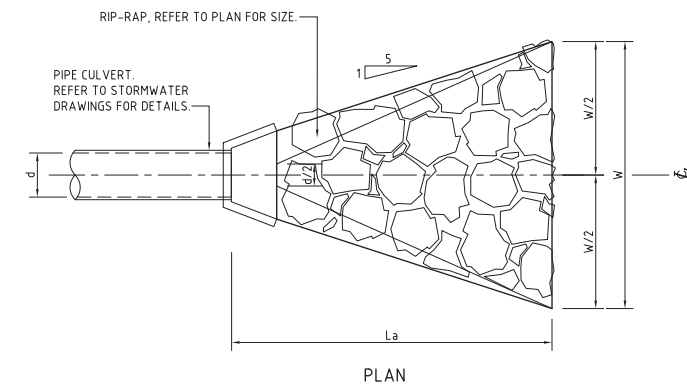
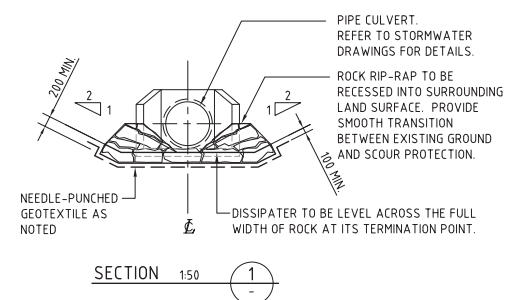
REFER TO DRAWING C09349.12-DA10 FOR STORMWATER NOTES.



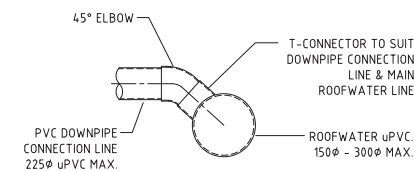


- ## DISSIPATER NOTES :
1. ALIGN STRUCTURE EVENLY WITH BANK.
  2. LOCATE STRUCTURE AT INVERT LEVEL OF STREAM AND POINT IN A DOWNSTREAM DIRECTION.
  3. PIPE TO REST ON, AND BE PACKED IN, BY RIP-RAP (SIZE AS NOTED)
  4. DISCHARGE INTO STREAM WHERE BEDROCK IS PRESENT, OTHERWISE SCOUR PROTECT AS REQUIRED
  5. SCOUR PROTECT THE OPPOSITE BANK AS REQUIRED. SCOUR PROTECTION TO BE PROVIDED WHERE OPPOSITE BANK IS WITHIN 12-14 TIMES THE PIPE DIAMETER.
  6. RIP-RAP TO CONSIST OF ANGULAR RUN-OF-QUARRY ROCK (d50=150mm MINIMUM) AS NOTED ON THE PLAN. RIP-RAP TO BE MINIMUM THICKNESS OF RIP-RAP LAYER TO BE 1.6x AVERAGE ROCK SIZE (d50)
  7. RIP-RAP IS TO BE PLACED OVER A 200mm LAYER OF 140mm COBBLES OVER NEEDLE-PUNCHED GEOFAB #44.
  8. PLACE ROCK SO THAT IT FORMS A DENSE, WELL-GRADED MASS OF ROCK WITH A MINIMUM OF VOID. THE FINISHED RIP-RAP SURFACE SHOULD BE FREE OF POCKETS OF SMALL ROCK OR CLUSTERS OF LARGE ROCKS.
  9. GAPS IN RIP-RAP TO BE HAND PACKED WITH TOPSOIL & PLANTED WITH NATIVE SEDGES & RUSHES TO PROVIDE. THE INTENT IS FOR THERE TO BE NO VOIDS BETWEEN RIP-RAP BOULDERS.
  10. ENSURE THE FINISHED ROCK SURFACE BLENDS WITH THE SURROUNDING GRASS LEVELS. NO OVERFALL OR PROTRUSION OF ROCK SHOULD BE APPARENT.
  11. ENSURE THAT STORMWATER FROM SURROUNDING GROUND IS FREE TO ENTER THE STRUCTURE WITHOUT CAUSING UNDESIRABLE PONDING OR SCOUR.

| DISSIPATER      | SCHEDULE |      |      |               |
|-----------------|----------|------|------|---------------|
| DISCHARGE POINT | d        | La   | W    | RIP-RAP (d50) |
| OUTLET 1        | 225      | 2000 | 2300 | 150           |
| OUTLET 2        | 600      | 5500 | 6100 | 200           |
| OUTLET 3        | 600      | 5100 | 6100 | 200           |
| OUTLET 4        | 300      | 3200 | 3500 | 150           |



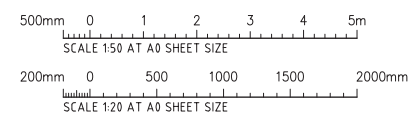
STORMWATER OUTLET DISSIPATER WITH HEADWALL  
SCALE 1:50



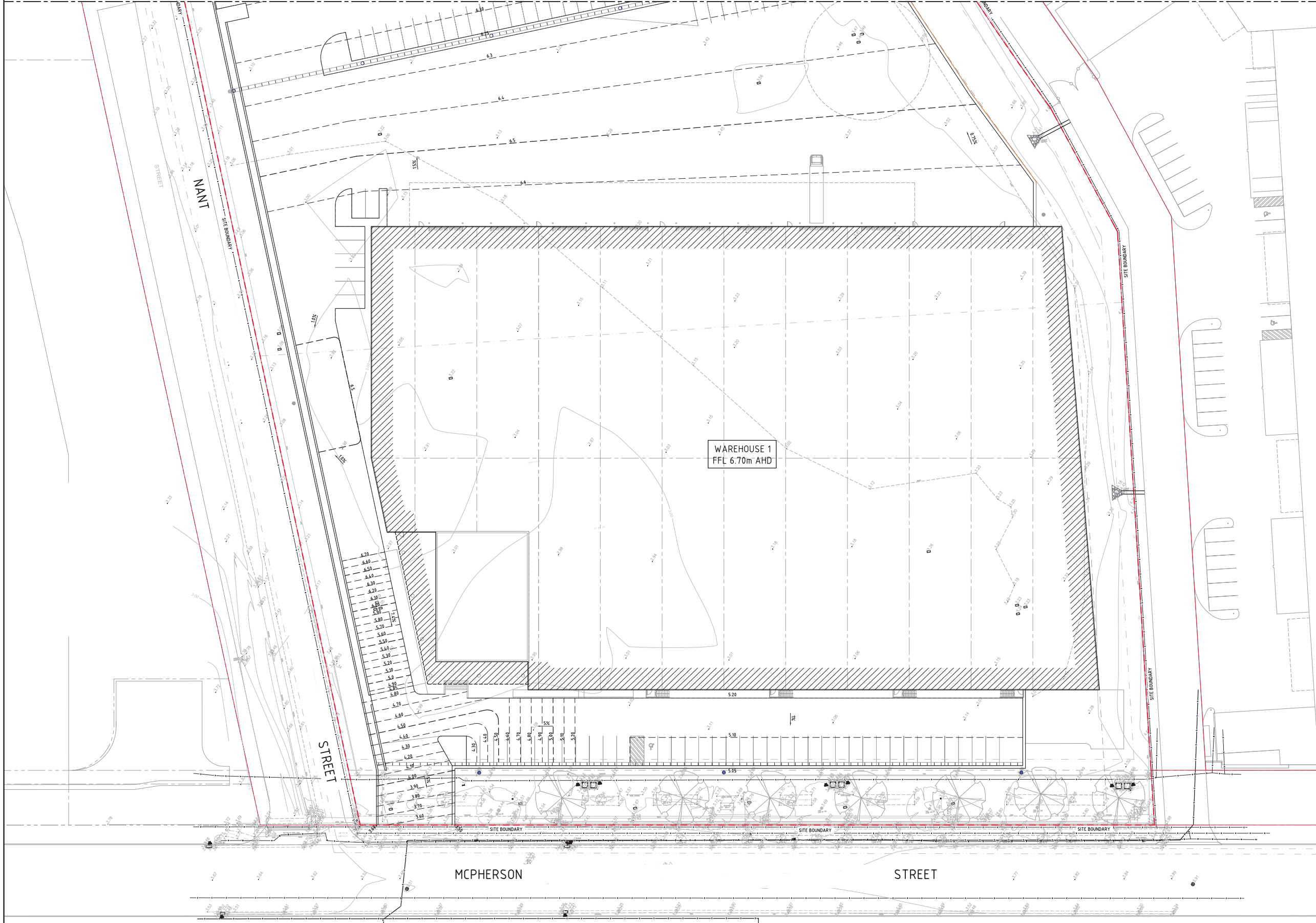
### DOWN PIPE CONNECTION TO uPVC PIPE

1. PROPRIETARY T-PIECE CONNECTORS SHALL BE USED TO WHERE DIRECT CONNECTIONS ARE REQUIRED TO uPVC PIPES.
2. ALL JOINTS TO BE SEALED WITH SOLVENT WELDED JOINTS.
3. THE PVC PIPE SHALL NOT PROTRUDE BEYOND THE INNER SURFACE OF THE STORMWATER PIPE.

SCALE 1:20



REFER TO DRG. DA52 (SHEET 2) FOR CONTINUATION



**LEGEND:**  
LEVELS DATUM IS AHD.

EXISTING SITE LEVELS AND DETAILS BASED ON SURVEY INFORMATION TITLED PLANS SHOWING DETAIL AND PLAN LEVELS LOT 9 D.P. 1205673 NO.28 MCPHERSON STREET BY RYGALE SURVEYORS DATED 30.10.18

- DP - ROOFWATER DOWNPIPE (INDICATIVE)
- +6.00 - FINISHED LEVEL SPOT LEVEL
- +6.70 - EXISTING SPOT HEIGHT
- 1% - PAVEMENT FALL DIRECTION AND GRADE
- - GRATED DRAIN
- o - VERTICAL DROPPER
- o - DRAIN TO EXISTING BASIN
- 56.00--- - FINISHED PAVEMENT CONTOUR (MAJOR) 0.5m INTERVALS
- 56.10--- - FINISHED PAVEMENT CONTOUR (MINOR)

**NOTE:**  
REFER TO DRAWING C0934.9.12-DA10 FOR FINISHED LEVELS NOTES.

**FINISHED LEVELS PLAN SHEET 1**  
1:250

**FOR INFORMATION ONLY**

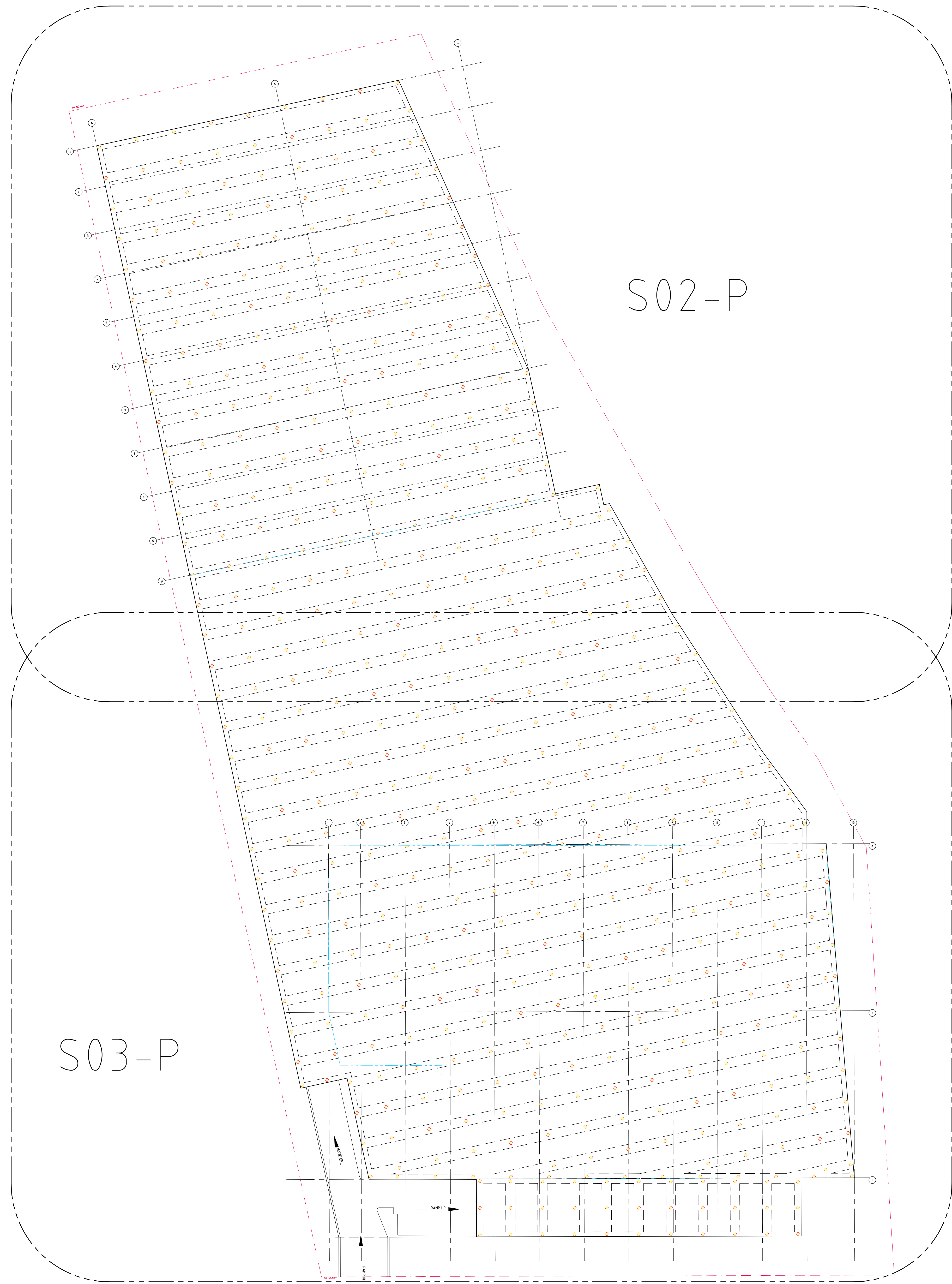
2m 0 5 10 15 20 25m  
SCALE 1:250 AT A1 SIZE PLOT

|  |  |  |  |               |  |            |  |   |  |   |  |                              |  |  |  |  |  |
|--|--|--|--|---------------|--|------------|--|---|--|---|--|------------------------------|--|--|--|--|--|
| ISSUED FOR INFORMATION ONLY<br>30.01.19<br>B<br>ISSUED FOR INFORMATION ONLY<br>30.11.18<br>A<br>AMENDMENTS<br>DATE<br>ISSUE<br>AMENDMENTS<br>DATE<br>ISSUE |  |  |  | ARCHITECT<br> |  | CLIENT<br> |  | PROJECT<br>PROPOSED WAREHOUSE<br>DISTRIBUTION AND OFFICE DEVELOPMENT<br>28 MCPHERSON ST, BANKSMEADOW NSW<br>DESIGNED: [ ] DATE: [ ]<br>SM NOV 18<br>CHECKED: [ ]<br>XC<br>SIZE: [ ]<br>A0<br>SCALE: [ ]<br>AS SHOWN<br>CADD REF: 9349.12-DA51 |  | Costin Roe Consulting Pty Ltd.<br>Consulting Engineers<br>Level 1, 8 Windmill Street<br>Wahah Bay, Sydney NSW 2000<br>Tel: (02) 8551-7899 Fax: (02) 9541-3721<br>email: mail@costinroe.com.au © |  | <b>Costin Roe Consulting</b> |  | PRECISION   COMMUNICATION   ACCOUNTABILITY |  | DRAWING TITLE<br>FINISHED LEVELS PLAN SHEET 1<br>DRAWING No 9349.12-DA 51<br>ISSUE B |  |
|--|--|--|--|---------------|--|------------|--|---|--|---|--|------------------------------|--|--|--|--|--|



## **Appendix C   Concept Piling Designs**





250 MIN. THICK SUSPENDED PT BANDED SLAB  
ON CONCRETE COLUMNS OVERALL PLAN  
SCALE 1500

PRELIMINARY DRAWING; NOT ALL DETAILS SHOWN  
ALLOW FOR ADDITIONAL STRUCTURAL COMPONENTS  
SUBJECT TO ARCHITECTURAL RESOLUTION

- GENERAL NOTES :**
- SUSPENDED SLAB TO BE A POST-TENSIONED SLAB OF 250 MINIMUM THICKNESS U.N.O. SUPPORTED ON EDGE AND BAND BEAMS
  - EDGE BEAMS TO BE 600 DEEP x 1200 WIDE U.N.O. ON DRGS S02 & S03
  - BAND BEAMS TO BE 600 DEEP x 2400 WIDE U.N.O. PLACED AT 8000 MAX. CTRS. U.N.O. ON DRGS S02 & S03
  - EDGE BEAMS & BAND BEAMS ARE SUPPORTED CENTRALLY ON 800 DIA. REINFORCED CONCRETE COLUMNS, PLACED AT 10000 MAX. CTRS. U.N.O. ON DRGS S02 & S03. A REINFORCED CONCRETE PILE CAPS (ON DRIVEN TIMBER PILES) AS DETAILED ON DRG S04 SUPPORTS EACH CONCRETE COLUMNS.
  - SLAB PENETRATION LOCATIONS TO BE CONFIRMED & COORDINATED WITH ARCHITECT & OTHER CONSULTANTS. ANY VARIATIONS TO THOSE SHOWN ON THESE DRAWINGS TO BE ADVISED TO STRUCTURAL ENGINEER.
  - SLAB DEFLECTIONS :  
SPAN/500 INCREMENTAL  
SPAN/250 TOTAL
  - LANDSPAN RAMP TO BE A 300 THICK CONVENTIONALLY REINFORCED TRAFFICABLE SLAB SUPPORTED ON A 600 WIDE CORBEL OFF MAIN SLAB EDGE BEAM & SPANNING TO NATURAL GROUND AT NANT STREET.

- POST TENSIONED SLAB NOTES**
1. POST TENSIONED SLAB TO BE COMPLETED BY A SPECIALIST PT DESIGN AND CONSTRUCT CONTRACTOR.
  2. LOADS INDICATED ARE PRESENT FOR DESIGN PURPOSE PT DESIGN TO ALLOW FOR ALL LOADS AS REQUIRED BY AS1170
  3. MAXIMUM SHORT TERM DEFLECTION OF SLABS & BEAMS SHALL BE SPAN/500  
MAXIMUM LONG TERM DEFLECTION OF SLABS & BEAMS SHALL BE SPAN/250
  4. PT CONTRACTOR TO PROVIDE ALL PT REINFORCEMENT AND ANY REQUIRED SECONDARY NON PT INCLUDING BEAM SHEAR REINFORCEMENT AND PUNCHING SHEAR REQUIREMENTS.
  5. MINIMUM RESIDUAL COMPRESSION OF PT SLABS TO BE 14 MPa GENERALLY AND 20 MPa EXTERNALLY. THE CONTRIBUTION OF THE COLUMN STIFFNESS IN THE FLOOR SLAB DESIGN SHALL NOT BE PERMITTED
  6. THE PT DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL 14 DAYS PRIOR TO CONSTRUCTION
  7. THE DESIGN OF THE PT FLOOR SHALL BE THE RESPONSIBILITY OF THE PT CONTRACTOR. A STRUCTURAL ENGINEER WITH NPER SHALL CERTIFY THE SLAB DESIGN & INSTALLATION.
  8. FLOOR TO BE CONSTRUCTED TO A TOLERANCE OF +/- 3mm OVER 3M LENGTH IN ANY DIRECTION. THE FINISHED LEVEL OF ANY POINT ON THE FLOOR SHALL BE WITHIN +/- 10mm OF THE NOMINATED FLOOR LEVEL.
- LOADS:** **HARDSTAND** **WAREHOUSE**  
TRUCKS - 25kPa 5 TONNE POST LOAD - 35kPa

**NOTE:**  
ATTENTION IS DRAWN TO THE FACT THAT DUE TO THE NATURE OF CONCRETE, CRACKING OF A NON-STRUCTURAL NATURE MAY OCCUR. REINFORCEMENT HAS BEEN ADDED TO THE SLABS TO MITIGATE THE EXTENT OF CRACKING, HOWEVER IT IS NOT POSSIBLE TO GUARANTEE COMPLETE ELIMINATION OF SLAB CRACKING.

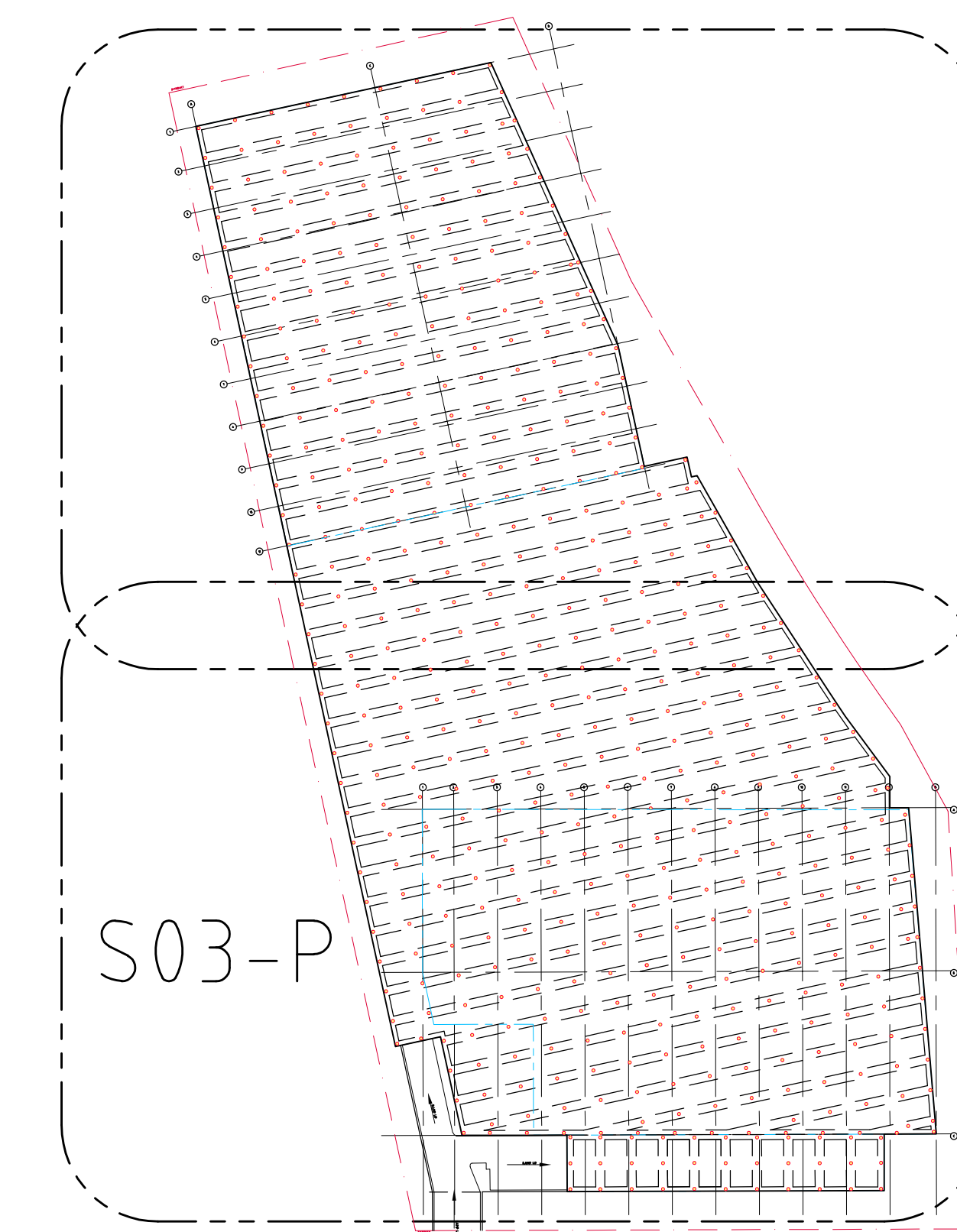
| CONCRETE QUALITY                         |       |                       |             |            |                       |
|--|-------|-----------------------|-------------|------------|-----------------------|
| ELEMENT                                  | SLOPE | AGGREGATE (MAX. SIZE) | CEMENT TYPE | ADDMIXTURE | F <sub>ck</sub> (MPa) |
| POST TENSIONED SLAB                      | 80    | 20                    | SL          | NL         | 40                    |
| COLUMNS                                  | 80    | 20                    | GP          | NL         | 40                    |
| COLUMN FOOTINGS                          | 80    | 20                    | SL          | NL         | 32                    |
| LANDSPAN RAMP                            | 80    | 20                    | GP          | NL         | 32                    |
| MAXIMUM 56 DAY SHRINKAGE 650 MICROSTRAIN |       |                       |             |            |                       |

- REINFORCEMENT RATES :**
- POST TENSIONED SLAB**  
POST TENSION REINFORCEMENT - 18 kg/m<sup>2</sup>  
CONVENTIONAL REINFORCEMENT - 80 kg/m<sup>2</sup>
- CONCRETE COLUMNS**  
CONVENTIONAL REINFORCEMENT - 120 kg/m<sup>3</sup>
- LANDSPAN RAMP**  
CONVENTIONAL REINFORCEMENT - 160 kg/m<sup>3</sup>
- COLUMN FOOTINGS**  
CONVENTIONAL REINFORCEMENT - 120 kg/m<sup>3</sup>

**PRELIMINARY ONLY**  
**CONCEPT DESIGN ONLY**  
**FOR DISCUSSION**

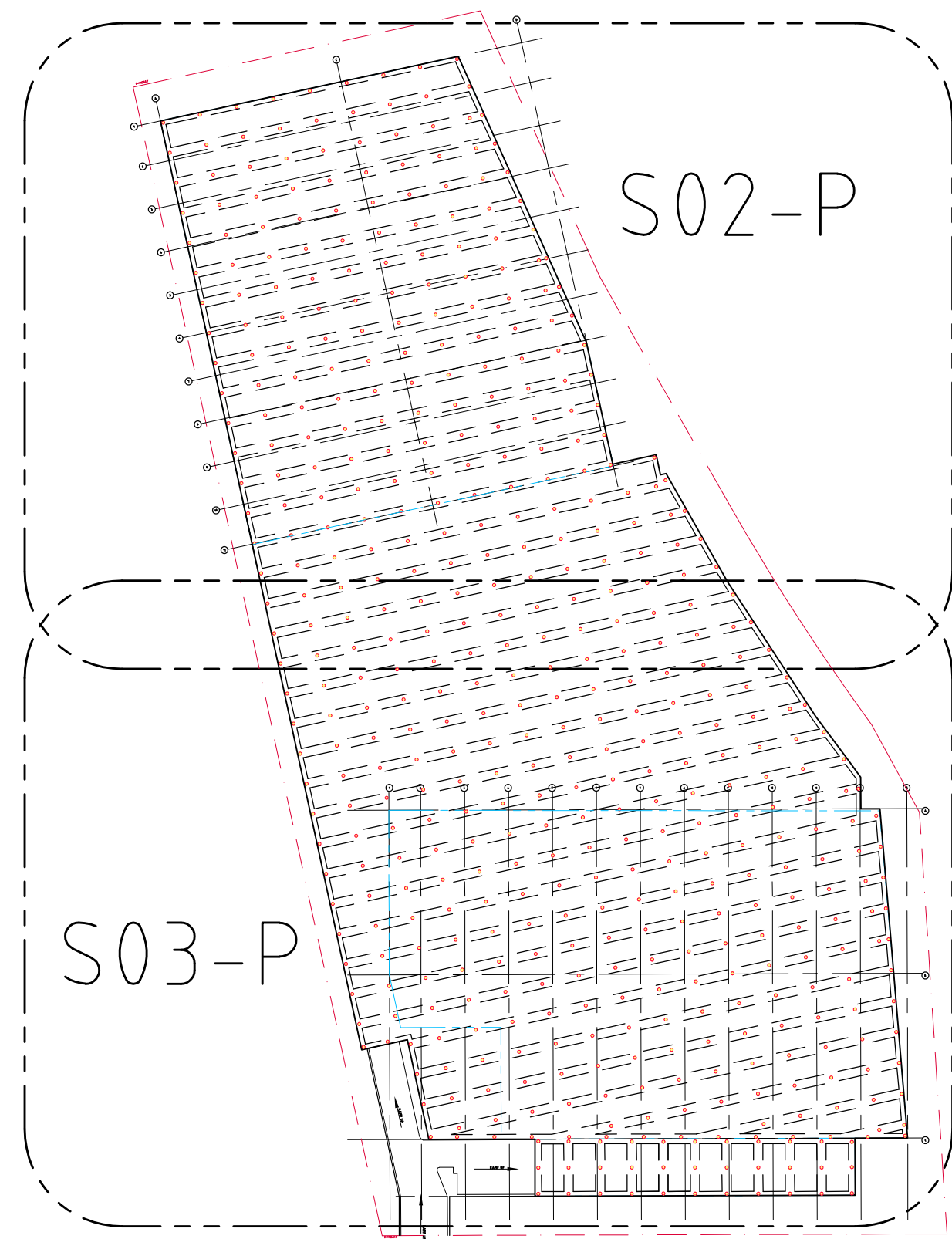
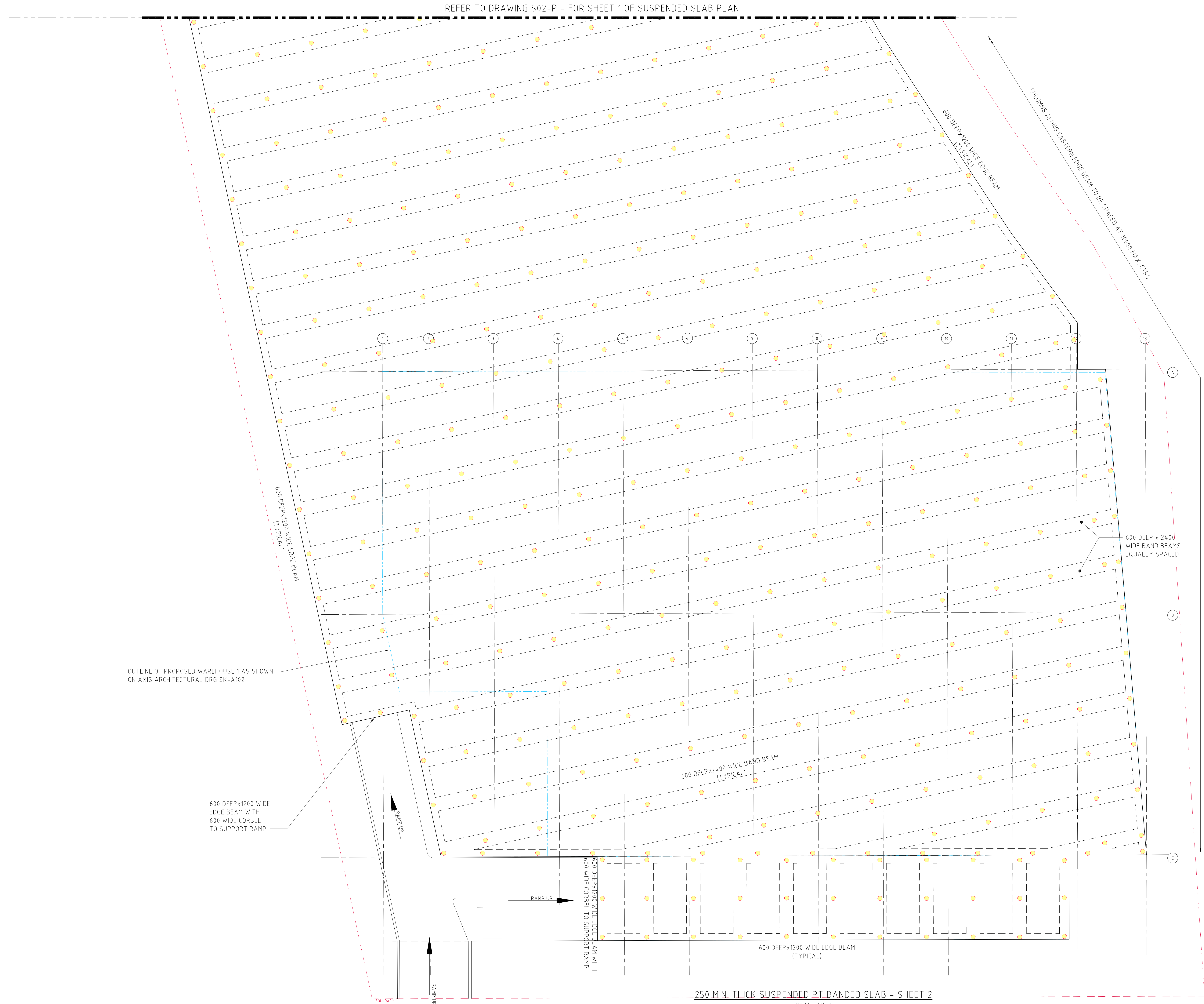






|   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|---|--|--|--|--|--|--|--|--|--|
|   |  |  |  |  |  |  |  |  |  |  <b>AXIS ARCHITECTURAL</b><br>4 / 112 Cronulla Street<br>Cronulla NSW 2230<br>M + 0416 956 445<br>P + 02 9523 8568<br>E + info@axisarchitectural.com.au  |  |  |  |  |  |  |  |  |  |  <b>CONSULTING AUSTRALIA</b><br>250 MIN. THK. SUSPENDED<br>POST-TENSIONED BANDED SLAB<br>SHEET 1   |  |  |  |  |  |  |  |  |  |
| PRELIMINARY ONLY - ISSUED FOR INFORMATION<br>AMENDMENTS |  |  |  |  |  |  |  |  |  | PROJECT<br><b>ORICA AUSTRALIA</b><br>LOT 9 McPHERSON STREET<br>BANKS MEADOW NSW 2019<br>CLIENT<br><b>DBL PROPERTY PTY. LTD.</b><br>SUITE 2, UPPER GROUND FLOOR<br>437 KENT STREET<br>SYDNEY NSW 2000  |  |  |  |  |  |  |  |  |  | PROJECT<br><b>ORICA AUSTRALIA</b><br>LOT 9 McPHERSON STREET<br>BANKS MEADOW NSW 2019<br>DESIGNED DRAWN DATE DATE<br>G.W. S. 1 APR 19 19<br>CHECKED SIZE SCALE CAD REVISION<br>J.S. SHAWEN 12-562-P<br>Costin Roe Consulting Pty Ltd.<br>Consulting Engineers 424 02 56 445<br>Level 1, 8 Windmill Street<br>Walsh Bay, Sydney NSW 2000<br>Tel: (02) 9251-7699 Fax: (02) 9241-0721<br>email: mail@costinroe.com.au |  |  |  |  |  |  |  |  |  |
| PRELIMINARY ONLY - ISSUED FOR INFORMATION<br>AMENDMENTS |  |  |  |  |  |  |  |  |  | PROJECT<br><b>ORICA AUSTRALIA</b><br>LOT 9 McPHERSON STREET<br>BANKS MEADOW NSW 2019<br>DESIGNED DRAWN DATE DATE<br>G.W. S. 1 APR 19 19<br>CHECKED SIZE SCALE CAD REVISION<br>J.S. SHAWEN 12-562-P<br>Costin Roe Consulting Pty Ltd.<br>Consulting Engineers 424 02 56 445<br>Level 1, 8 Windmill Street<br>Walsh Bay, Sydney NSW 2000<br>Tel: (02) 9251-7699 Fax: (02) 9241-0721<br>email: mail@costinroe.com.au |  |  |  |  |  |  |  |  |  | PROJECT<br><b>ORICA AUSTRALIA</b><br>LOT 9 McPHERSON STREET<br>BANKS MEADOW NSW 2019<br>DESIGNED DRAWN DATE DATE<br>G.W. S. 1 APR 19 19<br>CHECKED SIZE SCALE CAD REVISION<br>J.S. SHAWEN 12-562-P<br>Costin Roe Consulting Pty Ltd.<br>Consulting Engineers 424 02 56 445<br>Level 1, 8 Windmill Street<br>Walsh Bay, Sydney NSW 2000<br>Tel: (02) 9251-7699 Fax: (02) 9241-0721<br>email: mail@costinroe.com.au |  |  |  |  |  |  |  |  |  |





KEY PLAN  
NOT TO SCALE

PRELIMINARY DRAWING, NOT ALL DETAILS SHOWN  
ALLOW FOR ADDITIONAL STRUCTURAL COMPONENTS  
SUBJECT TO ARCHITECTURAL RESOLUTION

**PRELIMINARY ONLY**  
**CONCEPT DESIGN ONLY**  
**FOR DISCUSSION**



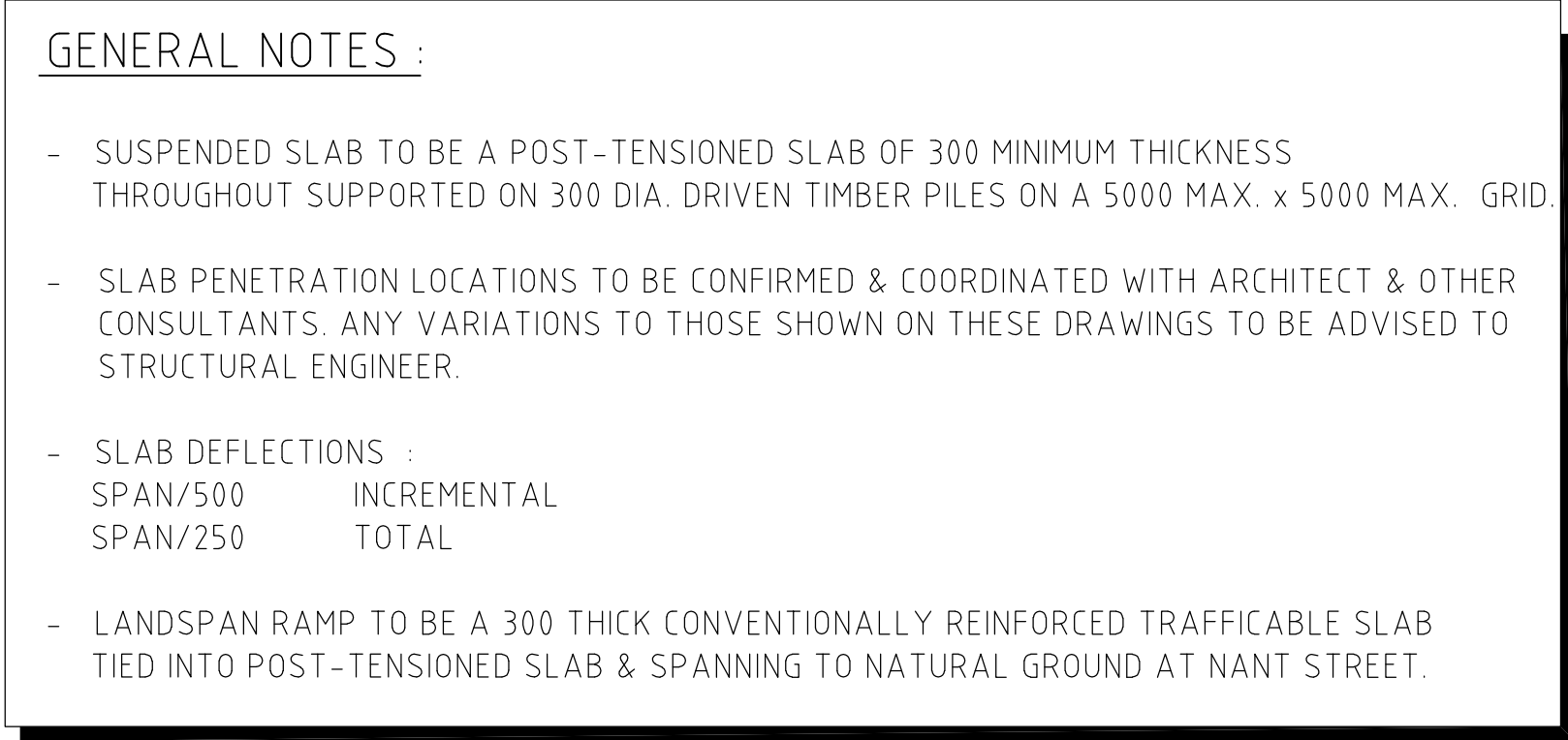
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| PRELIMINARY ONLY - ISSUED FOR INFORMATION |  |  | 11/04/19 |  |  | A     |  |  | AMENDMENTS |  |  | DATE |  |  | ISSUE |  |  | AMENDMENTS |  |  | DATE |  |  | ISSUE |  |  |
| AMENDMENTS                                |  |  | DATE     |  |  | ISSUE |  |  | AMENDMENTS |  |  | DATE |  |  | ISSUE |  |  | AMENDMENTS |  |  | DATE |  |  | ISSUE |  |  |

|  |  |   |  |   |  |   |  |   |  |                             |  |
|--|--|---|--|---|--|---|--|---|--|-----------------------------|--|
| ARCHITECT  |  | AXIS ARCHITECTURAL  |  | CLIENT  |  | PROJECT   |  | COSTIN ROE CONSULTING PTY LTD.                        |  | DRAWING TITLE               |  |
| 4 / 112 Cronulla Street<br>Cronulla NSW 2230                         |  | DBL PROPERTY PTY. LTD.  |  | LOT 9 McPHERSON STREET<br>BANKSMEADOW NSW 2019            |  | Consulting Engineers  |  | 250 MIN. THK. SUSPENDED<br>POST-TENSIONED BANDED SLAB |  | SHEET 2                     |  |
| H: 0414 954 445<br>P: 02 9523 7859<br>E: david@axisarchitects.com.au |  | SUITE 2, UPPER GROUND FLOOR<br>437 KENT STREET<br>SYDNEY NSW 2000 |  | Level 1, 9 Windmill Street<br>Wahbah Bay, Sydney NSW 2000 |  | Tel: (02) 9251-7699 Fax: (02) 9241-3721<br>email: mail@costinroe.com.au © |  | PRECISION   COMMUNICATION   ACCOUNTABILITY            |  | DRAWING No: C09349.12-S03-P |  |
| DESIGNED (DATE) GR B.C. APR 19                                       |  | CHECKED (DATE) GR B.C. APR 19                                     |  | SIZE SCALE A0 1:AS SHOWN                                  |  | CNO REF: C09349.12-S03-P  |  | ISSUE A   |  | ISSUE A                     |  |









**NOTE:**  
ATTENTION IS DRAWN TO THE FACT THAT DUE TO THE NATURE OF CONCRETE, CRACKING OF A NON-STRUCTURAL NATURE MAY OCCUR. REINFORCEMENT HAS BEEN ADDED TO THE SLABS TO MITIGATE THE EXTENT OF CRACKING, HOWEVER IT IS NOT POSSIBLE TO GUARANTEE COMPLETE ELIMINATION OF SLAB CRACKING.

TIMBER PILE SAFE WORKING LOAD :

TIMBER PILE SAFE WORKING LOAD (S.W.L.) = 1000 kN

REINFORCEMENT RATES :

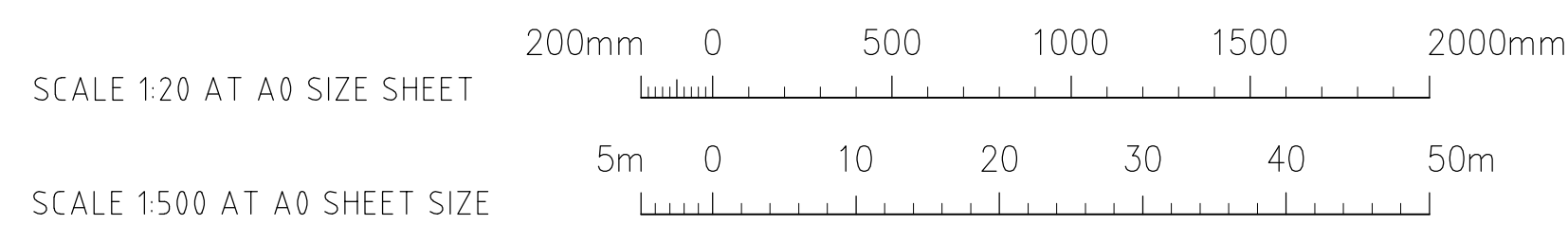
POST TENSIONED SLAB  
POST TENSION REINFORCEMENT -  $18 \text{ kg/m}^2$   
CONVENTIONAL REINFORCEMENT -  $80 \text{ kg/m}^3$

LANDSPAN RAMP  
CONVENTIONAL REINFORCEMENT -  $160 \text{ kg/m}^3$



300 MIN. THICK PT SLAB ON TIMBER  
PILES OVERALL PLAN  
SCALE 1:500

**PRELIMINARY ONLY  
CONCEPT DESIGN ONLY  
FOR DISCUSSION**



Costin Roe Consulting Pty Ltd.  
Consulting Engineers

ABN 50 003 696 446

Level 1, 8 Windmill Street, Walsh Bay, Sydney, NSW 2000

PO Box N419, Sydney NSW 1220, Australia

Tel: +61 2 9251 7699 Fax: +61 9241 3731

email: [mail@costinroe.com.au](mailto:mail@costinroe.com.au)

web: [www.costinroe.com.au](http://www.costinroe.com.au)

**PROJECT:**

CO9349.12

**ORICA AUSTRALIA**

LOT 9 MCPHERSON STREET

BANKSMEADOW NSW 2019

DELIVER TO:

DBL PROPERTY PTY. LTD.

SUITE 2, UPPER GROUND FLOOR, 437 KENT STREET

SYDNEY NSW 2000

**ATTENTION:**

**JEFFREY LORD**

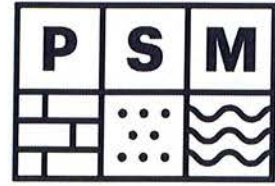
jlord@dblpproperty.com

**DOCUMENT TRANSMITTAL**

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## **Appendix D PSM Geotechnical Assessment**



Our Ref: PSM1329.1-002L

10 January 2019

DBL Property Pty Limited  
Suite 2, Upper Ground Floor  
437 Kent Street  
Sydney NSW 2000

G3 56 Delhi Road  
North Ryde NSW 2113

P +61-2 9812 5000  
F +61-2 9812 5001  
E mailbox@psm.com.au  
www.psm.com.au

Attention: Jeffrey Lord

Dear Jeffrey

**RE: DEVELOPEMENT PLAN AT LOT 9, MCPHERSON STREET, BANKSMEADOW – GEOTECHNICAL ASSESSMENT**

## 1. Introduction

This letter has been prepared at the request of Orica Australia Pty Ltd for geotechnical assessment for the proposed development at Lot 9, McPherson Street, Banksmeadow referred herein as the Site as shown in Figure 1. The letter contains our assessment of the depth to dense sand at the Site and some comment on the proposed erosion cover system.

The work was undertaken in accordance with our proposal dated 30 November 2018 (Ref. PSM1329.1-001L), which was accepted by email dated 5 December 2018.



**Figure 1** Lot 9 locality plan.

## 2. Background

The Site is located along McPherson Street and Nant Street in Banksmeadow. PSM understands that DBL is preparing a Development Application for a suspended 34,025 m<sup>2</sup> concrete slab on the Site to be supported by timber group piles supporting two warehouses with office buildings, carparks and loading zones.

PSM have provided a previous assessment of the Site in terms of the potential impacts of different proposed groundwater extraction rates at the Site. This assessment was provided in our report PSM1329.R1 dated 26 November 2009. This study included the analysis of 119 CPT across the Botany Industrial Park (BIP) which incorporates the Site.

Our assessment found the subsurface conditions of the Site and the BIP generally to be comprised of three soil layers, these being:

- An upper layer comprising loose fills, peat and loose sands with a thickness of around 0 to 6 m, underlain by
- An intermediate layer comprising predominantly dense sands with intercalated peat, sandy peat and peaty sand layers with a thickness of between 10 and 20 m, underlain by
- A basal zone of clayey sand and sandy clay with discontinuous layers of gravel, peat and peaty clay of varying thickness.

These soil layers are underlain by sandstone bedrock.

The proposed foundation solution is a network of 300 mm diameter driven timber piles at 10 m centres. The foundation is to support a concrete slab as part of a proposed warehouse development and associated car park.

It is understood that these piles are to be founded in dense sand.

It is proposed to cover the ground surface with a cover to prevent or limit the loss of soil through erosion processes. Currently it is understood this cover system comprises:

- Bidim unwoven geotextile equivalent to Geofabrics A39 or similar
- Overlain by up to 100 mm of suitable aggregate such as gravel or road base.

## 3. Information Provided

We received the following documents to assist with this assessment:

- Lot 9 Locality plan
- Axis Architectural drawing SK-A105 'Proposed Warehouse Distribution and Office Development' dated Jan 2018
- Axis Architectural drawing CO9349.11-S01-P 'Preliminary Slab and Timber Piles Concept Design' dated Feb 2018
- DP Report on geotechnical conditions of the site dated 9 Aug 2005
- Golder Associates drawing indicating the location of all the CPTs undertaken in the vicinity of Lot 9 dated 11 Oct 2011
- Golder Associates 2011 CPT data.

The following documents were also available from our previous work in the vicinity of the Site:

- DP Factual Report on field sampling and testing dated 20 Dec 1993.

We have also relied upon our assessment of potential settlement impacts due to groundwater extraction; report PSM1329.R1 dated 26 Nov 2009.



#### 4. Assessment of CPT Data

A suite of CPT testing has been conducted by Douglas Partners at the Site as part of a previous multi-stage assessment of geological, geotechnical and environmental conditions whose details are summarised in their report dated 20 December 1993. An additional complain was conducted in 2011 and these results have also been made available to PSM. Among these CPTs, 11 tests are performed on Lot 9. The locations of these CPTs are shown in Figure 2.

PSM have analysed the CPT data for the site to assess material and strength profiles. The results of this analysis are provided in the Appendix. From this analysis PSM have estimated the depth to dense sand at all 11 CPT test sites. For the purposes of this report dense sand has been defined as where the CPT tip resistance exceeds 20 MPa. The depth to dense sand has only been adopted where this resistance continues or increases for at least another 2 m below this depth.

The interpreted depths to dense sand at the Site are provided in Table 2. Based on this assessment the depth to dense sand at the Site is around 5 to 6 m.

**Table 1 – Interpreted depths to Dense Sand at the Site**

| CPT Test Site | Approximate Easting (m) | Approximate Northing (m) | Depth to Dense Sand (m) |
|---------------|-------------------------|--------------------------|-------------------------|
| CPT51         | 335301                  | 6241058                  | 4.8                     |
| CPT58         | 335240.6                | 6241304                  | 5.2                     |
| CPT59         | 335181                  | 6241291                  | 5.5                     |
| CPT63         | 335243                  | 6241252                  | 5.0                     |
| CPT65         | 335183.5                | 6241254                  | 4.8                     |
| CPT68         | 335297.7                | 6241157                  | 4.0                     |
| CPT69         | 335238.2                | 6241154                  | 3.8                     |
| CPT71         | 335250.2                | 6241105                  | 3.6                     |
| CPT72         | 335201.8                | 6241152                  | 4.0                     |
| CPT74         | 335254.4                | 6241041                  | 5.2                     |
| CPT75         | 335192                  | 6241051                  | 5.6                     |

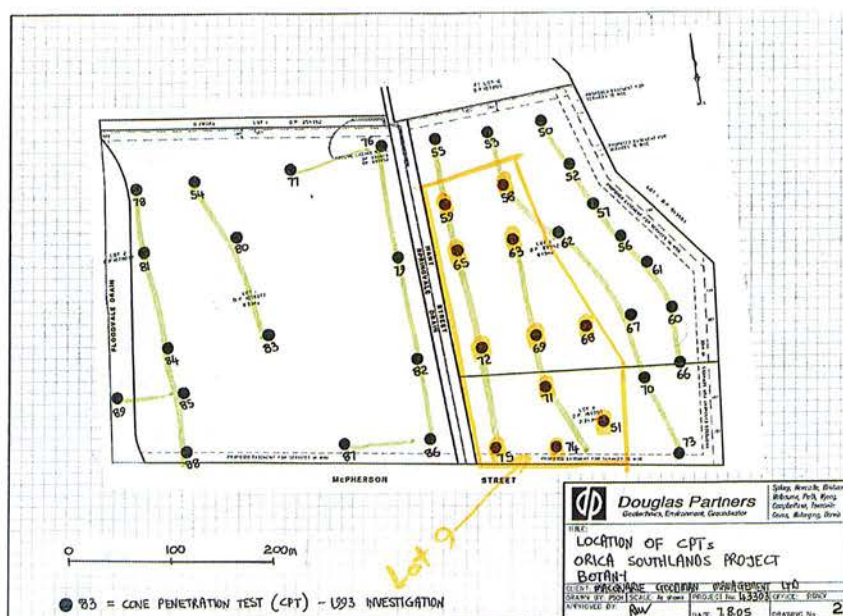


Figure 2 1993 Douglas Partners CPTs undertaken at Lot 9 (Taken from DP report dated 9 Aug 2005).

## 5. Likely Piling Depth

We understand the proposed foundation system includes driven timber piles. The likely depth of piling will depend on pile diameter, pile material and applied loading. A definitive assessment of pile depth is beyond the scope of this assessment; however, we would expect that piles may need to extend 3 to 4 m into the dense sand to achieve desired loads.

## 6. Piling Rig Access

Access for piling may require the use of a permanent or temporary raft to reduce loads to acceptable levels. The required dimensions of such a raft are plant specific and beyond the scope of this assessment. Irrespective of plant specifics we envisage that provision of a temporary support system could readily employed over the Site by the constructing of a temporary access pad. The pad requirements are rig specific and this should be confirmed with the contractor.

Access roads could be built on top of the proposed ground cover by increasing the thickness of the granular material.

Material used to provide suitable bearing capacity for plant access could be readily removed after construction to maintain required flood capacity.

For and on behalf of  
PELLS SULLIVAN MEYNINK

GARETH SWARBRICK  
PRINCIPAL

Encl Attachment A CPT Result



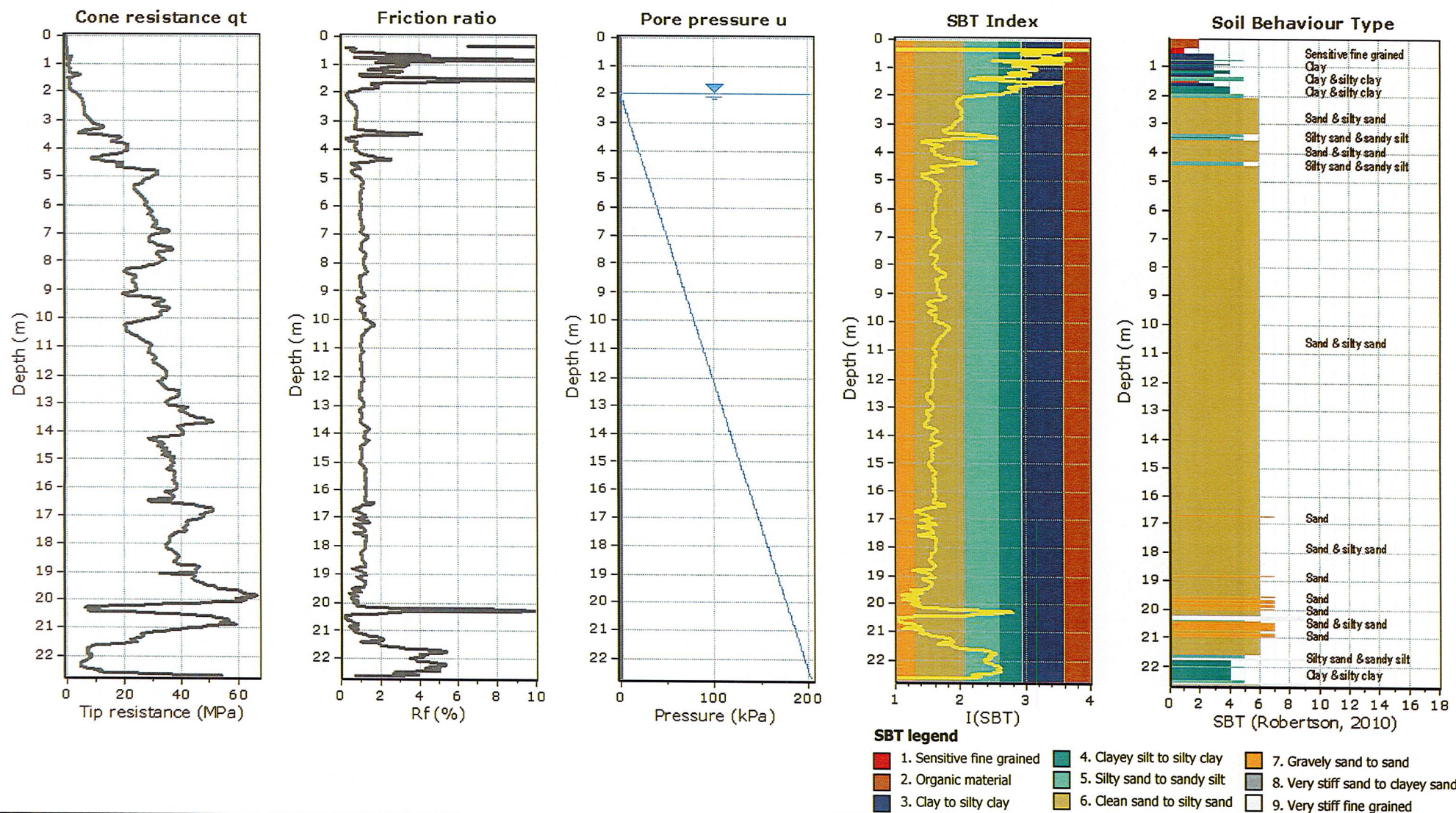
## **Attachment A**

### **CPT Result**

Project:  
Location:

**CPT: CPT51**

Total depth: 22.70 m, Date: 17/12/2018  
Surface Elevation: 0.00 m  
Coords: X:0.00, Y:0.00  
Cone Type: Unknown  
Cone Operator: Unknown





Project:

Location:

**CPT: CPT58**

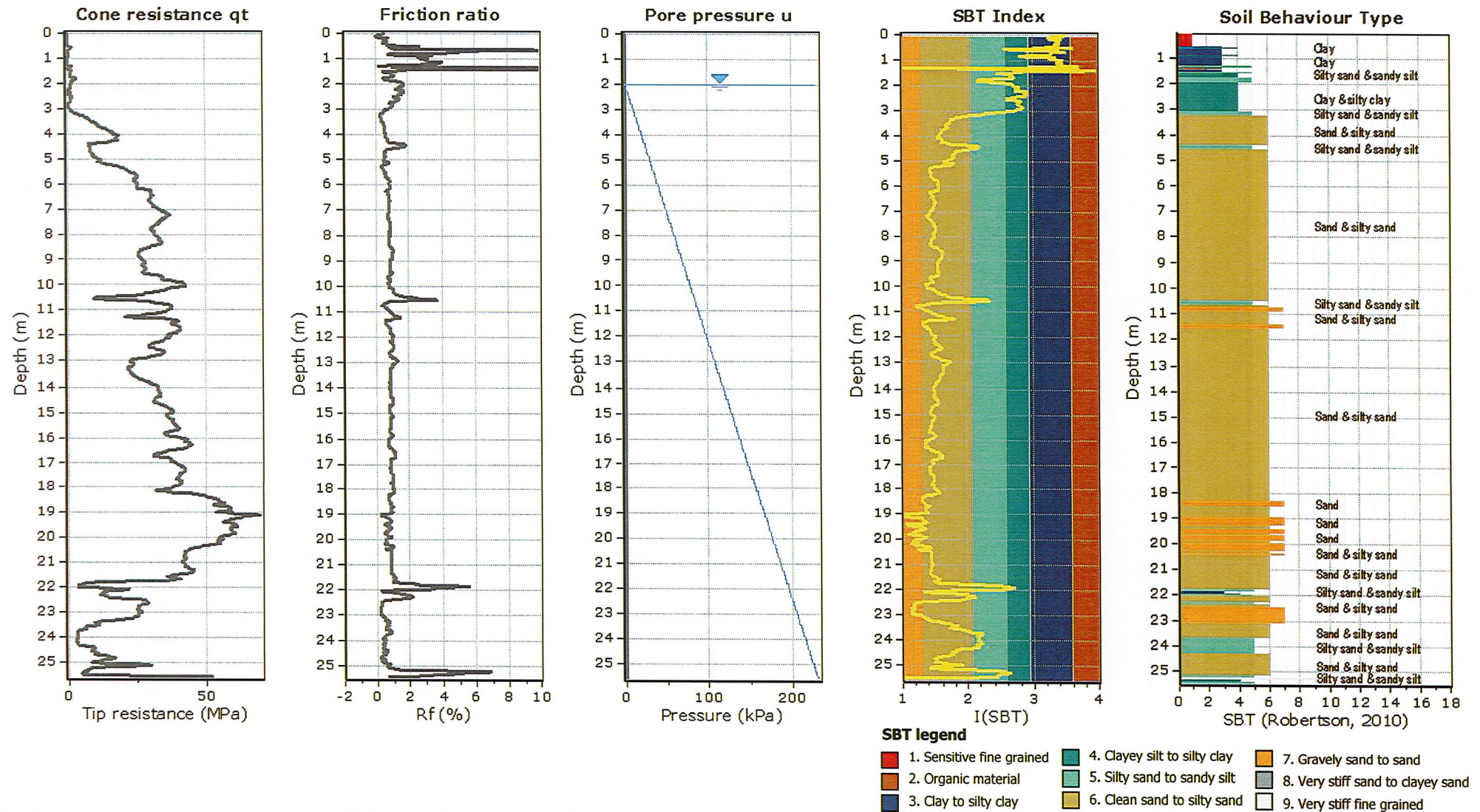
Total depth: 25.54 m, Date: 17/12/2018

Surface Elevation: 0.00 m

Coords: X:0.00, Y:0.00

Cone Type: Unknown

Cone Operator: Unknown





Project:

Location:

CPT: CPT59

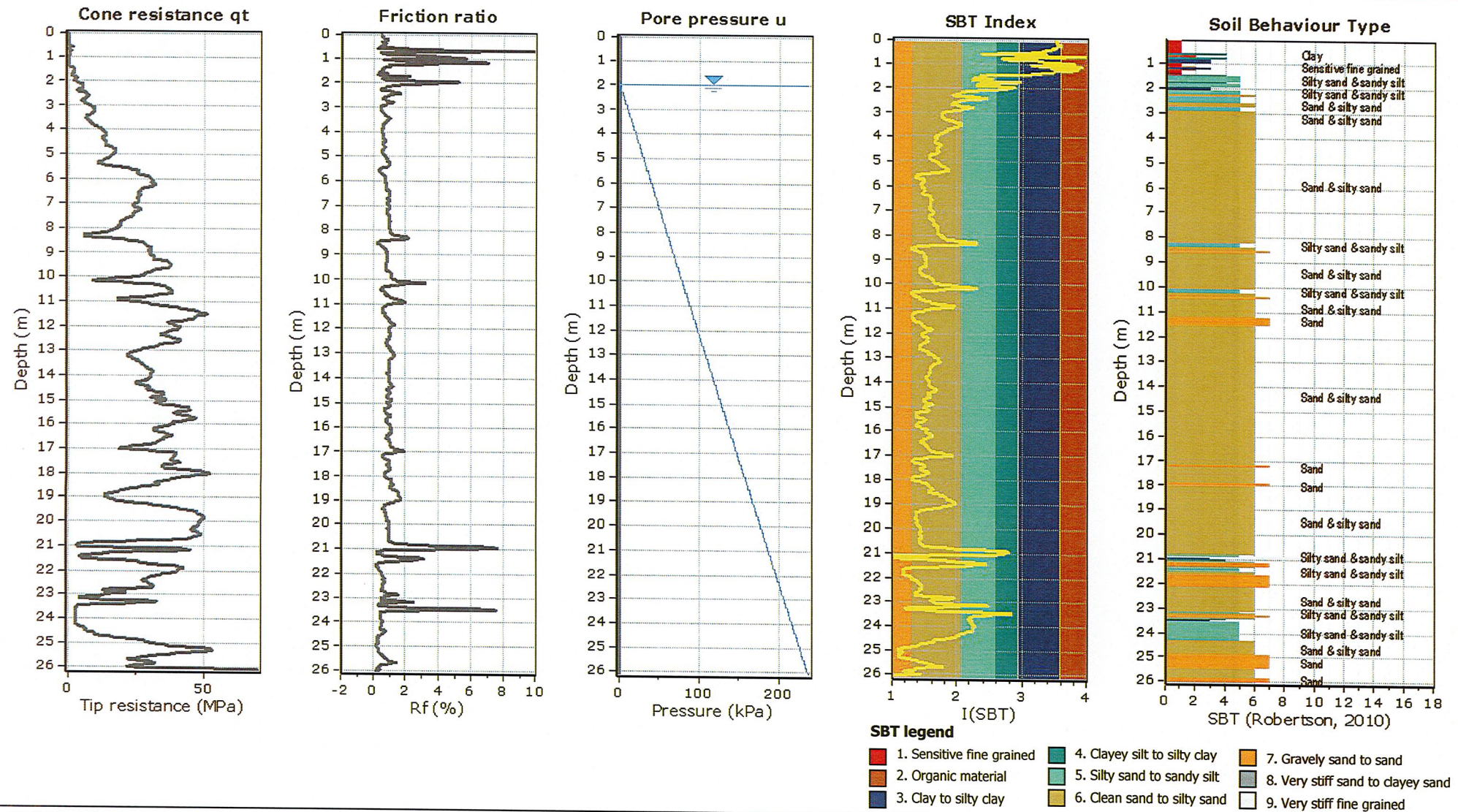
Total depth: 26.10 m, Date: 17/12/2018

Surface Elevation: 0.00 m

Coords: X:0.00, Y:0.00

Cone Type: Unknown

Cone Operator: Unknown





Project:

Location:

**CPT: CPT63**

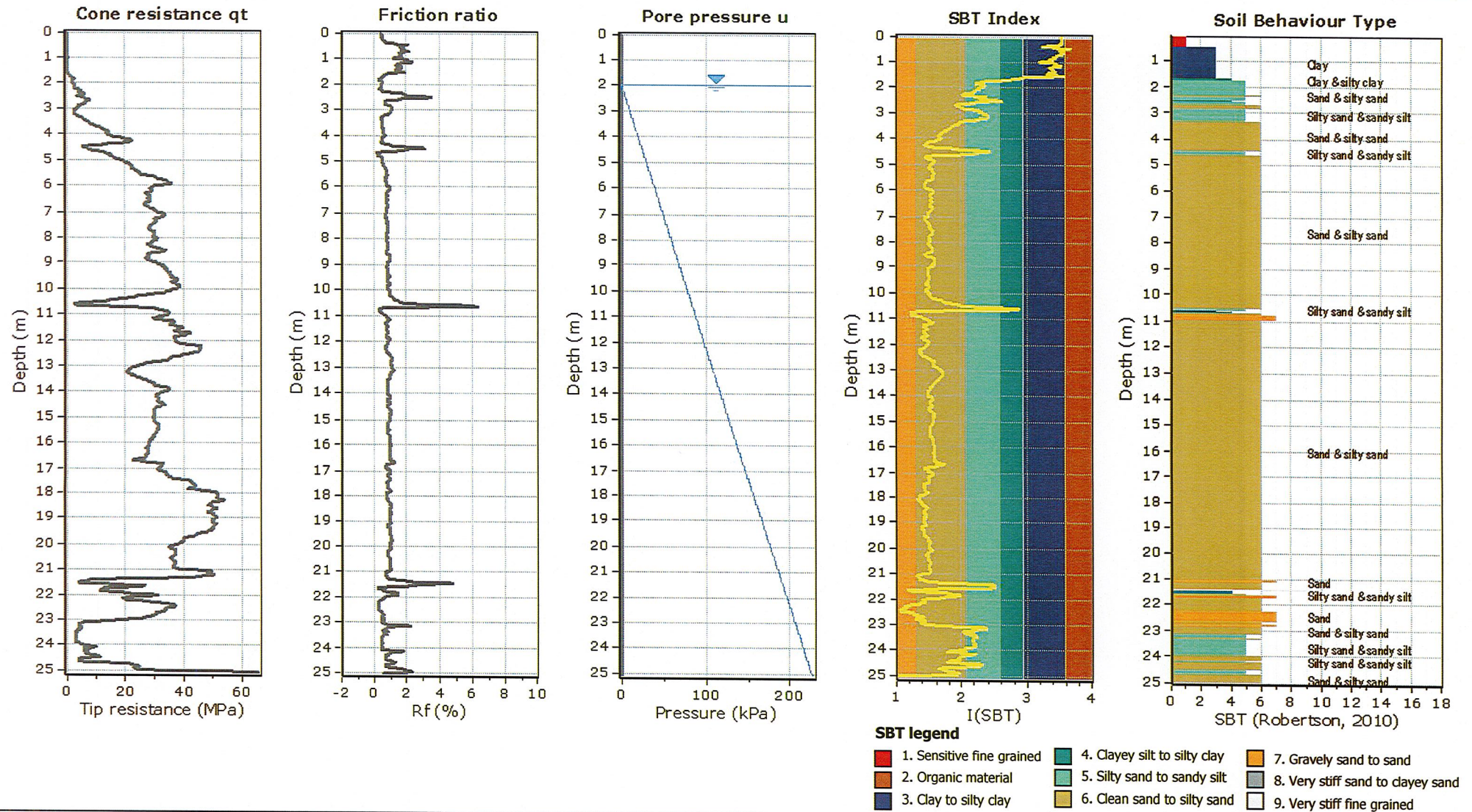
Total depth: 25.06 m, Date: 17/12/2018

Surface Elevation: 0.00 m

Coords: X:0.00, Y:0.00

Cone Type: Unknown

Cone Operator: Unknown





Project:

Location:

**CPT: CPT65**

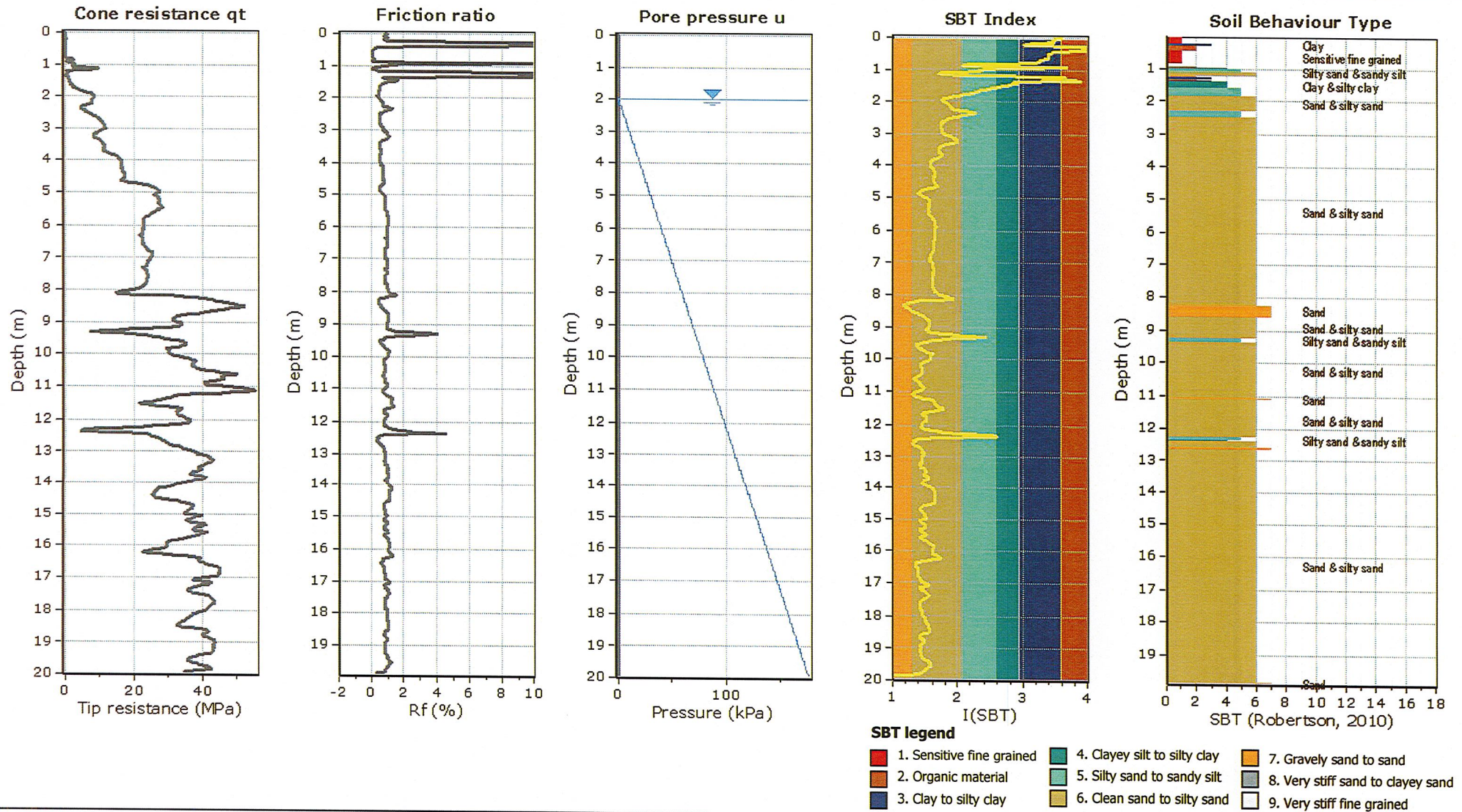
Total depth: 19.92 m, Date: 17/12/2018

Surface Elevation: 0.00 m

Coords: X:0.00, Y:0.00

Cone Type: Unknown

Cone Operator: Unknown





Project:

Location:

**CPT: CPT68**

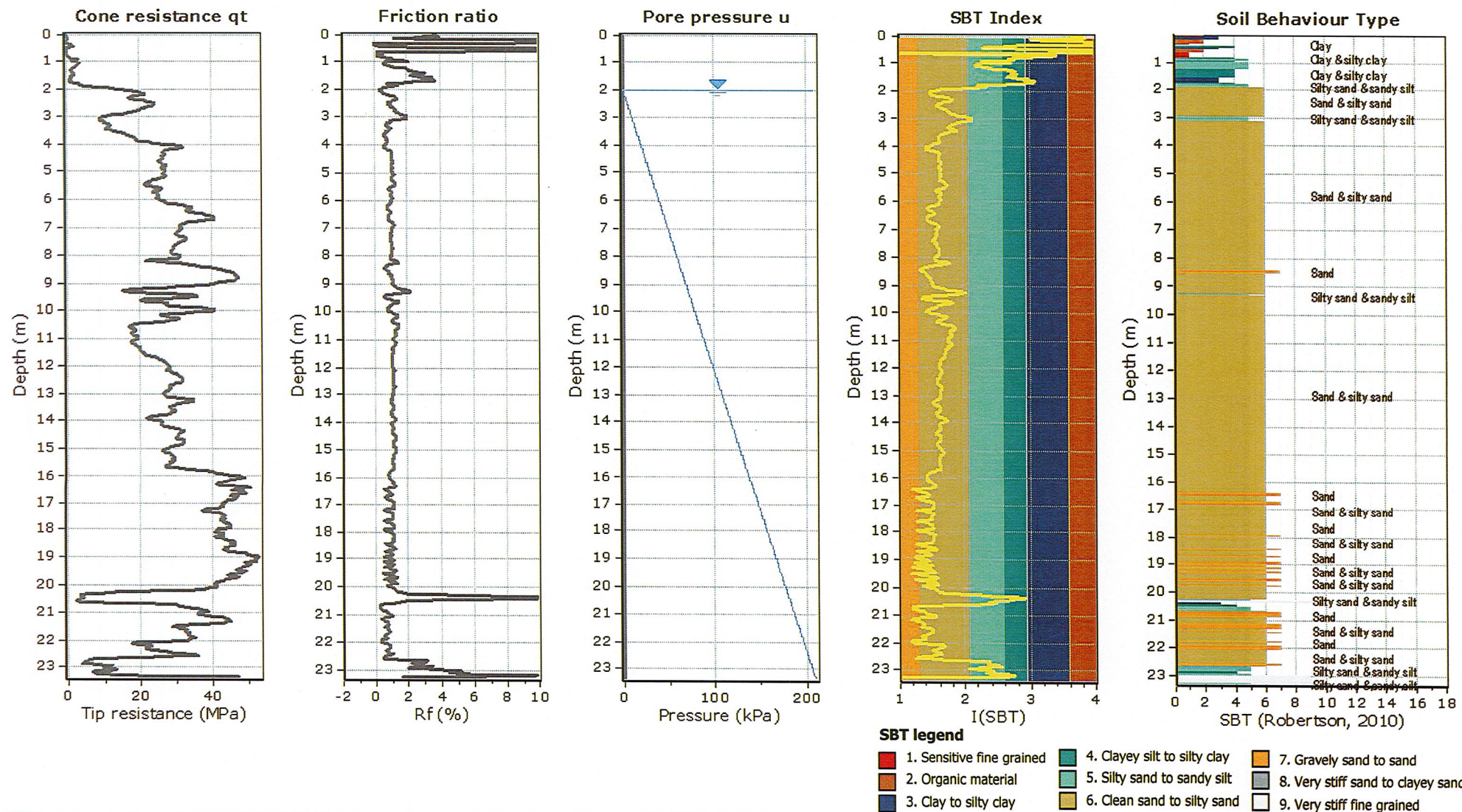
Total depth: 23.34 m, Date: 17/12/2018

Surface Elevation: 0.00 m

Coords: X:0.00, Y:0.00

Cone Type: Unknown

Cone Operator: Unknown





Project:

Location:

**CPT: CPT69**

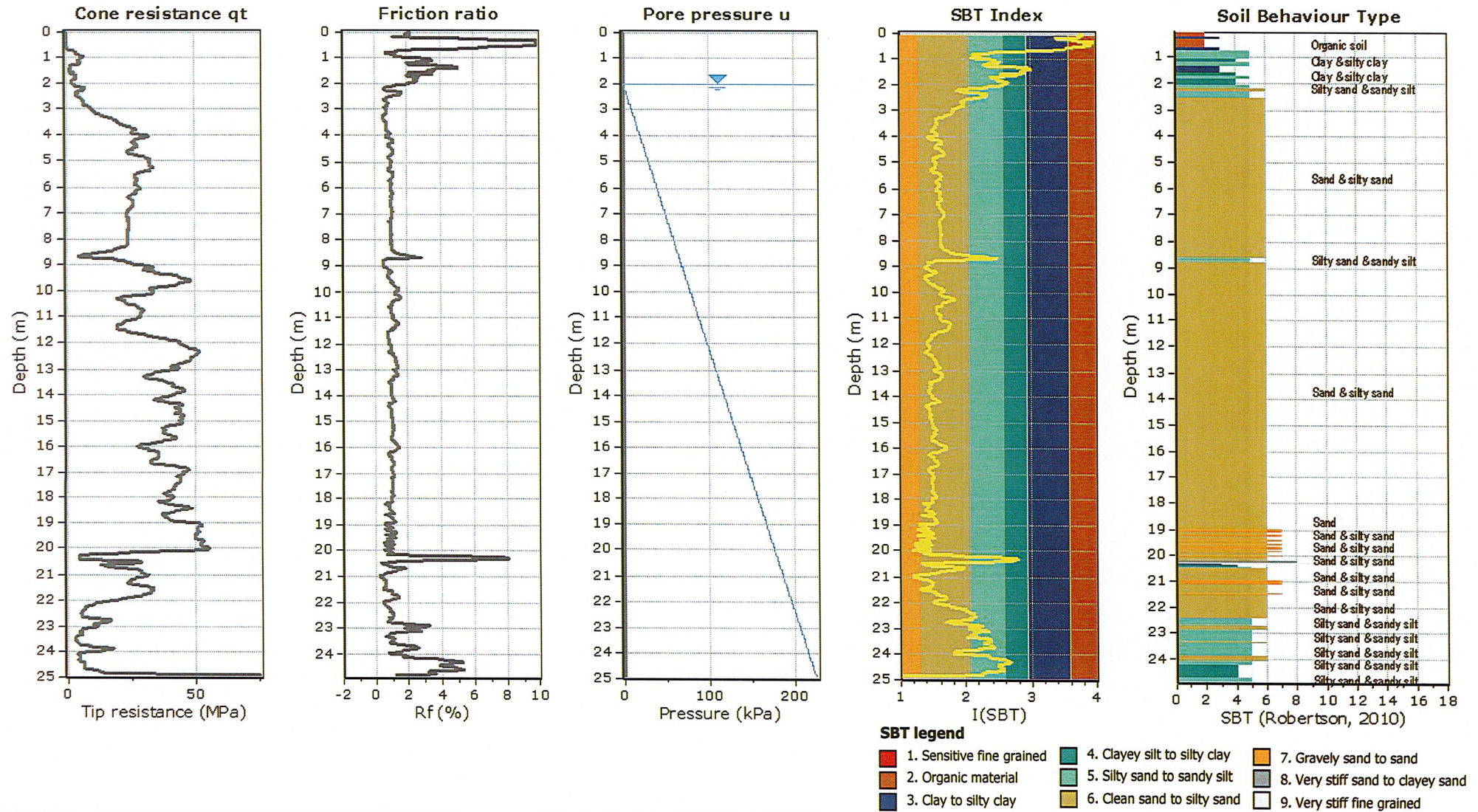
Total depth: 24.90 m, Date: 17/12/2018

Surface Elevation: 0.00 m

Coords: X:0.00, Y:0.00

Cone Type: Unknown

Cone Operator: Unknown





Project:

Location:

**CPT: CPT71**

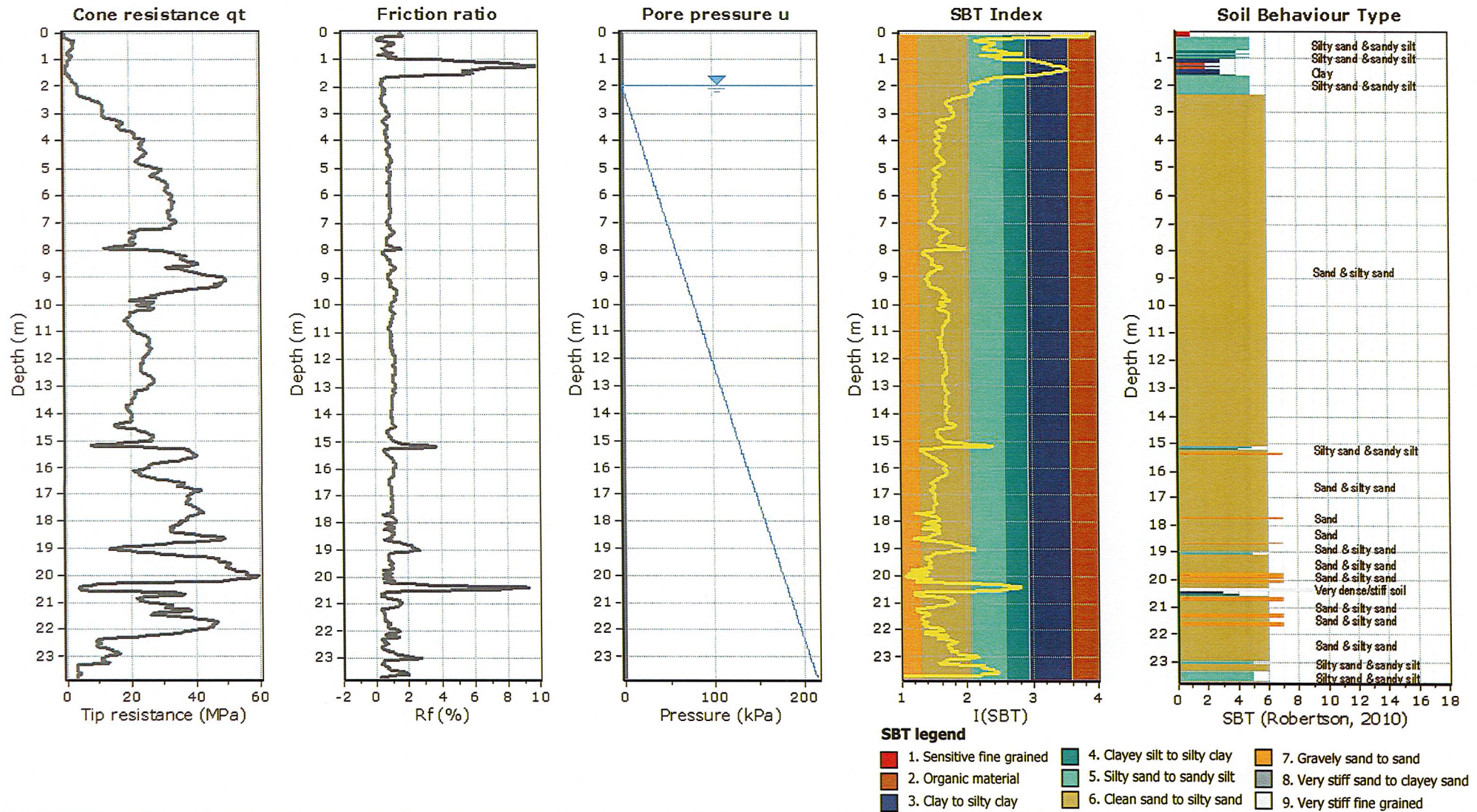
Total depth: 23.78 m, Date: 17/12/2018

Surface Elevation: 0.00 m

Coords: X:0.00, Y:0.00

Cone Type: Unknown

Cone Operator: Unknown

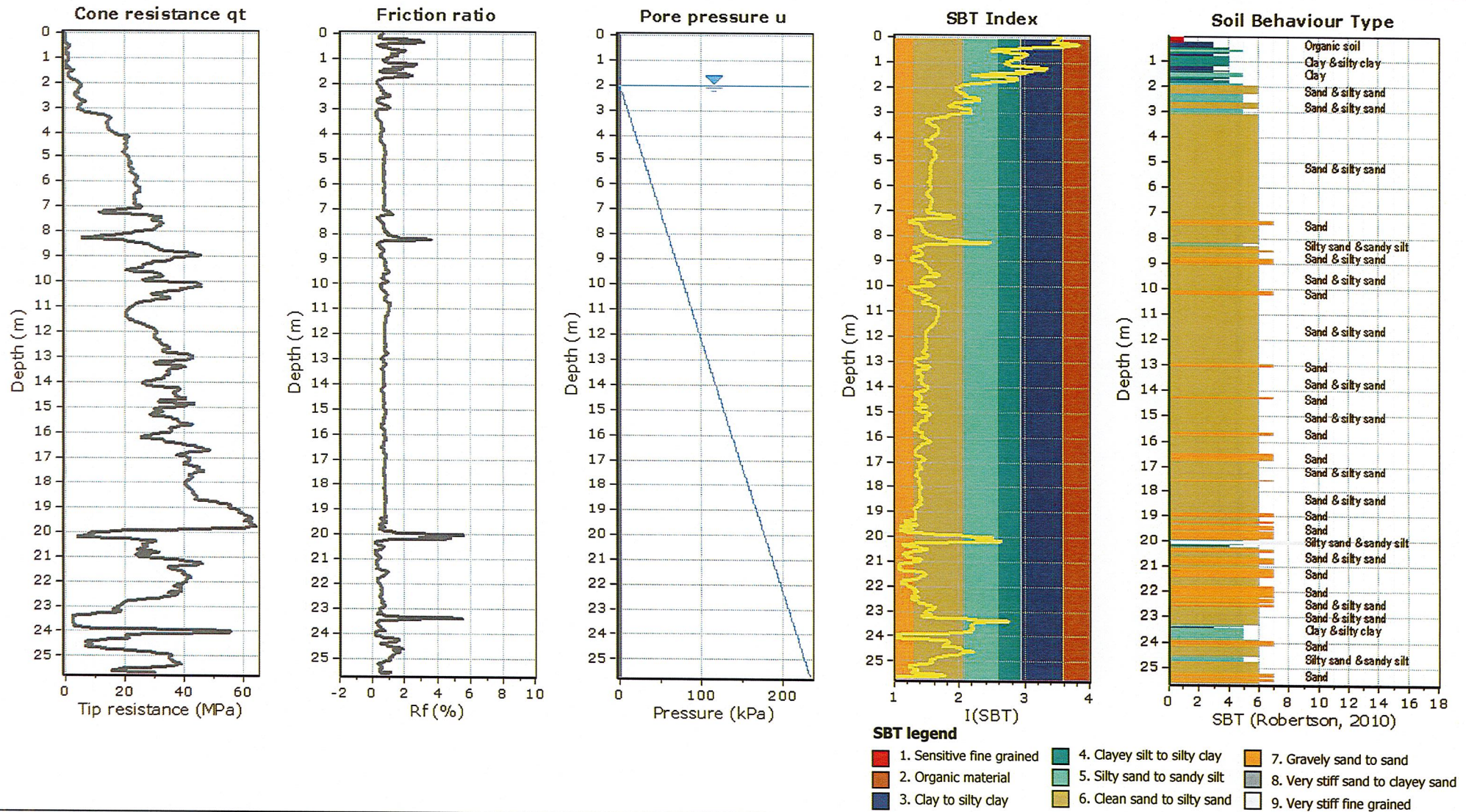




Project:  
Location:

**CPT: CPT72**

Total depth: 25.68 m, Date: 17/12/2018  
Surface Elevation: 0.00 m  
Coords: X:0.00, Y:0.00  
Cone Type: Unknown  
Cone Operator: Unknown

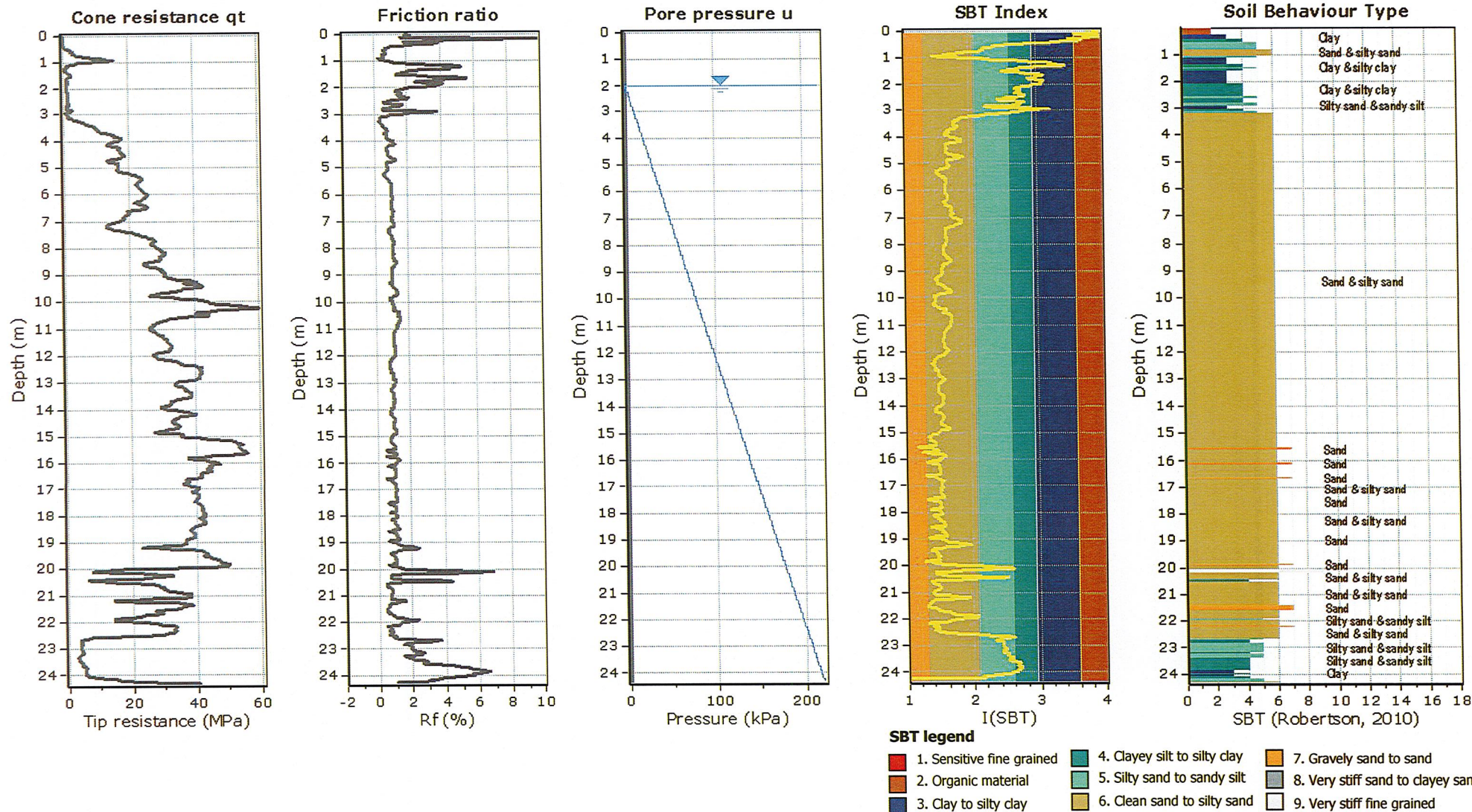




**Project:**  
**Location:**

**CPT: CPT74**

Total depth: 24.34 m, Date: 17/12/2018  
Surface Elevation: 0.00 m  
Coords: X:0.00, Y:0.00  
Cone Type: Unknown  
Cone Operator: Unknown

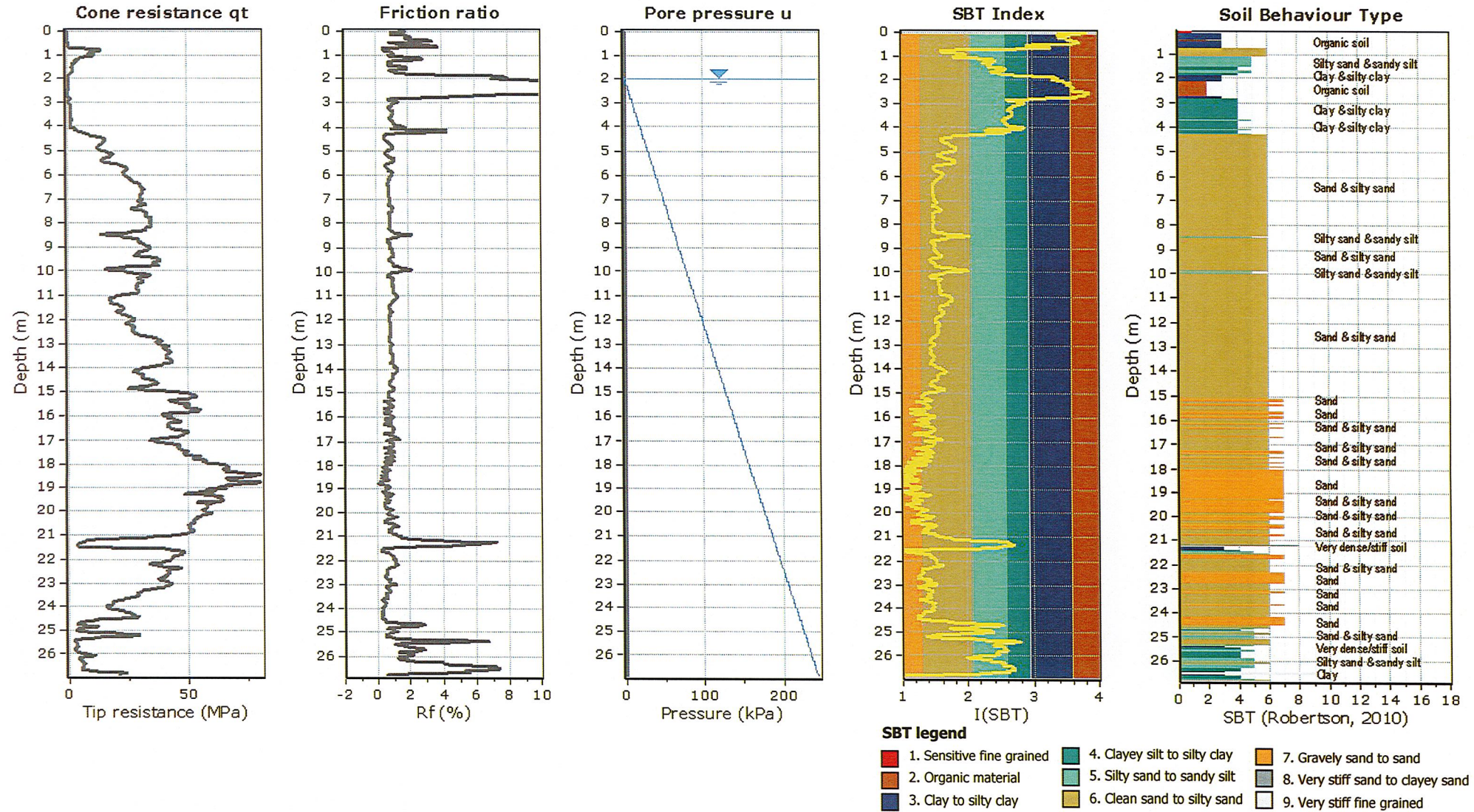




Project:  
Location:

**CPT: CPT75**

Total depth: 26.86 m, Date: 17/12/2018  
Surface Elevation: 0.00 m  
Coords: X:0.00, Y:0.00  
Cone Type: Unknown  
Cone Operator: Unknown






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| B       | John De Martin | Greg Dasey | Greg Dasey         |  | 18/2/2019 |
| 0       | John De Martin | Greg Dasey | Greg Dasey         |  | 15/5/2019 |



## **Appendix M Noise and Vibration Management Plan**

# 28 MCPHERSON STREET, BANKSMEADOW

## Construction Noise and Vibration Management Plan SSD-9691

### Prepared for:

Richard Crookes Constructions  
Level 3, 4 Broadcast Way  
Artarmon NSW 2064



## 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 Richard Crookes Constructions (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   |
|--------------------------|-----------------|-----------------|--------------|--------------|
| 610.31102.00000-R01-v1.1 | 17 January 2023 | Jason Rasquinha | Aaron Miller | Aaron Miller |
|                          |                 |                 |              |              |
|                          |                 |                 |              |              |
|                          |                 |                 |              |              |
|                          |                 |                 |              |              |
|                          |                 |                 |              |              |

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### APPENDICES

**Appendix A** Acoustic Terminology

**Appendix B** Construction Noise Sources



# 1 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Richard Crookes Constructions (RCC) to prepare a Construction Noise and Vibration Management Plan (CNVMP) for construction works associated with the development of 28 McPherson Street, Banksmeadow.

This CNVMP addresses the potential noise and vibration impacts associated with the vegetation clearing, earthworks, piling and the construction of the suspended concrete platform (the 'deck'), roads and site structures. Details relating to the mitigation and management procedures for dealing with potential impacts are also addressed in this report. Construction noise and vibration impacts were previously assessed for the site as part of the *SSDA Noise Impact Assessment 610.18516-R01-v1.1* prepared by SLR in December 2020 (DA NIA).

SLR is suitably qualified to produce this CNVMP and both the preparer and reviewers are members of the Australian Acoustical Society (AAS). SLR is also a member firm of the Association of Australasian Acoustical Consultants (AAAC). Specific acoustic terminology is used in this report: an explanation of common acoustic terms is provided in **Appendix A**.

# 2 Development Overview

The development comprises the construction, fit out and operation of two warehouses with associated offices, carparking and hardstands. As the development will be constructed on a 4-hectare flood detention basin, a suspended deck founded on piles will be constructed to support the site structures, hardstands and carparking.

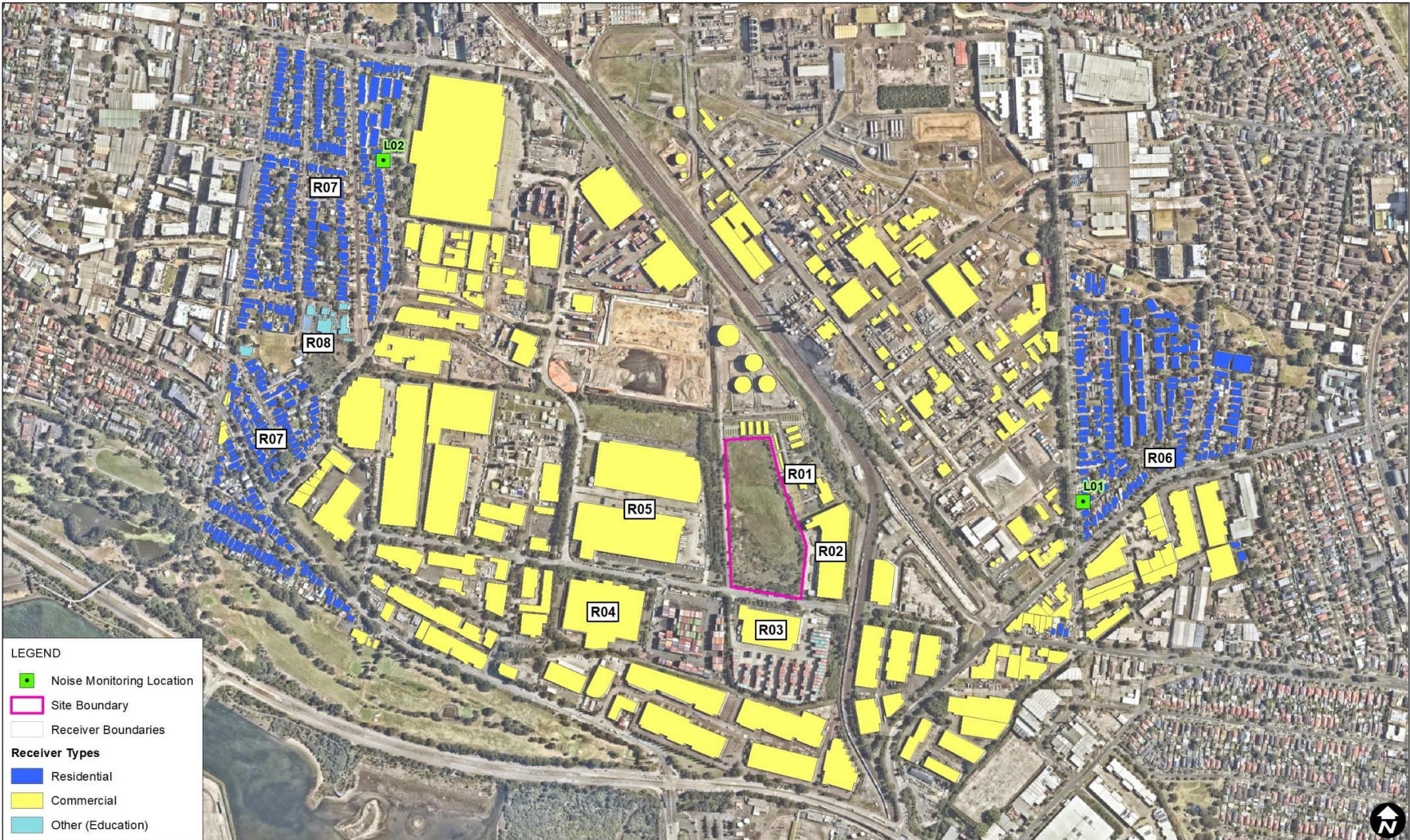
Key construction activities include:

- Clearing of existing vegetation
- Delivery and placement of rock and aggregate
- Installation of 1600 driven piles
- Construction of deck and hardstands
- Construction of roads
- Construction of site structures

Vehicle access to the site will initially be from Nant Street. After the driveway ramps are constructed, access to the site will be from McPherson Street.

The site location is shown in **Figure 1** and the proposed site layout is shown in **Figure 2**.





0 250 500  
m

Scale: 1:10,000 at A4  
Coordinate System: GDA 1994 MGA Zone 56

Date Drawn: 23-Dec-2022  
Project Number: 610.31102



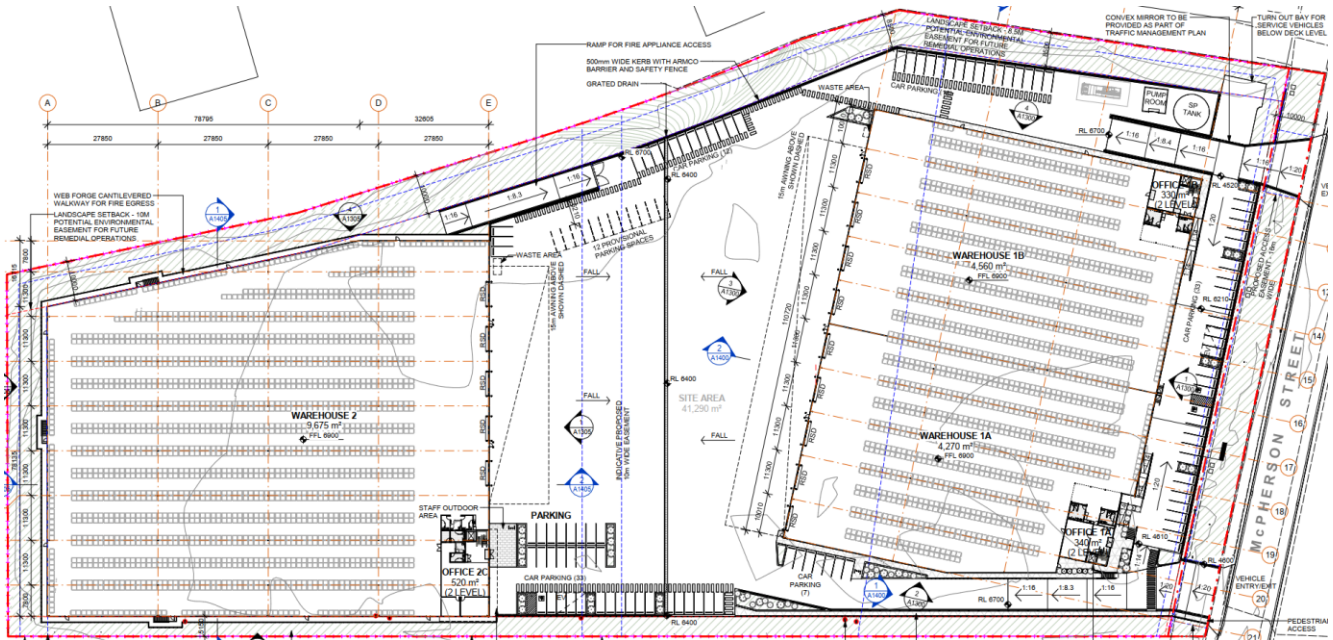
Data Source:  
Nearmap Imagery Nov 2022

**SITE LOCATION AND  
SURROUNDINGS**

**FIGURE 1**



**Figure 2 Development Plan**



Note: Figure provided by RCC, dated 9 November 2022.

## 2.1 Nearest Receivers

The project site is surrounded by commercial warehouses to the east, south and west and the Australian Border Protection dog facility (ABPDF) to the north and east. The closest residential receivers to the east are located on Denison Street in Hillsdale, approximately 850 m from the site. The closest residential receivers to the west are located along Stephen Road in Botany, approximately 700 m from the site.

Banksmeadow Public School is also located approximately 800m from the site on Stephen Road.

The nearest receivers are shown in **Figure 1** and detailed in **Table 1**.

**Table 1 Surrounding Sensitive Receivers**

| ID  | Description                                       | Type                | Distance (m) | Direction   |
|-----|---|---------------------|--------------|-------------|
| R01 | Australian Border Protection dog facility         | Active Recreational | <20          | North, East |
| R02 | Warehouse facility at 28 McPherson Street         | Commercial          | 30           | East        |
| R03 | Warehouse facility at 11 McPherson Street         | Commercial          | 35           | South       |
| R04 | Warehouse facility at 3-7 McPherson Street        | Commercial          | 170          | South west  |
| R05 | Warehouse facility at 15 Coal Pier Road           | Commercial          | 50           | West        |
| R06 | Residences along Denison Street in Hillsdale, NSW | Residential         | 850          | East        |
| R07 | Residences along Stephen Road in Botany, NSW      | Residential         | 700          | West        |
| R08 | Banksmeadow Public School                         | Educational         | 800          | West        |

### 3 Development Consent

The development conditions for SSD-9691 were issued by the Department of Planning and Environment (DPE) (formerly the Department of Planning, Industry and Environment) in April 2021. The requirements relevant to construction noise and vibration are shown in **Table 2**.

**Table 2 Development Consent Conditions**

| Development Consent  | Where Addressed  |                              |      |              |                             |                              |           |                 |          |   |
|--|--|------------------------------|------|--------------|-----------------------------|------------------------------|-----------|-----------------|----------|---|
| <p><b>Hours of Work</b></p> <p>B37. The Applicant must comply with the hours detailed in Table 1, unless otherwise agreed in writing by the Planning Secretary.</p> <p><i>Table 1 Hours of Work</i></p> <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> <p>B38. Works outside of the hours identified in Condition B37 may be undertaken in the following circumstances:</p> <p>(a) works that are inaudible at the nearest sensitive receivers;</p> <p>(b) for the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons; or</p> <p>(c) where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.</p>  | Activity   | Day                          | Time | Construction | Monday – Friday<br>Saturday | 7 am to 6 pm<br>8 am to 1 pm | Operation | Monday – Sunday | 24 hours | <p><b><u>Construction Hours:</u></b><br/><b>Section 6.2</b></p> |
| Activity   | Day  | Time                         |      |              |                             |                              |           |                 |          |   |
| Construction   | Monday – Friday<br>Saturday  | 7 am to 6 pm<br>8 am to 1 pm |      |              |                             |                              |           |                 |          |   |
| Operation  | Monday – Sunday  | 24 hours                     |      |              |                             |                              |           |                 |          |   |
| <p><b>Construction Noise Limits</b></p> <p>B39. 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 Appendix 2.</p> <p>The noise and vibration mitigation measures stated in Appendix 2 of the development consent are reproduced below:</p> <ul style="list-style-type: none"><li>Construction work to be undertaken during the hours outlined within the NSW Interim Construction Noise Guideline (ICNG)</li><li>Construction noise to be managed and minimised in accordance with procedures outlined under Section 6.5 in Table 21 – Environmental Management Controls for Construction Noise - Source Control of the Noise and Vibration Impact Assessment (NVIA) prepared by SLR Consulting dated January 2019</li><li>Adoption of construction mitigation measures outlined in the NVIA to reduce vibration impacts.</li></ul> | <p><b><u>Noise Management Levels:</u></b><br/><b>Section 5.2.2</b></p> <p><b><u>Construction Noise and Vibration Impacts:</u></b><br/><b>Section 6</b></p> <p><b><u>Mitigation and Management Measures:</u></b><br/><b>Section 7</b></p> |                              |      |              |                             |                              |           |                 |          |   |



| Development Consent  | Where Addressed  |
|--|--|
| <p><b>Construction Environmental Management Plan</b></p> <p>C3. As part of the CEMP required under Condition C2 of this consent, the Applicant must include the following:</p> <p>(a) a procedure for consulting with nearby sensitive receivers (including the adjacent ABP Detector Dog Facility) to schedule high noise generating works and vibration intensive activities;</p> <p>(b) details of the vibration monitoring which would be undertaken during the Stage 1 works;</p> | <p><b><u>Community Consultation:</u></b><br/><b>Section 7.3</b></p> <p><b><u>Construction Vibration Monitoring:</u></b><br/><b>Section 7.4.2</b></p> |

## 4 Existing Noise Environment

Unattended noise monitoring was completed in December 2018 as part of the SSDA NVIA. This monitoring was undertaken at the locations shown in **Figure 1** to measure the background noise levels in the identified residential receiver areas to the east and west of the site.

A summary of the noise monitoring results is presented in **Table 3**. Further information regarding the monitoring, including methodology and detailed data, is provided in the DA NVIA.

**Table 3 Summary of Ambient Noise Levels**

| ID  | Address                     | Measured Noise Levels (dBA) |                      |                    |                      |                      |                    |
|-----|-----------------------------|-----------------------------|----------------------|--------------------|----------------------|----------------------|--------------------|
|     |                             | Background Noise (RBL)      |                      |                    | Average Noise (LAeq) |                      |                    |
|     |                             | Day <sup>1</sup>            | Evening <sup>1</sup> | Night <sup>1</sup> | Day <sup>1</sup>     | Evening <sup>1</sup> | Night <sup>1</sup> |
| L01 | 6 Denison Street, Hillsdale | 54                          | 46                   | 42                 | 68                   | 66                   | 64                 |
| L02 | 36 Stephen Road, Botany     | 49                          | 49                   | 47                 | 60                   | 62                   | 54                 |

Note 1: The assessment periods are the daytime which is 7 am to 6 pm Monday to Saturday and 8 am to 6 pm on Sundays and public holidays, the evening which is 6 pm to 10 pm, and the night-time which is 10 pm to 7 am on Monday to Saturday and 10 pm to 8 am on Sunday and public holidays. See the NSW EPA *Noise Policy for Industry*.

## 5 Assessment Criteria

### 5.1 Construction Noise and Vibration Guidelines

The standards and guidelines relevant to the development are listed in **Table 4**. These guidelines aim to protect the community and environment from excessive noise and vibration impacts during construction of projects.

**Table 4 Construction Noise and Vibration Standards and Guidelines**

| Guideline/Policy Name   | Where Guideline Used   |
|---|--|
| <i>Interim Construction Noise Guideline</i> (ICNG) (DECC, 2009)   | Assessment of airborne noise impacts on sensitive receivers  |
| <i>Construction Noise and Vibration Guideline</i> (CNVG) (Roads and Maritime Services, 2016)                                  | Assessment and management protocols for noise and vibration impacts  |
| <i>Road Noise Policy</i> (RNP) (DECCW, 2011)  | Assessment of construction traffic impacts   |
| <i>BS 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2</i> , BSI, 1993                           | Assessment of vibration impacts (structural damage) to non-heritage sensitive structures   |
| <i>DIN 4150:Part 3-2016 Structural vibration – Effects of vibration on structures</i> , Deutsches Institute fur Normung, 2016 | Screening assessment of vibration impacts (structural damage) to heritage sensitive structures, where the structure is found to be unsound |
| <i>Assessing Vibration: a technical guideline</i> (DEC, 2006)   | Assessment of vibration impacts on sensitive receivers   |

### 5.2 Interim Construction Noise Guideline

The NSW *Interim Construction Noise Guideline* (ICNG) is used to assess and manage impacts from construction noise on residences and other sensitive land uses in NSW.

The ICNG contains procedures for determining project-specific Noise Management Levels (NMLs) for sensitive receivers based on the existing background noise in the area. The 'worst-case' noise levels from the construction of a project are predicted and then compared to the NMLs in a 15-minute assessment period to determine the likely impact of the project.

The NMLs are not mandatory limits, however, where construction noise levels are predicted or measured to be above the NMLs, feasible and reasonable work practices to minimise noise emissions are to be investigated.

#### Residential Receivers

The ICNG approach for determining NMLs at residential receivers is shown in **Table 5**.

**Table 5 ICNG NMLs for Residential Receivers**

| Time of Day  | NML<br>LAeq(15minute)                   | How to Apply   |
|--|---|--|
| 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 | Noise affected RBL <sup>1</sup> + 10 dB | <ul style="list-style-type: none"> <li>The noise affected level represents the point above which there may be some community reaction to noise</li> <li>Where the predicted or measured LAeq(15minute) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level</li> <li>The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.</li> </ul>  |
|  | Highly Noise Affected<br>75 dBA         | <ul style="list-style-type: none"> <li>The Highly Noise Affected (HNA) level represents the point above which there may be strong community reaction to noise</li> <li>Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restructuring the hours that the very noisy activities can occur, taking into account: <ul style="list-style-type: none"> <li>Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools or mid-morning or mid-afternoon for works near residences)</li> <li>If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.</li> </ul> </li> </ul> |
| Outside Standard Construction Hours  | Noise affected RBL + 5 dB               | <ul style="list-style-type: none"> <li>A strong justification would typically be required for works outside the recommended standard hours</li> <li>The proponent should apply all feasible and reasonable work practices to meet the noise affected level</li> <li>Where all feasible and reasonable practises have been applied and noise is more than 5 dB above the noise affected level, the proponent should negotiate with the community.</li> </ul>  |

Note 1: The RBL is the Rating Background Level and the ICNG refers to the calculation procedures in the NSW *Industrial Noise Policy* (INP). The INP has been superseded by the NSW EPA *Noise Policy for Industry* (NPfI).

### 'Other Sensitive' Land Uses and Commercial Receivers

Non-residential land uses have been identified in the study area. The NMLs for 'other sensitive' receivers are shown in **Table 6**.

**Table 6 ICNG NMLs at 'Other Sensitive' Land Uses**

| Land Use  | Noise management level LAeq(15minute) (dBA)<br>(applied when the property is in use) |                 |
|---|--|-----------------|
|   | Internal   | External        |
| <b>ICNG 'other sensitive' receivers</b>   |  |                 |
| Classrooms at schools and other educational institutions  | 45   | 55 <sup>1</sup> |
| Hospital wards and operating theatres   | 45   | 65 <sup>2</sup> |
| Places of worship   | 45   | 55 <sup>1</sup> |
| Active recreation areas<br>(characterised by sporting activities and activities which generate noise) | -  | 65              |



| Land Use   | Noise management level LAeq(15minute) (dBA)<br>(applied when the property is in use) |          |
|--|--|----------|
|  | Internal   | External |
| Passive recreation areas<br>(characterised by contemplative activities that generate little noise) | -  | 60       |
| Commercial   | -  | 70       |
| Industrial   | -  | 75       |
| <b>Non-ICNG 'other sensitive' receivers</b>  |  |          |
| n/a  | n/a  | n/a      |

Note 1: It is assumed that these receivers have windows partially open for ventilation which results in internal noise levels being around 10 dB lower than the external noise level.

Note 2: It is assumed that these receivers have fixed windows which conservatively results in internal noise levels being around 20 dB lower than the external noise level.

## Sleep Disturbance

A method for assessing sleep disturbance is contained in the NPfI. Although the NPfI sleep disturbance criteria relates to industrial noise, it is also considered relevant for reviewing potential impacts from construction noise as a screening criterion to identify the need for further assessment. The NPfI notes that a detailed maximum noise level assessment should be undertaken where a project results in night-time noise levels that exceed 52 dBA LA<sub>Fmax</sub> or the prevailing background level plus 15 dB, whichever is the greater.

Works will be undertaken during the standard daytime construction hours provided in **Table 5**, in accordance with the requirements of Consent Conditions B37 and B38. As any works outside of these hours must be inaudible at the nearest sensitive receivers, this is expected to limit any such works to internal fitout works, which are not within the scope of this CNVMP. Any works outside of the standard daytime construction hours should be assessed separately, consequently sleep disturbance will not be considered further within this CNVMP.

### 5.2.2 NML Summary

The NMLs for the project have been determined in accordance with the requirements of the ICNG and are shown in **Table 7**. Further information regarding the NMLs is provided in the DA NIA.

**Table 7 Project Specific Noise Management Levels (dBA)**

| Receiver                  | Monitoring Location | Measured RBL <sup>1</sup> (dBA) |      |       | NML (LAeq(15minute) (dBA)        |                        |                  |                    | Sleep Disturbance Screening Level (LA <sub>max</sub> – dBA) |
|---------------------------|---------------------|---------------------------------|------|-------|----------------------------------|------------------------|------------------|--------------------|---|
|                           |                     |                                 |      |       | Standard Construction (RBL+10dB) | Out of Hours (RBL+5dB) |                  |                    |   |
|                           |                     | Day                             | Eve. | Night | Day <sup>2</sup>                 | Day <sup>2</sup>       | Eve <sup>2</sup> | Night <sup>2</sup> |   |
| Active Recreational (R01) | -                   | -                               | -    | -     | 65 (when in use) <sup>3</sup>    | -                      | -                | -                  | -   |

| Receiver                | Monitoring Location | Measured RBL <sup>1</sup> (dBA) |      |       | NML (LAeq(15minute) (dBA)        |                        |                  |                    | Sleep Disturbance Screening Level (LA <sub>max</sub> – dBA) |
|-------------------------|---------------------|---------------------------------|------|-------|----------------------------------|------------------------|------------------|--------------------|---|
|                         |                     |                                 |      |       | Standard Construction (RBL+10dB) | Out of Hours (RBL+5dB) |                  |                    |   |
|                         |                     | Day                             | Eve. | Night | Day <sup>2</sup>                 | Day <sup>2</sup>       | Eve <sup>2</sup> | Night <sup>2</sup> | Night   |
| Commercial (R02 to R05) | -                   | -                               | -    | -     | 70 (when in use)                 | -                      | -                | -                  | -   |
| East Residential (R06)  | L01                 | 54                              | 46   | 42    | 64                               | 59                     | 51               | 47                 | 57  |
| West Residential (R07)  | L02                 | 49                              | 49   | 47    | 59                               | 54                     | 54               | 52                 | 62  |
| Educational (R08)       | -                   | -                               | -    | -     | 55                               | -                      | -                | -                  | -   |

Note 1: RBL = Rating Background Level.

Note 2: Daytime out of hours is 7 am to 8 am and 1 pm to 6 pm on Saturday, and 8 am to 6 pm on Sunday and public holidays.

Note 3: As the ICNG does not provide a specific criterion for animal facilities, the noise criteria for active recreational areas has hence been applied for R01.

### 5.3 Construction Road Traffic Noise Guidelines

The potential impacts from construction traffic on public roads are assessed under the NSW EPA *Road Noise Policy* (RNP).

An initial screening test is first applied to evaluate if existing road traffic noise levels are expected to increase by more than 2.0 dB as a result of construction traffic. Where this is considered likely, further assessment is required using the RNP base criteria shown in **Table 8**.

**Table 8 RNP Criteria for Assessing Construction Vehicles on Public Roads**

| Road Category                       | Type of Project/Land Use   | Assessment Criteria (dBA)  |                           |
|-------------------------------------|--|----------------------------|---------------------------|
|                                     |  | Daytime (7 am – 10 pm)     | Night-time (10 pm – 7 am) |
| Freeway/arterial/sub-arterial roads | Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments | LAeq(15hour) 60 (external) | LAeq(9hour) 55 (external) |
| Local roads                         | Existing residences affected by additional traffic on existing local roads generated by land use developments                          | LAeq(1hour) 55 (external)  | LAeq(1hour) 50 (external) |

### 5.4 Vibration Guidelines

The effects of vibration from construction works can be divided into three categories:

- Those in which the occupants of buildings are disturbed (human comfort)
- Those where building contents may be affected (building contents)
- Those where the integrity of the building may be compromised (structural or cosmetic damage).

### 5.4.1 Human Comfort Vibration

People can sometimes perceive vibration impacts when vibration generating construction works are located close to occupied buildings.

Vibration from construction works tends to be intermittent in nature and the EPA's *Assessing Vibration: a technical guideline* (2006) provides criteria for intermittent vibration based on the Vibration Dose Value (VDV). The 'preferred' and 'maximum' VDV's for human comfort impacts are shown in **Table 9**.

**Table 9 Vibration Dose Values for Intermittent Vibration**

| Building Type  | Assessment Period | Vibration Dose Value <sup>1</sup> (m/s <sup>1.75</sup> ) |         |
|--|-------------------|--|---------|
|  |                   | Preferred  | Maximum |
| Critical Working Areas (eg operating theatres or laboratories)   | Day or night-time | 0.10   | 0.20    |
| Residential  | Daytime           | 0.20   | 0.40    |
|  | Night-time        | 0.13   | 0.26    |
| Offices, schools, educational institutions and places of worship | Day or night-time | 0.40   | 0.80    |
| Workshops  | Day or night-time | 0.80   | 1.60    |

Note 1: The VDV accumulates vibration energy over the daytime and night-time assessment periods, and is dependent on the level of vibration as well as the duration.

### 5.4.2 Effects on Building Contents

People perceive vibration at levels well below those likely to cause damage to building contents. For most receivers, the human comfort vibration criteria are the most stringent and it is generally not necessary to set separate criteria for vibration effects on typical building contents.

Exceptions to this can occur when vibration sensitive equipment, such as electron microscopes, are located in buildings near construction works.

### 5.4.3 Structural and Cosmetic Damage Vibration

#### Buildings

In terms of the most recent relevant vibration damage criteria, Australian Standard AS 2187: Part 2-2006 *Explosives - Storage and Use - Part 2: Use of Explosives* recommends the frequency dependent guideline values and assessment methods given in BS 7385 Part 2-1993 *Evaluation and measurement for vibration in buildings Part 2* as they "are applicable to Australian conditions".

The standard sets guide values for building vibration based on the lowest vibration levels above which damage has been credibly demonstrated. These levels are judged to give a minimum risk of vibration-induced damage, where the minimal risk for a named effect is usually taken as a 95% probability of no effect.

Sources of vibration that are considered in the Standard include demolition, piling, ground treatments (eg compaction), construction equipment, tunnelling, road and rail traffic and industrial machinery.

The recommended limits (guide values) for transient vibration to ensure minimal risk of cosmetic damage to residential and industrial buildings are shown in **Table 10** and **Figure 3**.

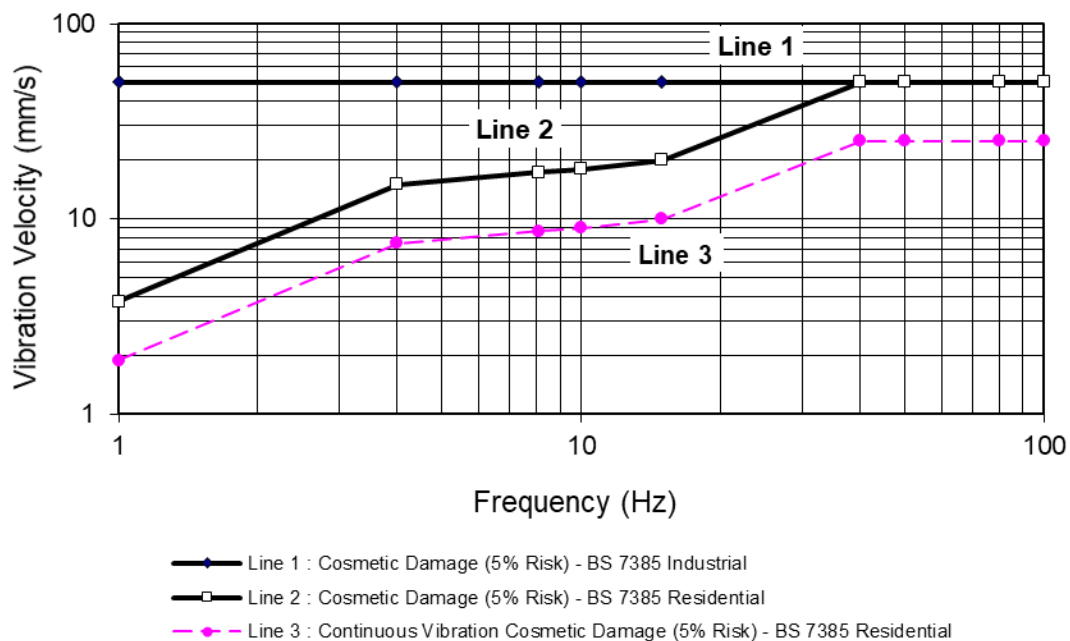
**Table 10 Transient Vibration Guide Values - Minimal Risk of Cosmetic Damage**

| 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<br>Industrial and heavy commercial buildings              | 50 mm/s at 4 Hz and above  |   |
| 2    | Unreinforced or light framed structures<br>Residential or light commercial type buildings | 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 |

The standard states that the guide values in **Table 10** relate predominantly to transient vibration which does not give rise to resonant responses in structures and low-rise buildings.

Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in **Table 10** may need to be reduced by up to 50%. The proposed activities are considered to have the potential to cause dynamic loading in some structures (eg neighbouring commercial developments) and it may therefore be appropriate to reduce the transient values by 50%.

**Figure 3 Graph of Transient Vibration Guide Values for Cosmetic Damage**



In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the guide values for building types corresponding to Line 2 are reduced. Below a frequency of 4 Hz where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.



The standard goes on to state that minor damage is possible at vibration magnitudes that are greater than twice those given in **Table 10**, and major damage to a building structure may occur at values greater than four times the tabulated values.

Fatigue considerations are also addressed in the standard and it is concluded that unless calculation indicates that the magnitude and number of load reversals are significant (in respect of the fatigue life of building materials) then the guide values in **Table 10** should not be reduced for fatigue considerations.

In order to assess the likelihood of cosmetic damage due to vibration, AS 2187 specifies that vibration measured should be undertaken at the base of the building and the highest of the orthogonal vibration components (transverse, longitudinal and vertical directions) should be compared with the criteria curves presented in **Table 10**.

It is noteworthy that extra to the guide values nominated in **Table 10**, the standard states that:

*“Some data suggests that the probability of damage tends towards zero at 12.5 mm/s peak component particle velocity. This is not inconsistent with an extensive review of the case history information available in the UK.”*

Also that:

*“A building of historical value should not (unless it is structurally unsound) be assumed to be more sensitive.”*

#### 5.4.3.2 German Standard DIN 4150: Part 3-2016

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:

- 2.5 mm/s for buildings of great intrinsic value (eg heritage listed buildings).

#### 5.4.3.3 General Vibration Screening Criteria

The Transport for NSW (TfNSW) *Construction Noise and Vibration Strategy* elaborates on the vibration criteria in the Roads and Maritime Services (RMS, now TfNSW) *Construction Noise and Vibration Guideline* (CNVG) and specifies general vibration screening criteria based on BS 7385: Part 2 – 1993. It notes that for most construction activities involving intermittent vibration such as rock breakers, piling rigs, vibratory rollers, excavators and the like, vibration predominantly occurs at frequencies greater than 4 Hz and therefore specifies the following conservative vibration damage screening levels:

- Reinforced or heavy frame structures: 25 mm/s
- Unreinforced or light frame structures: 7.5 mm/s

At locations where the predicted and/or measured vibration levels are greater than shown above, a more detailed analysis of the building structure, vibration source, dominant frequency and dynamic characteristics of the structure would be required to determine the applicable safe vibration levels.

#### 5.4.3.4 Heritage

Heritage structures are also assessed against the above screening criteria as they should not be assumed to be more sensitive to vibration unless they are found to be structurally unsound following an inspection. Where they are found to be unsound a 2.5 mm/s criterion can be applied in accordance with DIN 4150. It is understood that there are no heritage buildings in the vicinity of the site (ie within 100 m) that would require inspection.

#### 5.4.4 Minimum Working Distances for Vibration Intensive Works

Minimum working distances for typical vibration intensive construction equipment are provided in the CNVG and are shown in **Table 11**. The minimum working distances are for both cosmetic damage (from BS 7385) and human comfort at residential receivers (from the NSW EPA Vibration Guideline). They 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.

**Table 11 Recommended Minimum Working Distances from Vibration Intensive Equipment**

| Plant Item              | Rating/Description              | Minimum Distance                              |  |                                       |
|-------------------------|---------------------------------|---|--|---------------------------------------|
|                         |                                 | Cosmetic Damage                               |  | Human Response<br>(NSW EPA Guideline) |
|                         |                                 | Residential and Light Commercial<br>(BS 7385) | Heavy Commercial and Industrial<br>(BS 7385) |                                       |
| Vibratory Roller        | <50 kN (1–2 tonne)              | 5 m   | 3 m  | 15 m to 20 m                          |
|                         | <100 kN (2–4 tonne)             | 6 m   | 3 m  | 20 m                                  |
|                         | <200 kN (4–6 tonne)             | 12 m  | 6 m  | 40 m                                  |
|                         | <300 kN (7–13 tonne)            | 15 m  | 8 m  | 100 m                                 |
|                         | >300 kN (13–18 tonne)           | 20 m  | 10 m   | 100 m                                 |
|                         | >300 kN (>18 tonne)             | 25 m  | 12 m   | 100 m                                 |
| Small Hydraulic Hammer  | 300 kg (5 to 12 t excavator)    | 2 m   | 1 m  | 7 m                                   |
| Medium Hydraulic Hammer | 900 kg (12 to 18 t excavator)   | 7 m   | 4 m  | 23 m                                  |
| Large Hydraulic Hammer  | 1,600 kg (18 to 34 t excavator) | 22 m  | 12 m   | 73 m                                  |
| Vibratory Pile Driver   | Sheet piles                     | 2 m to 20 m                                   | 1 m to 10 m                                  | 20 m                                  |
| Piling Rig – Bored      | ≤ 800 mm                        | 2 m (nominal)                                 | 1 m (nominal)                                | 4 m                                   |
| Piling Rig – Hammer     | 12 t down force                 | 15 m  | 8 m  | 50 m                                  |
| Jackhammer              | Hand held                       | 1 m (nominal)                                 | <1 m (nominal)                               | 2 m                                   |

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 buildings under typical geotechnical conditions.

## 6 Construction Noise and Vibration Assessment

### 6.1 Construction Activities

Representative scenarios have been developed to assess the likely impacts of the various construction phases of the proposal. These scenarios are shown in **Table 12**.

The assessment uses 'realistic worst-case' scenarios to determine the impacts from the noisiest 15-minute period that is likely to occur for each work scenario, as required by the ICNG. The impacts represent construction noise levels without mitigation applied.

The sound power levels for the construction equipment used in each scenario are presented in **Appendix B**.

**Table 12 Construction Equipment**

| Scenario | Works Activity                      | Equipment  |
|----------|-------------------------------------|--|
| W.01     | Vegetation clearing                 | Chainsaw, dozer, grader, truck, tub grinder  |
| W.02     | Earthworks                          | Dump truck (15 t), excavator (22 t), front end loader, grader, vibratory roller (12 t), water tanker   |
| W.03     | Piling                              | Concrete mixer truck, concrete pump mobile crane (100 t), impact piling rig <sup>1</sup> , truck       |
| W.04     | Construction of deck and hardstands | Concrete mixer truck, concrete pump, concrete vibrator   |
| W.05     | Construction of roads               | Bitumen spray truck, line marking plant, vibratory roller (12 t)                                       |
| W.06     | Construction of structures          | Concrete mixer truck, concrete pump, concrete vibrator, flatbed truck, handtools, mobile crane (100 t) |

Note 1: Junttan PMx25 piling rig with a SHK 110-7 hammer

### 6.2 Hours of Construction

Construction activities will be undertaken during the following standard daytime construction hours:

- 7:00 am to 6:00 pm, Mondays to Fridays
- 8:00 am to 1:00 pm on Saturdays
- At no time on Sundays or Public Holidays.

### 6.3 Construction Noise Predictions

A noise model of the study area has been used to predict noise levels from the proposed construction work to all surrounding receivers. The model uses ISO 9613 algorithms in SoundPLAN software.

Local terrain, receiver buildings and structures were digitised in the noise model to develop a three-dimensional representation of the construction sites and surrounding areas.

A summary of the predicted noise levels (without additional mitigation) at the nearest receivers for the various work activities is presented in **Table 14** and exceedances of the NMLs are shown in **Table 15**. Construction noise impacts have been assessed only for standard daytime construction hours. The predictions represent a realistic worst-case scenario where the equipment in each scenario is working concurrently and the nearest location to each receiver. It is expected that noise levels would frequently be lower than the worst-case levels presented.

The assessment shows the predicted impacts based on the exceedance of the NMLs, as per the categories in **Table 13**.

**Table 13 Exceedance Bands and Impact Colouring**

| Exceedance of NML | Subjective Classification | Impact Colouring |
|-------------------|---------------------------|------------------|
| No exceedance     | Negligible                |                  |
| 1 to 10 dB        | Clearly audible           |                  |
| 11 dB to 20 dB    | Moderate intrusive        |                  |
| >20 dB            | Highly intrusive          |                  |

**Table 14 Predicted Worst-Case Construction Noise Levels**

| ID  | Receiver Type     | NML (Day) | Predicted Noise Level – LAeq(15minute) (dBA) |                    |                |   |                                  |                                       |
|-----|-------------------|-----------|--|--------------------|----------------|---|----------------------------------|---------------------------------------|
|     |                   |           | W.01<br>Vegetation<br>clearing               | W.02<br>Earthworks | W.03<br>Piling | W.04<br>Construction of<br>deck and<br>hardstands | W.05<br>Construction of<br>roads | W.06<br>Construction of<br>structures |
| R01 | Active recreation | 65        | 97   | 91                 | 101            | 77  | 80                               | 78                                    |
| R02 | Commercial        | 70        | 77   | 71                 | 87             | 64  | 64                               | 61                                    |
| R03 |                   | 70        | 79   | 74                 | 89             | 66  | 53                               | 63                                    |
| R04 |                   | 70        | 63   | 57                 | 74             | 50  | 47                               | 51                                    |
| R05 |                   | 70        | 67   | 69                 | 86             | 63  | 58                               | 64                                    |
| R06 | East residential  | 64        | 50   | 44                 | 62             | 38  | 41                               | 39                                    |
| R07 | West residential  | 59        | 49   | 43                 | 61             | 38  | 41                               | 39                                    |
| R08 | School            | 55        | 47   | 42                 | 60             | 36  | 39                               | 37                                    |



**Table 15 Predicted Exceedances at Nearest Receivers**

| ID  | Receiver Type     | NML (Day) | Predicted Exceedance(dB)       |                    |                |   |                                  |                                       |
|-----|-------------------|-----------|--------------------------------|--------------------|----------------|---|----------------------------------|---------------------------------------|
|     |                   |           | W.01<br>Vegetation<br>clearing | W.02<br>Earthworks | W.03<br>Piling | W.04<br>Construction of<br>deck and<br>hardstands | W.05<br>Construction of<br>roads | W.06<br>Construction of<br>structures |
| R01 | Active recreation | 65        | 32                             | 26                 | 36             | 12  | 15                               | 13                                    |
| R02 | Commercial        | 70        | 7                              | 1                  | 17             | -   | -                                | -                                     |
| R03 |                   | 70        | 9                              | 4                  | 19             | -   | -                                | -                                     |
| R04 |                   | 70        | -                              | -                  | 4              | -   | -                                | -                                     |
| R05 |                   | 70        | -                              | -                  | 16             | -   | -                                | -                                     |
| R06 | East residential  | 64        | -                              | -                  | -              | -   | -                                | -                                     |
| R07 | West residential  | 59        | -                              | -                  | 2              | -   | -                                | -                                     |
| R08 | School            | 55        | -                              | -                  | 5              | -   | -                                | -                                     |

The above shows the following:

- Noise levels at the west residential and educational receivers are expected to exceed the NMLs during W.03. However, these impacts are likely to be minor.
- The noise levels from the construction of the development are likely to exceed the NMLs at all receivers adjacent to the site.
- Moderate to high impacts are predicted at the nearest buildings of ABPDF during all scenarios. This would occur when works are conducted near these buildings. Worst-case exceedances between 26 dB and 36 dB are predicted during W.01, W.02 and W.03.
- Worst case exceedances between 16 dB and 19 dB are predicted at the commercial receivers to the east, west and south of the site during work scenarios W.01.
- The highest impacts are seen during work that uses noise intensive equipment such as chainsaws, tub grinders, vibratory rollers and impact piling rigs during early stages of the works (*W.01 – Vegetation clearing, W.02 Earthworks and W.03 Piling*).

It is expected that the construction noise levels would frequently be lower than predicted at the most-affected receivers when equipment is operated further from the receivers than the closest point of works, and when less noisy equipment is used.

All appropriate feasible and reasonable construction noise mitigation measures will be applied to works where exceedances of the NMLs are predicted. Construction noise mitigation measures are discussed in **Section 7**.

## 6.4 Construction Road Traffic Noise

Construction traffic would access the site from McPherson Street via Botany Road. McPherson Street is an existing heavy vehicle route through the industrial area with no adjacent sensitive receivers and Botany Road is an arterial road with high existing traffic volumes.

The requirements for construction traffic movements would be minimal and would not be expected to result in any additional noise impacts at the nearest receivers due to the existing volumes of traffic on the access roads, noting that a vehicle increase of roughly 60% would be required to increase the noise levels by 2 dB.

As such, road traffic noise impacts from construction related traffic are expected to be negligible.

## 6.5 Construction Vibration

The major potential sources of vibration from the proposed construction activities would likely be during:

- 'Earthworks' when vibratory rollers are being used.
- 'Piling' when the impact piling rig is being used

Vibration offset distances have been determined from the CNVG minimum working distances for cosmetic damage and human response in **Table 11** and the assessment is summarised in **Figure 4** for a 12 T vibratory roller and an impact piling rig. Buildings within the minimum working distances are shown on the figure. Minimum working distances should be confirmed for specific plant and works locations prior to commencement of vibration intensive works, and vibration monitoring undertaken in accordance with **Section 7.4.2**.

**Figure 4 Construction Vibration – Vibratory Roller (12 t) and Impact Piling Rig**



## Cosmetic Damage Assessment

The above figures show that the distance between the construction work and the nearest receivers is generally sufficient for all residential, educational buildings and commercial buildings to be outside of the cosmetic damage minimum working distance for vibration intensive equipment. Hence, cosmetic damage impacts on these buildings are not considered likely. However, the nearest buildings of the ABPDF to the north and east are likely to be within the minimum working distance for cosmetic damage when vibration intensive works are being completed adjacent to the boundary of the work area.

## Human Comfort Assessment

The above figure shows that all buildings of the ABPDF and the nearest commercial buildings to the west east and south are within the human comfort minimum working distance for a 12 t vibratory roller and an impact piling rig. Occupants of affected buildings may be able to perceive vibration impacts at times when vibration intensive equipment is in use. Where impacts are perceptible, they would likely only be apparent for relatively short durations when vibration intensive equipment is nearby.

Feasible and reasonable construction vibration mitigation measures should be applied where vibration intensive works are required within the minimum working distances. Construction mitigation and management measures are discussed further in **Section 7**.

# 7 Mitigation and Management Measures

The ICNG acknowledges that due to the nature of construction works it is inevitable that there will be impacts where construction work is occurring near sensitive receivers. The worst-case noise impacts during construction of the project are predicted to be 'highly intrusive' at the ABPDF and 'moderately intrusive' at the nearest commercial receivers, however, this would likely only occur on an infrequent basis when noise intensive works are being completed near to receivers. Works are also limited to daytime hours only.

All appropriate feasible and reasonable mitigation measures will be applied to the work to minimise the potential impacts, as far as practicable.

## 7.1 Project Specific Mitigation Measures

The receivers closest to the site are predicted to experience high noise levels due to specific equipment being utilised throughout the construction period. The principal cause of the exceedances is the use of chainsaws, tub grinders, vibratory rollers and impact piling rigs.

A number of potential mitigation measures for construction activities have been identified in **Table 16**.

It is noted that many of the noise level exceedances have limited mitigation measures that can be applied due to the type of activities occurring through the construction period.

**Table 16 Feasible and Reasonable Mitigation Options**

| Mitigation Option | Noise Impact/Benefit | Comments | Reasonable and Feasible to Apply |
|-------------------|----------------------|----------|----------------------------------|
| Source Control    |                      |          |                                  |



| Mitigation Option                               | Noise Impact/Benefit  | Comments  | Reasonable and Feasible to Apply |
|---|---|---|----------------------------------|
| Junttan Noise Control Jacket for Impact hammer  | Lower the total noise emissions from operations within cells  | This would reduce noise impacts from piling works by up to 15 dB compared to those shown in <b>Table 14</b> .   | Yes                              |
| Positioning sources that produce the most noise |   | Increasing the distance between individual plant operating during each work scenario and the nearest receivers can increase noise attenuation due to geometric spreading and lowering the overall noise impact.                   | Yes                              |
| Path Control                                    |   |   |                                  |
| Noise barriers                                  | Noise barriers can provide noise benefit for receivers that are located in close proximity to the site and when work is being conducted close to the site boundary. | The implementation of 2 m high hoarding around the northern and eastern perimeter of the site can reduce noise levels by up to 9 dB at the closest buildings of the ABPDF. Refer to <b>Figure 5</b> for location of the hoarding. | Yes                              |

**Figure 5 Noise Barrier Position**





## 7.2 Standard Mitigation and Management Measures

The mitigation and management measures that would be applied to the project are detailed in **Table 17**.

**Table 17 Environmental Management Controls for Construction Noise and Vibration**

| Measure  | Person Responsible  | Timing / Frequency | Reference / Notes |
|--|---|--------------------|-------------------|
| Project Planning   |   |                    |                   |
| Use quieter and less vibration emitting construction methods where feasible and reasonable.  | Project Manager   | Ongoing            | Best practice     |
| Works will be completed during standard daytime construction hours outlined in <b>Section 6.2</b> .  |   |                    |                   |
| Truck routes to site will be limited to major roads.   |   |                    |                   |
| Scheduling   |   |                    |                   |
| Respite offers will be considered where high-noise works are predicted to exceed 75 dBA for residential receivers. For schools and other sensitive receivers a lower level of 65 dBA will be used to account for the sensitive daytime uses of these 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><br>Consultation with these receivers will be undertaken to determine appropriate respite periods, such as exam periods for schools. | Project Manager/<br>Communications and Community Liaison Representative | Ongoing            | Best practice     |
| High-noise or vibration generating works will be carried out in continuous blocks no longer than three hours in length, with a minimum respite period of one hour between each block. ‘Continuous’ includes any period during which there is less than a one hour respite between ceasing and recommencing these works.  |   |                    |                   |
| Duration Respite will be considered where it may be beneficial to 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.   |   |                    |                   |
| 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.   |   |                    |                   |
| Site Layout  |   |                    |                   |
| Compounds and worksites will be designed to promote one-way traffic and minimise the need for vehicle reversing.   | Project Manager   | Ongoing            | Best practice     |

| Measure   | Person Responsible | Timing / Frequency | Reference / Notes |
|---|--------------------|--------------------|-------------------|
| 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.                           | Project Manager    | Ongoing            | Best practice     |
| Plant and Equipment Source Mitigation   |                    |                    |                   |
| All plant and equipment must be maintained in a proper and efficient condition, operated in a proper and efficient manner, and feature standard noise amelioration measures where applicable.   | Project Manager    | Ongoing            | 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. Equipment will be oriented so that noise emissions are directed away from any sensitive areas, where possible. |                    |                    |                   |
| 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.                          |                    |                    |                   |
| Noise monitoring spot checks of equipment will be completed to ensure individual items are operating as expected  |                    |                    |                   |
| 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.   |                    |                    |                   |
| Screening   |                    |                    |                   |
| Where possible, install purpose-built screening or enclosures will be used around long-term fixed plant that has the potential to impact nearby receivers   | Project Manager    | Ongoing            | Best practice     |

| Measure   | Person Responsible                                  | Timing / Frequency | Reference / Notes |
|---|---|--------------------|-------------------|
| The layout of the site will take advantage of existing screening from local topography, where possible. Site huts, maintenance sheds and/or containers will be positioned between noisy equipment and the affected receivers.   |   |                    |                   |
| 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.   | 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 <b>Section 7.5</b> .   |   |                    |                   |
| 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.   | Environmental Coordinator                           | 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 <b>Section 7.4</b> for full details of monitoring requirements.  |   |                    |                   |
| Vibration   |   |                    |                   |
| Attended vibration measurements of vibration intensive activities such as piling and vibratory rolling will be undertaken at the start of the works to determine actual vibration levels of the item. Works will cease if the monitoring indicates vibration levels are likely to, or do, exceed the relevant criteria. | Environmental Coordinator                           | Ongoing            | Best practice     |
| If vibration generating works are required within the minimum cosmetic damage working distances and considered likely to exceed the criteria, different construction methods with lower source vibration levels will be investigated and implemented, where feasible.   |   |                    |                   |
| Where works are required within the cosmetic damage minimum working distances, building condition surveys will be completed before and after the works to ensure no cosmetic damage has occurred.   |   |                    |                   |

### 7.3 Additional Mitigation Measures

The additional mitigation measures described in the CNVG that are relevant to works during standard construction hours are summarised in **Table 18**, with a discussion of their potential applicability to the proposed works. The objective of these additional noise mitigation measures is to engage, inform and provide project-specific messages to the community, recognising that advanced warning of potential disruptions can assist in reducing the impact. The additional mitigation measures also address the requirements of Condition C3(a) of the Development Consent and should be incorporated into RCC's Community Liaison Management Plan.

**Table 18 Additional Noise Mitigation Measures**

| Measure                 | Description   | Abbreviation |
|-------------------------|---|--------------|
| Periodic Notification   | <p>A notification entitled 'Project Update' or 'Construction Update' is produced and distributed to stakeholders via letterbox drop and distributed to the project postal and/or email mailing lists.</p> <p>Periodic notifications provide an overview of current and upcoming works across the project and other topics of interest. The objective is to engage, inform and provide project-specific messages. Advanced warning of potential disruptions (eg traffic change or noisy works) can assist in reducing the impact on stakeholders. The approval conditions for project specify the requirements for notification to sensitive receivers where works may impact on them.</p> <p>Most projects distribute notifications on a monthly basis. Each notification is graphically designed within a branded template.</p> <p>In certain circumstances media advertising may also be used to supplement Periodic Notifications, where considered effective.</p>   | PN           |
| Verification Monitoring | <p>Verification monitoring of noise and/or vibration during construction may be conducted at the affected receivers or a nominated representative location. Monitoring can be in the form of either unattended logging (ie for vibration with an immediate feedback mechanism such as SMS capabilities) or operator attended surveys (ie for specific periods of construction noise).</p> <p>The purpose of the monitoring is to confirm that:</p> <ul style="list-style-type: none"> <li>• construction noise and vibration from the project are consistent with the predictions in the noise assessment</li> <li>• mitigation and management of construction noise and vibration is appropriate for receivers affected by the works</li> </ul> <p>Where noise monitoring finds that the actual noise levels exceed those predicted in the noise assessment then immediate refinement of mitigation measures may be required.</p>  | V            |
| Specific Notification   | <p>Specific notification are in the form of a personalised letter or phone call to identified stakeholders no later than seven calendar days ahead of construction activities that are likely to exceed the noise objectives. Alternatively (or in addition to), communications representatives from the contractor would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities and provide an individual briefing.</p> <ul style="list-style-type: none"> <li>• Letters may be letterbox dropped or hand distributed</li> <li>• Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and their specific needs</li> <li>• Individual briefings are used to inform stakeholders about the impacts of noisy activities and mitigation measures that will be implemented. Individual briefing provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project.</li> </ul> <p>Specific notifications are used to support periodic notifications, or to advertise unscheduled works and must be approved by TfNSW prior to implementation/ distribution.</p> | SN           |

Based on the predicted noise levels in **Table 14**, additional mitigation measures as per the requirements shown in **Table 19** have been determined for works during the proposed construction hours.



**Table 19 Additional Mitigation Measures Matrix - Construction Noise**

| Time Period  | dB(A) above RBL | dB(A) above NML | Addition Mitigation Measures Type <sup>1</sup> |
|--|-----------------|-----------------|--|
| <b>Standard Hours: Mon - Fri (7am – 6pm), Sat (8am – 1pm), Sun/Pub Holiday (Nil)</b> |                 |                 |  |
| Noticeable   | 5 to 10         | 0               | -  |
| Clearly Audible  | > 10 to 20      | < 10            | -  |
| Moderately Intrusive   | > 20 to 30      | > 10 to 20      | PN, V  |
| High Intrusive   | > 30            | > 20            | PN, V  |
| 75dB(A) or greater <sup>2</sup>  | -               | -               | PN, V, SN                                      |

Note 1: PN = Project notification, SN = Specific notification, individual briefings, or phone call, V = Verification monitoring

Note 2: Applicable to residential receivers only.

What this means in practice is:

- The Periodic Notification (PN) and Verification (V) mitigation measure should be applied to all receivers that have noise impacts greater than 10 dB above the NML during the daytime. This corresponds to all residential receivers to the east with a predicted level greater than 74 dBA and residential receivers to the west with a predicted level greater than 69 dBA. Additionally, Periodic Notification (PN) and Verification (V) mitigation measures apply to commercial receivers with a predicted level greater than 80 dBA, active recreational receivers with a predicted level greater than 75 dBA and educational receivers with a predicted level greater than 65 dBA.
- The Specific Notification (SN) mitigation measure applies to residential receivers with a predicted level greater than or equal to 75 dBA.

For the commercial and industrial receivers near the site, the NSW Environment Protection Authority's (EPA's) *Interim Construction Noise Guideline* (ICNG) notes that:

*The proponent should assess construction noise levels for the project, and consult with occupants of commercial and industrial premises prior to lodging an application where required.*

*During construction, the proponent should regularly update the occupants of the commercial and industrial premises regarding noise levels and hours of work.*

Additionally, the TfNSW *Construction Noise and Vibration Strategy* (CNVS) notes regarding commercial and industrial premises that:

*Community consultation will be required during the assessment and planning phase of a project (prior to construction) to confirm the location of other sensitive receivers including collecting information on specialised requirements for each receiver (for example education or community facilities that provide Autism-specific services or identifying to location of vibration sensitive equipment in medical facilities). This may be achieved by completing a door-knock exercise or completing specific notifications prior to construction.*

The following consultation procedure is therefore recommended for the ABPDF and the other commercial receivers where noise levels are predicted to exceed 75 dBA and 80 dBA respectively (as shown in **Table 14**), or where vibration intensive activities will occur within the minimum working distances provided in **Table 11**.

- Project representatives should meet individually with the management of the ABPDF to determine their specific requirements at the earliest possible opportunity, and at least seven days prior to the commencement of works. Any specific requirements should be incorporated into the CNVMP as far as reasonably practicable.
- For the other commercial receivers, specific notifications in the form of a personalised letter should be provided to these receivers at least seven days prior to the commencement of works. In addition to providing the likely noise/vibration impacts and proposed hours (including respite periods), the letter should provide an opportunity to comment on the project as well as a point of contact for complaints.
- The construction contractor should continue to provide notifications to the above receivers in the form of a letterbox drop at monthly intervals, and when new activities are likely to commence. The letterbox drop should indicate the likely noise/vibration impacts and proposed hours (including respite periods) for the upcoming works.

## 7.4 Monitoring

### 7.4.1 Construction Noise Monitoring

Attended noise measurements will be undertaken at the start of noise intensive works that occur near sensitive receivers to verify the levels are as predicted and to check the effectiveness of mitigation and management measures. Attended noise monitoring will be conducted quarterly at a minimum.

Attended noise monitoring will also be undertaken in response to any formal complaints. All monitoring will be completed by suitably qualified acoustic specialists. The location and extent of attended monitoring will be determined in consultation with project staff 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 the impacts at the potentially affected sensitive receivers.

A noise monitoring report will be prepared after each attended monitoring survey.

All items of acoustic instrumentation utilised will be designed to comply with AS/NZS IEC 61672.1-2004 *Electroacoustics – Sound level meters* (AS IEC 61672) and carry current calibration certificates.

### 7.4.2 Construction Vibration Monitoring

#### 7.4.2.1 Structural Damage Monitoring

Where vibration intensive works (such as vibratory rolling and impact piling) are required within the minimum working distances of sensitive receivers or structures (refer to **Table 11**), vibration will be monitored continuously for the duration of works within the minimum working distances. Vibration monitoring should be undertaken by an Acoustical Consultant to ensure acceptable levels of vibration are satisfied.

Attended vibration measurements will be undertaken at the start of vibration intensive works within the minimum working distances to confirm the levels of vibration are below the applicable vibration limits (refer to **Section 5.4**).

A single geophone mounting plate would be installed on the adjacent buildings to continuously monitor vibration for the duration of the works. The monitoring locations would be on a stiff part of the structures (at the foundations) and on the side of the structures adjacent to the subject construction works, in accordance with BS 7385. 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 system will be configured to record the peak vibration levels and to trigger an audible/visual alarm when predetermined vibration thresholds are exceeded. The thresholds correspond to an “Operator Warning Level” and an “Operator Halt Level”, where the Warning Level is 75% of the Halt Level.

Exceedance of the “Operator Warning Level” does not require construction activity to cease but rather alerts the construction contractor to proceed with caution at reduced force or load.

An exceedance of the “Operator Halt Level” requires construction activity to cease and the construction contractor to undertake a detailed analysis of the building structure, vibration source, dominant frequencies and dynamic characteristics of the structure to determine the applicable safe vibration level. Where the applicable safe vibration level is exceeded, the construction contractor would be required to implement an alternative construction technique.

Actions to be carried out if the exceedance alarms are triggered are detailed in **Section 7.6**.

The vibration monitoring data will be downloaded and reported on a weekly basis.

Attended vibration monitoring will, if required, be conducted by an Acoustical Consultant. Attended vibration monitoring will also be carried out in response to complaints or to structural damage criterion exceedances. This monitoring will provide direct feedback to the operators in order to allow appropriate modification of construction techniques.

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

#### 7.4.2.2 Human Comfort Monitoring

Where vibration intensive works are required to be undertaken within the safe working distances for human comfort presented in **Table 11**, attended vibration monitoring will be conducted by an Acoustical Consultant, to ensure acceptable levels of vibration are satisfied. Attended vibration monitoring will also be carried out in response to complaints. This monitoring will provide direct feedback to the operators in order to allow appropriate modification of construction techniques.

Vibration would be measured using an accelerometer located on the floor within the most affected/sensitive room of the affected premises. The accelerometer would be mounted in accordance with the requirements of AS 2775-2004, as required by AVaTG.

#### 7.4.3 Monitoring Reports

Noise and/or vibration monitoring reports will be provided to the relevant regulatory authorities after review, unless otherwise agreed by the relevant regulatory authorities. Monitoring reports would include the following details, at a minimum:

- Noise/vibration monitoring/measurement locations

- Date, time and length of noise monitoring/measurements
- Weather conditions during the measurements
- Name and position of personnel undertaking measurements
- Serial number of monitoring/measurement equipment
- Construction activities being undertaken during measurements
- Locations of construction equipment and distance from monitoring location
- Tabulation of the measured  $L_{Aeq}$  and  $L_{Amax}$  noise levels during construction works (for each activity) along with a comparison to the predicted noise levels and notes identifying the noise levels from individual construction sources should be included (noise monitoring only)
- Measured  $L_{A90}$  background noise level in absence of the construction works along with notes on the noise sources driving the levels (noise monitoring only)
- Tabulation of the measured vibration levels during construction works (for each activity) along with a comparison to the relevant vibration criteria together with notes identifying the principal vibration sources (vibration monitoring only)
- Measured background vibration level in absence of the construction works (vibration monitoring only)
- Summary of measurements exceeding the criteria levels and descriptions of the plant or operations causing these exceedances (if available) (noise and vibration monitoring)
- Operator observations noting any extraneous noise/vibration sources or other points of relevance.

## 7.5 Complaints Management

Complaints are able to be made via phone and email. Contact details will be included on site signage and on the project website.

Information recorded in the complaints register with respect to each complaint will include:

- Date and time of complaint
- Name, address and telephone number of complainant
- Nature of complaint
- Response actions taken to date.

A report of complaints will be provided to the relevant regulatory authorities every three months throughout the construction of the project, or as otherwise agreed by the relevant regulatory authorities.

Preliminary investigations into the complaint will commence within 48 hours of the complaint receipt and adequate measures to identify and manage will be considered and implemented. Where required, noise/vibration monitoring will be undertaken as per **Section 7.4**.



## 7.6 Contingency Plan

The following contingency management plan, shown in **Table 20**, would be used to manage noise and vibration impacts that are higher than expected.

In the event of an incident, response will be carried out as detailed below. All Condition Amber and Condition Red occurrences will be recorded in the Construction Contractor's Monthly Report to the Principal 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 daytime construction hours
- Any works occurring outside the standard daytime construction hours, where those works have not been agreed in writing by the relevant regulatory authority
- Trigger of Condition Red for vibration impacts at sensitive receivers.

**Table 20 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) | Works exceeding the Highly Noise Affected criteria will be managed in accordance with the strategies for high-noise generating works determined through community consultation, as detailed in <b>Section 7.2</b> and <b>Section 7.3</b> .                                       |
| 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. |

## 7.7 Internal Audits

Periodic internal audits will be conducted to ensure that the development consent conditions and commitments and environmental management controls outlined in this CNVMP are being properly implemented. Audit reports will be used to inform of any corrective actions.

## 7.8 Roles and Responsibilities

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

### 7.8.1 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 a consistent approach and outcomes are achieved
- Providing necessary training for project personnel to cover noise and vibration management
- Reviewing and update of this CNVMP, where necessary
- Commissioning suitably qualified consultants to complete noise and vibration monitoring. Ensuring environmental coordinators appropriately undertake attended noise and vibration measurements required by this CNVMP
- Assessing and (as required) mitigating risks of high noise and vibration levels before commencing works and ensuring that the appropriate controls are implemented
- Ceasing works in the event of excessive noise and vibration generation
- In the event that a noise or vibration complaint is received, implementing the procedure outlined in **Section 7.5**.

### 7.8.2 Environmental Coordinator

- Coordinating noise and/or vibration monitoring program, where required
- Review control measures in accordance with the CNVMP
- Identifying and reporting any high or non-compliant noise and vibration emissions.

### 7.8.3 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
- Identifying and reporting noise and vibration emission incidents.

## 8 Review and Improvement of Noise Management Plan

This CNVMP will be reviewed, and if necessary, updated in the following circumstances:

- Significant changes to the equipment, machinery and plant operated within the site

- 
- Where it is identified via monitoring that the performance of the project is not meeting the objectives of the CNVMP
  - At the request of the relevant regulatory authority or other relevant government agency.

All employees and contractors will be informed of any revisions to the CNVMP by Site Management during toolbox talks. The most recent version of the CNVMP as approved by the Planning Secretary, will be implemented for the duration of construction works.

# 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 | Loud                  |
| 80                         | Kerbside of busy street                    |                       |
| 70                         | Loud radio or television                   |                       |
| 60                         | Department store                           | Moderate to quiet     |
| 50                         | General Office                             |                       |
| 40                         | Inside private office                      | Quiet to very quiet   |
| 30                         | Inside bedroom                             |                       |
| 20                         | Recording studio                           | Almost silent         |

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

### 3. Sound Power Level

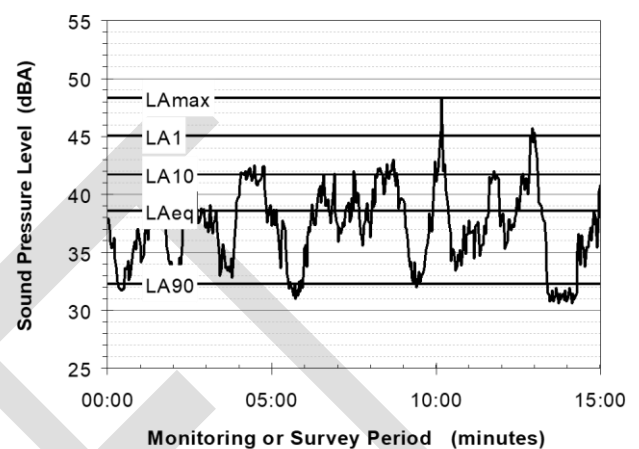
The Sound Power of a source is the rate at which it emits acoustic energy. As with Sound Pressure Levels, Sound Power Levels are expressed in decibel units (dB or dBA), but may be identified by the symbols SWL or LW, or by the reference unit  $10^{-12}$  W.

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

### 4. Statistical Noise Levels

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

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



Of particular relevance, are:

LA1 The noise level exceeded for 1% of the 15 minute interval.

LA10 The noise level exceeded for 10% of the 15 minute interval. This is commonly referred to as the average maximum noise level.

LA90 The noise level exceeded for 90% of the sample period. This noise level is described as the average minimum background sound level (in the absence of the source under consideration), or simply the background level.

LAeq The A-weighted equivalent noise level (basically, the average noise level). It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.

### 5. Frequency Analysis

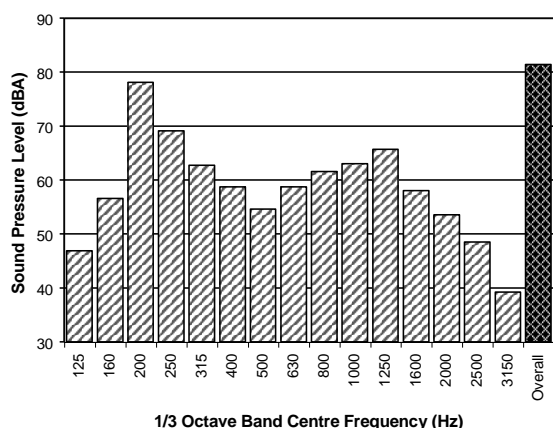
Frequency analysis is the process used to examine the tones (or frequency components) which make up the overall noise or vibration signal.

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

Frequency analysis can be in:

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

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



## 6. Annoying Noise (Special Audible Characteristics)

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

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

## 7. Vibration

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

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

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

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

## 8. Human Perception of Vibration

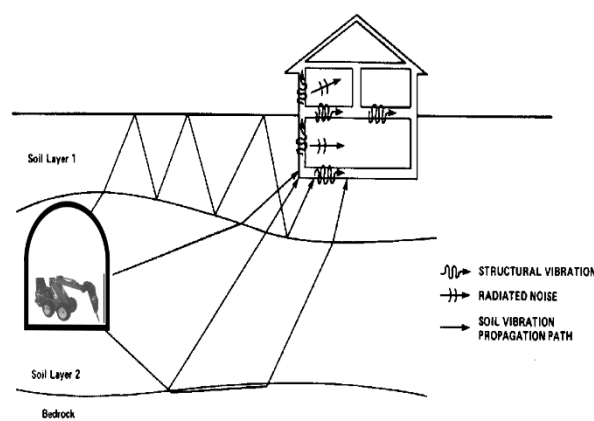
People are able to 'feel' vibration at levels lower than those required to cause even superficial damage to the most susceptible classes of building (even though they may not be disturbed by the motion). An individual's perception of motion or response to vibration depends very strongly on previous experience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

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

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

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

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



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

# Appendix B

## Construction Noise Sources

| Works ID                        | Scenario                            | Sound Power Level (LAeq dBA) |                       |                      |               |                                |       |                           |                  |               |                  |        |            |                    |                      |                              |  |       |             |                           |
|---------------------------------|-------------------------------------|------------------------------|-----------------------|----------------------|---------------|--------------------------------|-------|---------------------------|------------------|---------------|------------------|--------|------------|--------------------|----------------------|------------------------------|--|-------|-------------|---------------------------|
|                                 |                                     | Bitumen Spray Truck          | Chainsaw <sup>1</sup> | Concrete Mixer Truck | Concrete Pump | Concrete Vibrator <sup>1</sup> | Dozer | Dump Truck (approx. 15 t) | Excavator (22 t) | Flatbed Truck | Front End Loader | Grader | Hand Tools | Line Marking Plant | Mobile Crane (100 t) | Piling – Impact <sup>3</sup> | Roller - Vibratory (12 t) <sup>1</sup> | Truck | Tub Grinder | Water Tanker (8000 litre) |
| SWL <sup>2</sup>                |                                     | 100                          | 114                   | 103                  | 106           | 102                            | 114   | 100                       | 99               | 100           | 104              | 108    | 94         | 98                 | 100                  | 134                          | 109                                    | 107   | 116         | 107                       |
| Estimated on-time in any 15-min |                                     | 15                           | 5                     | 7.5                  | 7.5           | 15                             | 15    | 15                        | 7.5              | 15            | 7.5              | 15     | 15         | 15                 | 15                   | 7.5                          | 15                                     | 5     | 15          | 15                        |
| W.01                            | Vegetation clearing                 |                              | X                     |                      |               |                                | X     |                           |                  |               |                  | X      |            |                    |                      |                              |  | X     | X           |                           |
| W.02                            | Earthworks                          |                              |                       |                      |               |                                |       | X                         | X                |               | X                | X      |            |                    |                      |                              | X                                      |       |             | X                         |
| W.03                            | Piling                              |                              |                       | X                    | X             |                                |       |                           |                  |               |                  |        |            |                    | X                    | X                            |  | X     |             |                           |
| W.04                            | Construction of deck and hardstands |                              |                       | X                    | X             | X                              |       |                           |                  |               |                  |        |            |                    |                      |                              |  |       |             |                           |
| W.05                            | Construction of roads               | X                            |                       |                      |               |                                |       |                           |                  |               |                  |        |            | X                  |                      |                              | X                                      |       |             |                           |
| W.06                            | Construction of Structures          |                              |                       | X                    | X             | X                              |       |                           |                  | X             |                  |        | X          |                    | X                    |                              |  |       |             |                           |

Note 1: Equipment classed as 'annoying' in the ICNG and requires a 5 dB correction.

Note 2: Sound power level data is taken from the DEFRA Noise Database, RMS *Construction and Vibration Guideline* and TfNSW *Construction Noise and Vibration Strategy*.

Note 3: Junttan HHK7A on PM 25 rig



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F: +61 2 9427 8200

### DARWIN

Unit 5, 21 Parap Road  
Parap NT 0820  
Australia  
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F: +61 8 9370 0101

### GOLD COAST

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Varsity Lakes QLD 4227  
Australia  
M: +61 438 763 516

### MACKAY

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Mackay QLD 4740  
Australia  
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### MELBOURNE

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East Melbourne VIC 3002  
Australia  
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### NEWCASTLE CBD

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Australia  
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### NEWCASTLE

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New Lambton NSW 2305  
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T: +61 2 4037 3200  
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### PERTH

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Perth WA 6000  
Australia  
T: +61 8 9422 5900  
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Sub Base Platypus  
120 High Street  
North Sydney NSW 2060  
Australia  
T: +61 2 9427 8100  
F: +61 2 9427 8200

### TOWNSVILLE

12 Cannan Street  
South Townsville QLD 4810  
Australia  
T: +61 7 4722 8000  
F: +61 7 4722 8001

### WOLLONGONG

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UoW Innovation Campus  
North Wollongong NSW 2500  
Australia  
T: +61 2 4249 1000

### AUCKLAND

Level 4, 12 O'Connell Street  
Auckland 1010  
New Zealand  
T: 0800 757 695

### NELSON

6/A Cambridge Street  
Richmond, Nelson 7020  
New Zealand  
T: +64 274 898 628

### WELLINGTON

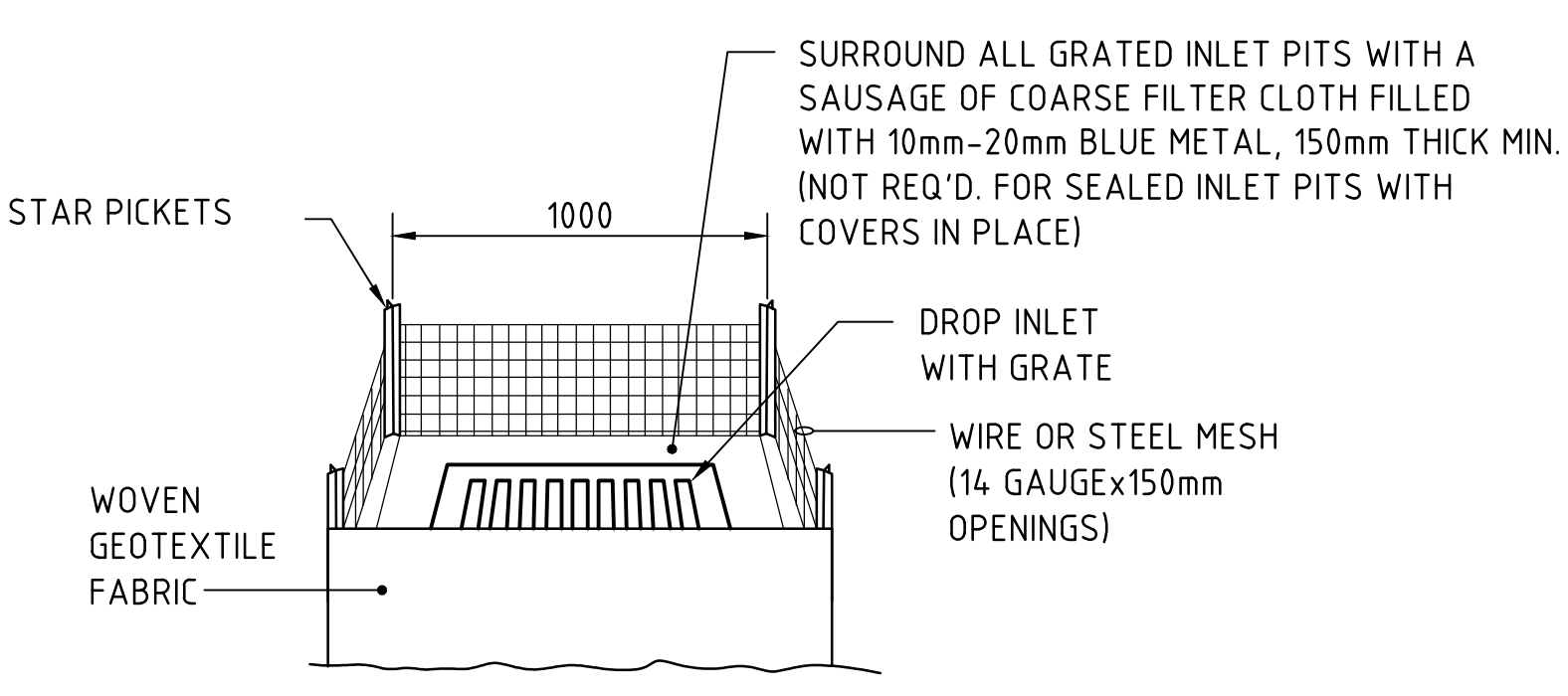
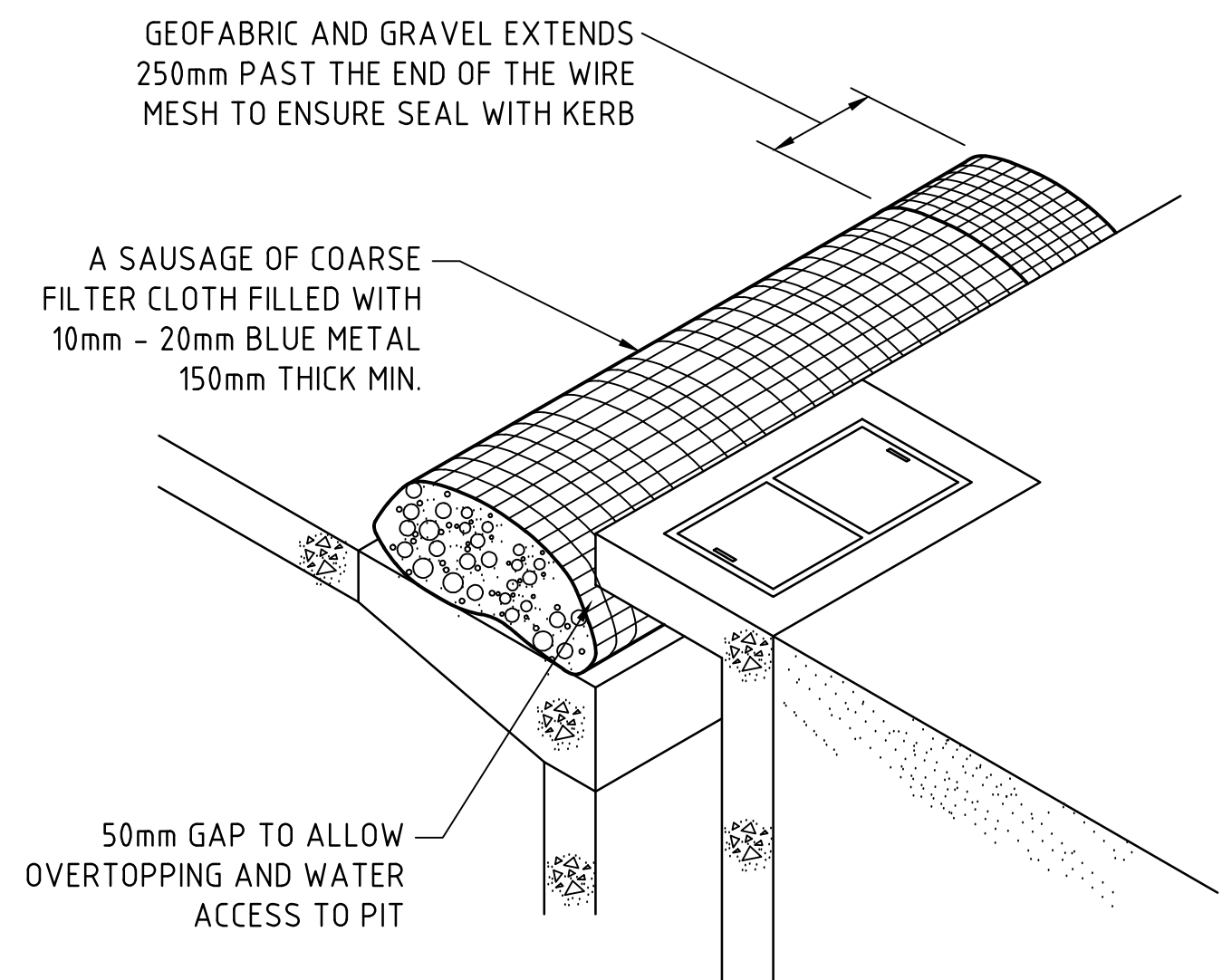
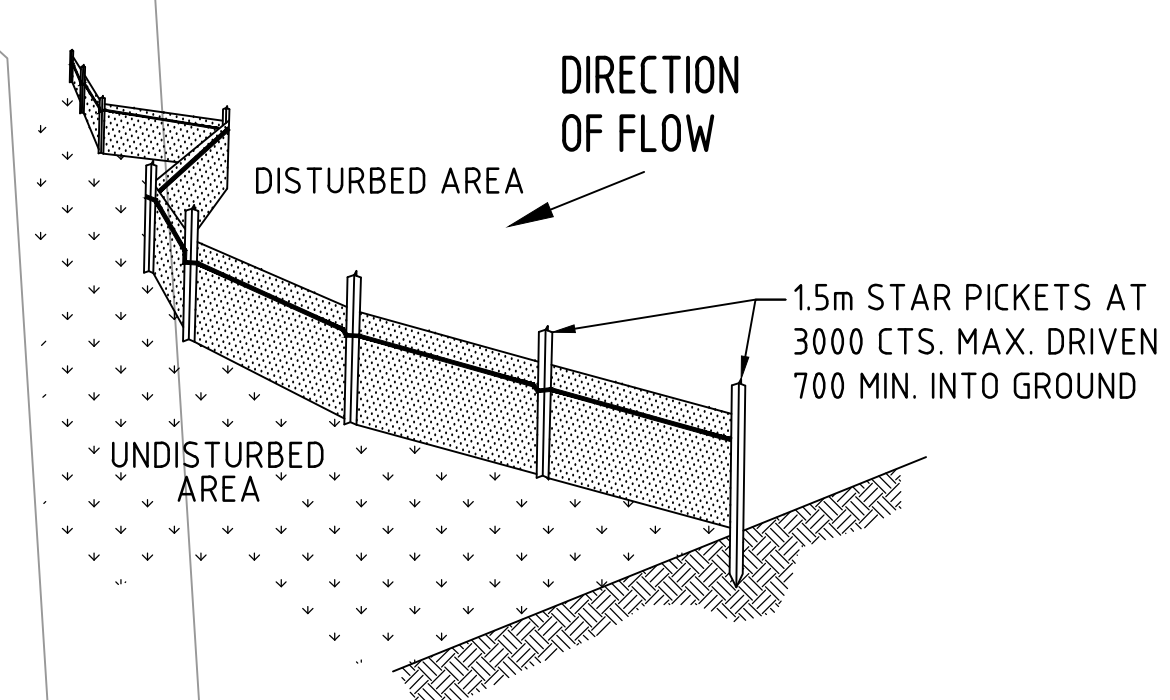
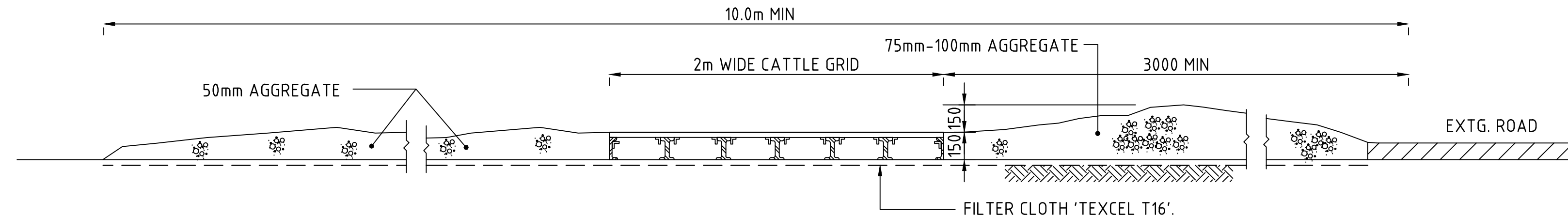
12A Waterloo Quay  
Wellington 6011  
New Zealand  
T: +64 2181 7186

### SINGAPORE

39b Craig Road  
Singapore 089677  
T: +65 6822 2203

## **Appendix N Erosion and Sediment Control Plan**





**EROSION CONTROL NOTES:**

- ALL CONTROL WORK INCLUDING DIVERSION BANKS AND CATCH DRAINS, V-DRAINS AND SILT FENCES SHALL BE COMPLETED DIRECTLY FOLLOWING THE COMPLETION OF THE EARTHWORKS.
- SILT FENCES AND SILT FENCE RETURNS SHALL BE ERCTED CONVEX TO THE CONTOUR TO POND WATER.
  - HAY BALE BARRIERS AND GEOFABRIC FENCES ARE TO BE CONSTRUCTED TO TOE OF BATTER, PRIOR TO COMMENCEMENT OF EARTHWORKS, IMMEDIATELY AFTER CLEARING OF VEGETATION AND BEFORE REMOVAL OF TOP SOIL.
  - ALL TEMPORARY EARTH BERMS, DIVERSION AND SILT DAM EMBANKMENTS ARE TO BE MACHINE COMPACTED, SEEDED AND MULCHED FOR TEMPORARY VEGETATION COVER AS SOON AS THEY HAVE BEEN FORMED.
  - CLEAR WATER IS TO BE DIVERTED AWAY FROM DISTURBED GROUND AND INTO THE DRAINAGE SYSTEM.
  - THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND PROVIDING ON GOING ADJUSTMENT TO EROSION CONTROL MEASURES AS REQUIRED DURING CONSTRUCTION.
  - ALL SEDIMENT TRAPPING STRUCTURES AND DEVICES ARE TO BE INSPECTED AFTER STORMS FOR STRUCTURAL DAMAGE OR CLOGGING, TRAPPED MATERIAL IS TO BE REMOVED TO A SAFE, APPROVED LOCATION.
  - ALL FINAL EROSION PREVENTION MEASURES INCLUDING THE ESTABLISHMENT OF GRASSING ARE TO BE MAINTAINED UNTIL THE END OF THE DEFECTS LIABILITY PERIOD.
  - ALL EARTHWORKS AREAS SHALL BE ROLLED ON A REGULAR BASIS TO SEAL THE EARTHWORKS.
  - ALL FILL AREAS ARE TO BE LEFT WITH A BUND AT THE TOP OF THE SLOPE AT THE END OF EACH DAYS EARTHWORKS. THE HEIGHT OF THE BUND SHALL BE A MINIMUM OF 200mm.
  - ALL CUT AND FILL SLOPES ARE TO BE SEEDED AND HYDROMULCHED WITHIN 10 DAYS OF COMPLETION OF FORMATION.
  - AFTER REVEGETATION OF THE SITE IS COMPLETE AND THE SITE IS STABLE IN THE OPINION OF A SUITABLY QUALIFIED PERSON ALL TEMPORARY WORK SUCH AS SILT FENCE, DIVERSION DRAINS ETC SHALL BE REMOVED.
  - ALL TOPSOIL STOCKPILES ARE TO BE SUITABLY COVERED TO THE SATISFACTION OF THE SITE MANAGER TO PREVENT WIND AND WATER EROSION.
  - ANY AREA THAT IS NOT APPROVED BY THE CONTRACT ADMINISTRATOR FOR CLEARING OR DISTURBANCE BY THE CONTRACTOR'S ACTIVITIES SHALL BE CLEARLY MARKED AND SIGN POSTED, FENCED OFF OR OTHERWISE APPROPRIATELY PROTECTED AGAINST ANY SUCH DISTURBANCE.
  - ALL STOCKPILE SITES SHALL BE SITUATED IN AREAS APPROVED FOR SUCH USE BY THE SITE MANAGER. A 6m BUFFER ZONE SHALL EXIST BETWEEN STOCKPILE SITES AND ANY STREAM OR FLOW PATH. ALL STOCKPILES SHALL BE ADEQUATELY PROTECTED FROM EROSION AND CONTAMINATION OF THE SURROUNDING AREA BY USE OF THE MEASURES APPROVED IN THE EROSION AND SEDIMENTATION CONTROL PLAN.
  - ACCESS AND EXIT AREAS SHALL INCLUDE SHAKE-DOWN OR OTHER METHODS APPROVED BY THE SITE MANAGER FOR THE REMOVAL OF SOIL MATERIALS FORM MOTOR VEHICLES. THE CONTRACTOR IS TO ENSURE RUNOFF FROM ALL AREAS WHERE THE NATURAL SURFACE IS DISTURBED BY CONSTRUCTION, INCLUDING ACCESS ROADS, DEPOT AND STOCKPILE SITES, SHALL BE FREE OF POLLUTANTS BEFORE IT IS EITHER DISPERSED TO STABLE AREAS OR DIRECTED TO NATURAL WATERCOURSES.
  - THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SLOPES, CROWNS AND DRAINS ON ALL EXCAVATIONS AND EMBANKMENTS TO ENSURE SATISFACTORY DRAINAGE AT ALL TIMES WATER SHALL NOT BE ALLOWED TO POND ON THE WORKS UNLESS SUCH PONDING IS PART OF AN APPROVED ESCP / SWMP.

**NOTE :**  
ADOPT ABOVE DETAILS AROUND ALL PITS WITHIN AREA ENCOMPASSED BY SILT FENCE & TO PITS ON THE ROAD ADJACENT TO SITE BOUNDARY.

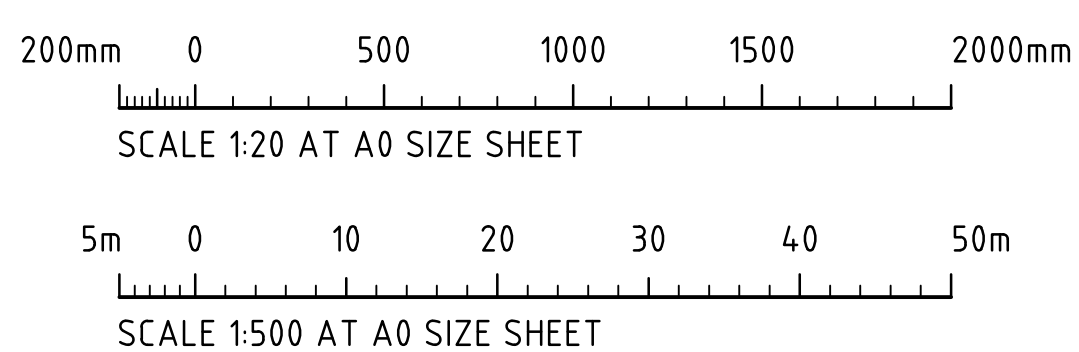
**LEGEND:**  
PROVIDE 1m RETURNS TO SILT FENCE AT 30m MAX. INTERVALS. TYPICAL (N.S.O.P.)

← - DENOTES DIRECTION OF OVERLAND FLOW

--- - DENOTES SILT FENCE

□ - DENOTES GRATED INLET PIT FILTER

**NOTE:**  
NO SEDIMENTATION BASIN IS REQUIRED AS THE TOTAL DISTURBED AREA IS LESS THAN 2,500m². ALTERNATE METHODS HAVE BEEN EMPLOYED TO PROTECT THE RECEIVING WATERS.



**EROSION & SEDIMENT CONTROL PLAN**  
SCALE 1:500

**FOR INFORMATION**

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## **Appendix O Environmental Policy Statement**



# ENVIRONMENTAL POLICY

---

Richard Crookes Constructions Pty Limited promotes and encourages a sustainable environment throughout our business activities and sources our supplies and services in ways that prevent pollution and promote compliance with legal and other requirements.

The company implements Environmental Management System to aid us in meeting our corporate responsibilities. The System is certified by Global-Mark as meeting the requirements of AS/NZS ISO 14001:2015 Environmental Management Systems.

These form part of the company's Project Management Plans and are supported by company procedures and guidelines.

Management intends that all employees of our company, relevant subcontractors and suppliers, are made aware of their environmental responsibilities and the environmental impacts associated with their activities, products and services.

Our company objectives for continual improvement in environmental management include:

- Reducing the number of environmental notices issued on the projects by implementing a program of inductions, training and monitoring.
- Minimising the impacts to the community through the development of project specific Environmental, Traffic management plans, stakeholder consultation plans and by timely and appropriate response to complaints.
- Minimising impacts on the environment using dust, soil and water, waste and chemical management practices that are regularly inspected and maintained.
- Achieve a waste minimisation figure of 85% through monthly reporting

The Continual improvement of the project environmental management plans and progress with achieving the company's objectives will be reviewed during management meetings, project reviews and following the results of internal and external audits.

The Policy will be made available to the public and interested parties on request. This Policy will be reviewed every two years.



**Jamie Crookes**  
**Managing Director**

26th February 2018

# RICHARD CROOKES



## CONSTRUCTIONS

Document Number-  
**ENV-003**

March 2018

Document Title  
**Environmental System Overview**

|            |                                       |
|------------|---------------------------------------|
| March 2018 | Review conducted for 14001 compliance |
| April 2015 | Review conducted                      |
| June 2012  | Minor updates WHS reference added     |
| DATE       | REVISION DESCRIPTION                  |

Approved CR

Title BSM

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## **1 Scope of the Environmental Management System**

The Environmental management system covers the provision of the ISO 14001 standards and the building contracting sectors including Health, Education, Industrial, Aged care, Commercial and Residential works this establishes the guidelines and controls for all RCC operations at may impact the surrounding environment, in which RCC operates being RCC Head office in Sydney and the Satellite offices in Canberra, Newcastle and Tamworth, this includes establishing project specific procedures to control and manage air, water, land, natural resources, flora, fauna, humans, and their interrelation.

## **2 Policy Statements**

RCC,s Environmental Policy reflects the commitment of senior management to prevent pollution, protect the environment and continually improve its environmental performance.

This policy forms the basis upon which RCC sets its objective and targets. It is circulated to all employees and is posted on the RCC Intranet and on the projects Notice Boards.

A copy of the current Environmental Policy is available on Crookesnet.

## **3 Organisation Chart**

Refer to the company's organisation chart in the RCC Management System

## **4 Environmental Management System**

### **4.1 General Requirements**

This document provides an overview of how the requirements of ISO 14001 are met.

### **4.2 Environmental Policy**

Environmental Policy — shall be communicated to all staff. This is normally done at time of employment through the induction process and via the distribution of the RCC Management system documentation.

The Environmental Policy shall be reviewed every two years in consultation with senior management and endorsed by the Managing Director

The Environmental policy shall be made available to interested parties upon request.

### **4.3 Understanding the needs and expectations of interested parties**

Understand the requirements both external and internal of the client and stakeholders needs including EPA, Councils, Heritage, General public

## **4.4 Planning**



#### **4.4.1 Planning Identification of Hazards, Hazard/Risk Assessment and Control of Hazards/Risks**

All activities, products and services carried out by or on behalf of RCC in connection with the Project are identified and an Environmental Aspect Matrix is completed.

For each activity the environmental aspects and associated actual and potential environmental impacts are identified for normal operations, uncommon events and incidents.

The environmental impacts are then assessed for significance by using the Risk Assessment Score sheet and calculating the rating score.

Refer to the Project Startup procedure [QAP-7.5-001](#), Risk Assessment & Control procedure [QAP-7.5-007](#) and the Project Management Plan

#### **4.4.2 Legal and Other Requirements**

A procedure [QAP-4.2-006](#) has been developed to identify legal and other requirements that are applicable to RCC operations, and to ensure the accessibility of the information.

A register which summarises applicable legislation and associated regulations and contractual requirements relevant to the environmental issues is maintained. The register is reviewed and updated as required. Personnel have access to this Legal and Other Requirements register and it provides information how to access the legislation and other requirements listed in the register.

#### **4.4.3 Objectives & Targets**

Environmental objectives and targets are established to allow the monitoring of environmental performance.

These objectives and targets are reviewed annually, and reflect:

- The commitments made in the Environmental Policy;
- Legislative, Legal and other requirements;
- The identified significant environmental impacts;
- Operational requirements;
- Views of stakeholders.

### **5 Implementation**

#### **5.1 Structure & Responsibility**

##### **5.1.1 Resources**

The resources required to implement, maintain and improve the RCC management system are determined through the business planning processes and at Company Meetings.

##### **5.1.2 Responsibility & Accountability**

Top management views the RCC Management System as an integral part of its overall management practices.

The responsibility and accountability of personnel, including contractors, are defined in the procedures.

The role of Management Representative is held by the Business Systems Manager who is responsible to maintain the Company's Environmental Management System responsibilities include:

- Ensuring that the processes needed for Environmental management are established implemented and maintained

- Communicating the effectiveness of the Environmental Management System within the organisation
- Ensuring that Environmental Management System requirements are established, implemented and maintained in accordance with ISO 14001
- Reporting on the performance of the Environmental Management System to top management for review and as a basis for improvement of the Environmental Management System.

### 5.1.3 Training & Competency

Environmental Training will be conducted across all levels of the companies operation and records documented as part of the overall competency and training programme controlled by the Human Resources Department.

Refer to the Training and Performance Reviews procedure [QAP-6.2-001](#) Consultation, communication and reporting

#### 5.1.3.1 Communication

RCC will liaise closely with its employees, contractors, suppliers, clients the community and external authorities to develop, implement and agreed environmental initiatives that affect and impact on the Environment. RCC will communicate via

- Email;
- Site notice boards;
- Intranet; Newsletters;
- Regular meetings Head office and Project

#### 5.1.3.2 Reporting

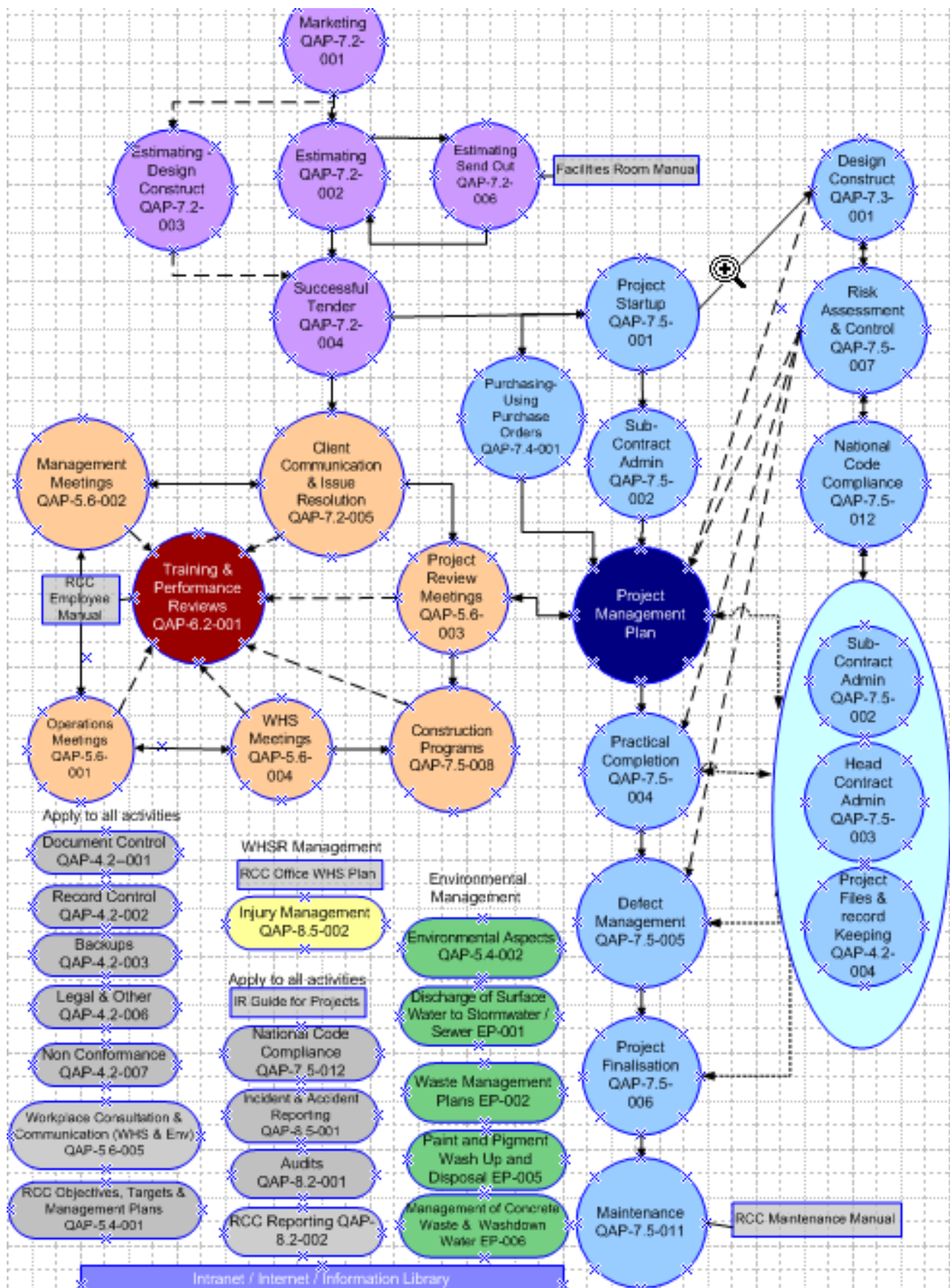
Reporting on environmental issues, incidents and general operations will be documented at project level through the Project Management Plan and Monthly reports. Client and Head Office The Risk Assessment & Control procedure [QAP-7.5-007](#), the Audit Procedure [QAP-8.2-002](#) and the Incident & Accident Reporting procedure [QAP-8.5-001](#)

#### 5.1.4 Documentation

The RCC Management System is made up of this document plus policies, procedures and records referenced directly, indirectly or contained within this document.

The interaction between processes is described in the referenced procedures and in the diagram below

a) Interaction of processes:



### 5.1.5 Document & Data Control

RCC has a procedure to identify and specify the method of collection, retention and disposition of its EMP records. Records are filed in accordance with the Standard File Register.

An appropriate process is implemented for the approval, storing and disposing of Environmental documents, data and records for the project. Refer to the Document Control procedure [QAP-4.2-001](#), the Updating of RCC Management System procedure [QAP-4.2-005](#), Records Control procedure [QAP-4.2-002](#), Project Files & Record Keeping procedure [QAP-4.2-004](#) and the Backup procedure [QAP-4.2-003](#)

### 5.1.6 Hazard Identification, Hazard/Risk Assessment and Control of Hazards/Risks

Refer to the Project Startup procedure [QAP-7.5-001](#), Risk Assessment & Control procedure [QAP-7.5-007](#), Design Construct procedure [QAP-7.3-001](#), Purchasing Goods & Services [QAP-7.4-001](#), Sub-contract Administration procedure [QAP-7.5-002](#) and the Project Management Plan

### 5.1.7 Emergency Preparedness and Response

Refer to the Project Specific Management Plan

Emergency preparedness and response procedures shall be reviewed, particularly after the occurrence of injuries or emergencies.

Refer to the Workplace Consultation procedure [QAP-5.6-005](#) and the WHS Meeting procedure [QAP-5.6-004](#)

Emergency preparedness shall be tested where practicable in conjunction with the companies Emergency Management Plan.

## 5.2 Measurement and evaluation

### 5.2.1 Monitoring and measurement

Refer to the WHS Reporting procedure [QAP-8.2-002](#), the Project Management Plan, the Legal & Other Requirements procedure [QAP-4.2-006](#) and the WHS Objectives & Management Plans procedure [QAP-5.4-001](#)

The decision to monitor health of employees and sub-contractors is determined project by project. In general terms RCC is not required to conduct surveillance of workers health.

### 5.2.2 Incident investigation, corrective and preventive action

Refer to the Injury & Accident reporting procedure [QAP-8.5-001](#), the Injury Management procedure [QAP-8.5-002](#), the Operations Meeting procedure [QAP-5.6-001](#), the Management Meeting procedure [QAP-5.6-002](#), the WHS Meetings procedure [QAP-5.6-004](#) and the Project Management Plan.

### 5.2.3 Records and records management

An appropriate process is implemented for the approval, storing and disposing of Environmental documents, data and records for the project. Refer to the Document Control procedure Refer to Records Control procedure [QAP-4.2-002](#), Project Files & Record Keeping procedure [QAP-4.2-004](#) and the Backup procedure [QAP-4.2-003](#). RCC has a procedure to identify and specify the method of collection, retention and disposition of its EMP records. Records are filed in accordance with the Standard File Register.



## 5.2.4 Environmental audits

The Business Systems Manager shall prepare and maintain an Annual Audit Schedule to address each and every procedure that forms part of the companies EMS.

Prior to performing an audit, the auditor internal or external shall ensure that an Audit Checklist/Report is available, detailing the criteria to be addressed by the audit, and the persons responsible for the activity to be audited are notified of the pending Audit.

Refer to the Audits procedure [QAP-8.2-001](#)

## 5.2.5 Non Conformances

When required Non Conformances will be raised and will document the control procedure for corrective and preventative action for:

- environmental-related problems,
- complaints from persons affected by RCC,s environmental performance; and
- preventing their occurrence or recurrence.

Managers and Senior Managers are responsible for managing the corrective and preventative actions require to control and prevent recurrence in their areas of operation.

## 5.3 Management Review

Management Review will take place to ensure that the Environmental Management System and Plans, suitable and effective in meeting the specified statutory legislation, policies, objectives and procedures within the corporate and project levels is achieved.

Refer to the Operations Meeting procedure [QAP-5.6-001](#), the Management Meetings procedure [QAP-5.6-002](#) and the WHS Meeting procedure [QAP-5.6-004](#)

## 6 Continual improvement

Refer to the Operations Meeting procedure [QAP-5.6-001](#), Management Meetings procedure [QAP-5.6-002](#) and the Project Review meeting procedure [QAP-5.6-003](#)

## **Appendix P Site Shutdown Procedure**

## 26.1 Holiday Period – Site Shutdown Checklist

|                     |                     |
|---------------------|---------------------|
| <b>Project Name</b> | Goodman Banksmeadow |
|---------------------|---------------------|

|   |                              |                              |
|---|------------------------------|------------------------------|
| Site clean as far as practical  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Perimeter footpaths and gutters adjacent land clear of any building materials and debris  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| External traffic control signs covered or removed   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Gates are locked, perimeter fence intact (bolts tight), not damaged, shade cloth secure (where used) to prevent unauthorised access far as practical "B" class hoardings presentable night lights working | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Signage is displayed on gates, construction site, no unauthorised access etc check RCC contact name over the holiday period   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Environmental controls in good order  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Any water drums or detention ponds are empty and secure   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Ladder ways removed, scaffold access secure   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| All non essential machinery is removed from site and or/off hired   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Machinery left on site is secure, keys removed, power isolated  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Hoists /Tower cranes are isolated, power source removed   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Scaffolds are complete and inspected for edge protection complete on all open edges, roofs, suspended slabs etc top & mid rail and kicker or mesh panel, stairs secure                                    | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| All materials neatly stacked and secured  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Penetrations are covered and secured  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Excavations are barricaded and covered  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Star pickets & exposed rebar are capped   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Minimise water ingress through penetrations, temp gutter connections, check subsoil pump operates   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Windows are taped, glass doorways marked  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Brick walls are braced, where required  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Debris and waste (Wet & Dry) removed, bins are empty  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Sheds are secured, computers and screens out of site , security arranged (where required) discuss with the PM risk of break-in  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Roof construction material secured, debris removed from roof, gutter clean  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Generators secured in containers or removed off site  | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| All sources of electricity isolated or removed, DBs locked, leads removed etc   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Fuel containers secured in hazchem shed or removed off site   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Containers locked and or barricaded   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Building doorways locked (where possible)   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| Reinforce to the subcontractors that they are responsible for material and equipment left on site   | Yes <input type="checkbox"/> | N/a <input type="checkbox"/> |
| List other:   |                              |                              |
|   |                              |                              |

Site supervisor: \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

## **Appendix Q Asbestos Management Plan**





# Asbestos Management Plan





Orica Southlands Warehouse Estate  
28 McPherson Street, Banksmeadow NSW

Richard Crookes Constructions  
20 January 2023

AU122127

# Quality Management

## Document Distribution

| Issue/Revision | Issue 1  | Final  |
|----------------|--|--|
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| Prepared by    | Tyler Creese   | Tyler Creese   |
| Signature      |                                       |                                       |
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This report was prepared in accordance with the scope of services set out in the contract between Geosyntec Consultants Pty Ltd (ABN 23 154 745 525) and the client.

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Appendices

Appendix A Figures

Appendix B Asbestos Register

# 1 Introduction

Geosyntec Consultants Pty Ltd (Geosyntec) was engaged by Richard Crookes Constructions (RCC) to prepare an Asbestos Management Plan (AMP) for Stage 1 and 2 construction works at the Orica Southlands Warehouse Estate located at 28 McPherson Street, Banksmeadow NSW (the site). This AMP is required for implementation during site works to manage risks associated with asbestos impacted soils at the site, and will be included as an Appendix of the Construction Environment Management Plan (CEMP). The site location and layout are presented in Figures 1 and 2 of Appendix A, respectively.

Proposed works comprise the construction of a suspended concrete platform above the existing flood detention basin (Stage 1), and construction of two warehouse buildings and associated infrastructure (Stage 2).

An NSW EPA Auditor approved Remediation Action Plan (RAP) has been prepared for the site, which indicates that asbestos contaminated soil is present in areas (bonded and friable). Remediation works will take place at the site during Stage 1 works, as outlined in Section 1.4.

RCC and subcontractors will ensure that the requirements of this plan are communicated and implemented by all relevant personnel involved with the development. This plan may be updated as required throughout the project.

## 1.1 Objectives

This AMP will form part of the CEMP for remediation and development works at the site.

The objective of this AMP is to provide guidance and strategies for the handling, management and treatment of asbestos including the removal, transport and disposal of asbestos-impacted soils (predominantly stripping of topsoil) from the site, in order to protect the health of onsite workers, visitors and potential offsite receptors and prevent potential spread of asbestos contamination offsite.

Specific aims of this AMP are to:

- Outline safe working conditions for workers;
- Outline procedures to manage works where asbestos may be encountered during development activities, including excavation of asbestos-impacted soils;
- Outline measures for the safe onsite storage and (where required) disposal of asbestos containing material (ACM) and asbestos-impacted soils in accordance with relevant legal and statutory requirements; and
- Outline ongoing management requirements to ensure that risk posed by potential asbestos contamination is appropriately managed.

## 1.2 Regulatory Framework

All asbestos-related works including asbestos remediation works will be undertaken in accordance with, but not limited to, all relevant sections of the following guidelines and regulations:

- Work Health and Safety Act 2011.
- Work Health and Safety Regulations 2017.
- Protection of the Environment Operations Act 1997 and associated Regulations.



- WorkCover NSW (now SafeWork NSW) (2014) 'Managing Asbestos in or on Soil', March 2014.
- NSW EPA (2014) 'Waste Classification Guidelines, Part 1: Classifying Waste'.
- National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended in 2013 (NEPM, 2013).
- WA DoH (2009) 'Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia'.

The above guidelines and regulations have been considered in the preparation of this AMP.

All parties involved in site works must ensure that they currently, and for the duration of the project, hold all appropriate licences, approvals and permits for working with asbestos, including excavation, transport and disposal of asbestos waste. These may include, but are not limited to:

- Notification to SafeWork NSW (required 10 days before licensed asbestos removal work is commenced). Notification for friable asbestos removal work, if required, should be accompanied by an Application for Permit for friable asbestos removal works.
- Permit from SafeWork NSW for any removal work involving friable asbestos (if relevant or required).

Due to the presence of friable asbestos in soils at the site, all works with potential to disturb asbestos impacted site soils must be supervised by a Class A asbestos contractor.

### 1.3 Certification and Approval

Development Consent conditions require the CEMP, which contains this AMP, to be reviewed by the appointed NSW EPA Site Auditor and the Planning Secretary.

### 1.4 Project Description

This AMP covers RCC Stage 1 and 2 construction works at the Orica Southlands Warehouse Estate which comprises the:

#### Stage 1

- Stripping of surface soils at the commencement of works within designated stages.
- Construction of a suspended concrete platform above the existing flood detention basin.

#### Stage 2

- Construction of two warehouse buildings, associated landscaping, hardstand areas, stormwater infrastructure and other onsite infrastructure.

It is noted that RCC intends to complete works in a staged approach, allowing for asbestos clearances to be completed in remediated areas thus mitigating the need for asbestos controls.

## 2 Site Identification and Description

### 2.1 Site Identification

Site identification details are presented in Table 2.1 below.

**Table 2.1: Site Identification**

| Title                     | Details                              |
|---------------------------|--------------------------------------|
| Street Address:           | 28 McPherson Street, Banksmeadow NSW |
| Property Description:     | Part Lot 9 in DP 1205673             |
| Geographical Coordinates: | E: 335680 N: 6242175                 |
| Property Size:            | Approximately 4.1 hectares           |
| Local Government Area:    | Bayside Council                      |

### 2.2 Site Setting

The site is located within the Botany industrial area between Nant Street and a railway line. General site conditions are presented in Table 2.2.

**Table 2.2: General Site Conditions**

| Title                                  | Details   |
|--|---|
| Topography and Drainage:               | The local topography is relatively flat with a gentle fall towards the south. Surface water is expected to mostly infiltrate the vacant/grassed ground surface. |
| Site Surface & Vegetation:             | Majority of the site is grassed. Vegetation is present in areas, mostly along the eastern and southern boundaries.  |
| Condition of Buildings & Roads:        | There are currently no buildings or roads onsite.   |
| Relevant Local Sensitive Environments: | Botany Bay is located approximately 1km to the south and south-west.  |

### 2.3 Surrounding Land Use

The JBSG (2019) RAP describes land uses immediately adjoining the site as:

**Table 2.3: Immediate Site Surrounds**

| Title  | Details  |
|--------|--|
| North: | <p>The site is located to the south-west of a Detector Dog Facility (Department of Agriculture, Border Force, Federal Police). Beyond the Detector Dog Facility is Botany Industrial Park (BIP), separated by the Sydenham – Botany Goods Railway Corridor. Several businesses have chemical manufacturing and distribution facilities in the BIP.</p> <p>A Qenos Pty Ltd (Qenos) owned tank farm facility known as the Nant Street Tank Farm is located immediately to the north of the Border Force facility. A former Tank Farm (now demolished) operated by Mobil is located to the north-west of the site. Underground pipelines leading to the tank farms are present in Nant Street.</p> <p>Located approximately 0.4 km west of the former Mobil Terminal is another chemical business, Nuplex Industries (Aust) Pty Ltd. Nuplex has frontage on Stephen Road.</p> |

| Title  | Details  |
|--------|--|
| East:  | The Detector Dog Facility and a warehousing facility are present to the east of the site. These facilities were constructed on land that formed Stage 2 of the Southlands development. Beyond these facilities is a narrow strip of land owned by Orica associated with the (Botany Groundwater Clean-up Project) BGCP. The Sydenham to Botany railway line is located beyond this land with a waste transfer facility located beyond the rail line. |
| South: | McPherson Street forms the southern boundary of the site. Beyond McPherson Street, there is a shipping container storage facility operated by Toll. Beyond the Toll holding facility to the south is a commercial / industrial estate.   |
| West:  | The western boundary of the site is formed by Nant Street. Beyond Nant Street is Springvale Drain and warehouses recently constructed on land that formed Stage 1 of the Southlands development and now owned by Goodman, comprising warehousing facilities. A chemical manufacturing facility owned by Solvay Interlox Pty Ltd (Solvay) is located to the west, separated by Floodvale Drain. Beyond Solvay, is an industrial estate.               |

### 3 Asbestos Register

The JBSG (2019) RAP provided a summary of contamination issues at the site, which indicates the presence of ACM (friable and bonded) in soils across majority of the site. It is noted that investigated depths ranged from 0.0 – 0.5m below ground surface (bgs), although the report does not specify at what depths ACM was encountered at each location. Due to the distributed nature of the ACM in site soils, delineation is not considered to be a practical approach.

An asbestos register is provided in Appendix B, based on the details above. This register should be revised as remediation works progress noting the proposed capping of asbestos impacted soil.



## 4 Implementation of This AMP

This AMP is applicable for the development activities across the site.

### 4.1 Roles and Responsibilities

#### 4.1.1 Roles

Description of the key roles of involved parties is provided below.

##### **Principal Contractor**

Under the provisions of the Work Health and Safety Regulation 2017 prepared under the Work Health and Safety Act 2011, the Principal Contractor must be appointed as the “person conducting a business or undertaking” (PCBU).

The Principal Contractor has the responsibilities set out in the Work Health and Safety Act and Regulations and the Safe Work Australia Codes of Practice.

The Principal Contractor will also be responsible for co-ordinating health and safety activities related to asbestos for the project.

##### **Competent Person or Licensed Asbestos Assessor**

A Competent Person or a Licenced Asbestos Assessor (LAA) shall be engaged to assess any suspected asbestos containing materials encountered during the remediation, validation and development works and provide advice on appropriate procedures for its handling, treatment or management.

A Competent Person is defined in SafeWork Australia (2011a) as “a person who has acquired, through training, qualification or experience, the knowledge and skills to carry out the task” – in this case the task is asbestos identification.

A Licensed Asbestos Assessor is a person who holds an asbestos assessor licenced by SafeWork NSW.

Given friable asbestos is present at the site, airborne asbestos monitoring and dust monitoring during any asbestos works must be completed by an LAA. Laboratory analysis for air monitoring is discussed in Section 6.3.5.

##### **Licensed Asbestos Removalist**

A SafeWork NSW licensed asbestos removalist will be required to undertake asbestos removal as follows:

- Class A (friable) licensed asbestos removal contractor shall be engaged if friable asbestos is identified.
- Class B (non-friable) licensed asbestos removal contractor if more than 10 m<sup>2</sup> of non-friable asbestos is identified for removal or if there is doubt about the total quantity.

For smaller quantities of non-friable asbestos, a suitably trained and experience contractor is required to conduct the removal work.

The asbestos removal contractor will remove ACM or asbestos impacted soils from the site and remediate or dispose of them to a suitably licensed waste facility or transfer the material to an onsite containment area (if available). The licensed asbestos removal contractor will be the primary person responsible for works on site involving ACM or asbestos impacted soils.

Given friable asbestos is present at the site, asbestos removal works must be completed by a Class A (friable) licensed asbestos removal contractor.

#### 4.1.2 Responsibilities

Description of the key roles and responsibilities of involved parties in relation to this AMP is provided below in Table 4.1.

**Table 4.1. Key roles and responsibilities of involved parties in relation to this AMP**

| Role                                     | Responsibility   |
|--|--|
| Principal Contractor                     | <ul style="list-style-type: none"> <li>Approval of the AMP.</li> <li>Provision of safe working environments relating to asbestos.</li> </ul>   |
| Richard Crookes Constructions            | <ul style="list-style-type: none"> <li>Ensure that all persons involved with the project have undertaken the appropriate workplace health and safety training and have been inducted into the CEMP.</li> <li>Ensure that all persons involved with asbestos in asbestos restricted areas have been inducted into this AMP.</li> <li>Ensure that all persons working on the project have been provided with the appropriate workplace health and safety training relating to asbestos, asbestos awareness and identification of ACM.</li> <li>Ensure that all persons working in the project area are appropriately trained for the specific works they undertake.</li> <li>Keep all training and induction records relevant to this AMP for persons involved in this project.</li> <li>Ensure that a site-specific safety plan for works in areas where potential asbestos contamination may be encountered is prepared for the site.</li> <li>Ensure that any subcontractors provide adequate SWMS for activities where asbestos may be encountered.</li> <li>Monitor the compliance with this AMP and relevant regulations, codes and guidelines.</li> <li>Control access into areas where asbestos is known to exist.</li> <li>Be responsible for the project work at all times until all works are completed.</li> <li>Maintain and update the Asbestos Register for this project.</li> <li>Auditing compliance with the AMP.</li> <li>Manage accident and emergency procedures related to asbestos.</li> <li>Inform the Asbestos Assessor of new asbestos finds.</li> <li>Engage a suitably experienced and licensed asbestos removalist and ensure they maintains appropriate licences and permits.</li> <li>Maintain material tracking records relating to the excavation, stockpiling and disposal of asbestos containing materials.</li> <li>Keep air monitoring records.</li> <li>Compliance with all other applicable statutory responsibilities related to management of asbestos in the workplace.</li> </ul> |
| Subcontractor(s) and their Supervisor(s) | <ul style="list-style-type: none"> <li>Understand the requirements of the CEMP and this AMP.</li> <li>Prepare SWMS, as required by the Principal Contractor, for specific activities undertaken within the project where asbestos may be encountered.</li> </ul>   |
| To be Engaged                            | <ul style="list-style-type: none"> <li>Take reasonable care for their own safety and the safety of others.</li> <li>Attend site inductions, asbestos awareness training and identification of ACM training, and, follow all site rules and work instructions related to asbestos.</li> <li>Take immediate action to rectify asbestos hazards that should arise during the course of the work.</li> <li>Immediately report unexpected finds (including asbestos) to site supervisor.</li> <li>Comply with the CEMP, this AMP, SSP, SWMS and other relevant OHS legislation and industry standards.</li> <li>Establish and maintain a positive safety climate on the project.</li> <li>Compliance all other applicable statutory responsibilities related to management of asbestos in the workplace.</li> </ul>   |
| Licensed Asbestos Removalist             | <ul style="list-style-type: none"> <li>Notify SafeWork NSW in writing at least ten days before removal work commences in accordance with Safe Work Australia (2011b).</li> </ul>   |

| Role  | Responsibility  |
|---|---|
| To be Engaged   | <ul style="list-style-type: none"> <li>Obtain Permit from SafeWork NSW for any friable asbestos removal works.</li> <li>Undertake asbestos removal work in accordance with Safe Work Australia (2011a &amp; 2011b).</li> <li>Compliance with all other applicable statutory responsibilities related to management of asbestos in the workplace.</li> </ul>   |
| Suitably Qualified Environmental Consultant / Asbestos Assessor | <ul style="list-style-type: none"> <li>Provision of safe working environment.</li> <li>Issue this AMP and coordinate works to review/update the AMP, as necessary.</li> <li>Provide onsite supervision of all potential asbestos works.</li> </ul>  |
| Geosyntec   | <ul style="list-style-type: none"> <li>Provide air monitoring services, when required by the SafeWork Australia Codes and/or the Principal Contractor and arrange for display of daily results for information of workers.</li> <li>Engage suitably qualified and competent staff and/or contractors to manage works in areas impacted with asbestos.</li> <li>Provide advice on handling, management and treatment of potential asbestos impacted material.</li> <li>Be available, if required, for consultation with regards to conditions and requirements of this AMP.</li> <li>Provide validation of excavation, waste classification and other advice in relation to asbestos.</li> <li>Other activities that may be required by the Principal Contractor from time to time.</li> </ul> |

## 4.2 Training and Induction

The Principal Contractor shall ensure that:

- Workers undertaking work onsite must be trained and be given appropriate occupational health and safety training in relation to asbestos, asbestos awareness training and training in the identification of ACM which may be encountered during their work
- Workers undertaking work within the site must be inducted into the CEMP
- Workers undertaking work in areas where asbestos may be encountered must be inducted into this AMP
- Other visitors entering the site understand the site safety provisions, including those covered in the CEMP and this AMP, as required
- Persons undertaking site induction acknowledge that they have understood the requirements of the site safety and environmental obligations related to asbestos
- Records of the site induction relating to asbestos must be kept

## 4.3 Audit and Revision of this AMP

The implementation of this AMP should be audited at regular intervals throughout the duration of construction works to confirm that the requirements of the AMP are understood and being implemented and to assess its ongoing suitability.

The audit shall include a site walkover and an assessment of induction, tracking and monitoring records prepared under this AMP. Should the review identify inconsistencies, these shall be documented in a review report and recommendations made for correcting these inconsistencies. The audit shall be documented in a brief audit report which will include recommendations for revisions to the AMP.

In the event that site conditions are substantially different than previously observed and/or the audit process recommends revision of this AMP, this AMP should be updated.

#### **4.4 Non-Conformance to this AMP**

In the event of a non-conformance to this AMP, the source and nature of the event will be investigated, the effectiveness of the existing controls reviewed and modified where practical, and necessary strategies will be implemented to minimise further impacts.

If necessary, the AMP will be updated as required to rectify non-conformance with the AMP.



## 5 Management Plan for Asbestos Impacted Soil

The management plan for asbestos in soil at the site is discussed below. Table 5.1 below details the general asbestos management requirements for the designated project stages, noting that the whole site currently requires asbestos controls.

**Table 5.1: General Asbestos Management Requirements**

| Project Stage  | Requirements   |
|--|--|
| Prior to topsoil stripping and proposed landscaped areas | No excavation to be completed. All site workers to be inducted to this AMP. All site works to be supervised by the Class A asbestos contractor with appropriate controls in place for the associated activity. |
| Areas subject to topsoil stripping and excavation        | Asbestos controls detailed in Section 5.3.1 required.  |
| Capped areas   | No asbestos controls required following clearance by LAA, as discussed in Section 5.3.2.   |

### 5.1 Asbestos Types, Risk and Potential Exposure Pathways

Friable and non-friable Asbestos/ACM had been identified within soils across the site, as detailed in the JBSG (2019) RAP.

Non-friable ACM is defined by SafeWork Australia (2011b) as "... material containing asbestos that is not friable asbestos, including material containing asbestos fibres, reinforced with a bonding compound." This includes bonded asbestos fragments found in soil.

Friable asbestos is defined by SafeWork Australia (2011b) as "... material that is in a powder form or that can be crumbled, pulverised or reduced to a powder by hand pressure when dry, and contain asbestos." This includes soil impacted with asbestos fibres or fibre bundles, or asbestos fragments which can easily produce asbestos fibre or fibre bundles.

Mechanical disturbance of non-friable asbestos may result in the production of friable asbestos.

Asbestos poses a human health risk through the inhalation of its fibres (WA DoH 2009). If deposited in the lungs, the fibres can initiate diseases which may produce major health effects, such as asbestosis, lung cancer and/or mesothelioma.

Potential exposure pathways for asbestos relevant to this AMP are considered to be:

- Inhalation of asbestos fibres by workers/visitors during excavation of asbestos containing soil
- Inhalation of asbestos fibres by workers/visitors from stockpiled material containing asbestos
- Inhalation of asbestos fibres by workers or others onsite or offsite during transport of asbestos containing material

### 5.2 Health and Safety Management

#### 5.2.1 Safe Work Method Statements (SWMS)

The Principal Contractor or subcontractors undertaking works must prepare site specific job hazard assessment and relevant safe work method statements for the work undertaken. The SWMS must include activities where asbestos may be encountered and strategy to minimise exposure to asbestos in accordance to this AMP, including requirements of personal protective equipment (PPE).

Safe Work Method Statements must:

- Describe how work is to be carried out;
- Identify the safety risks;
- Describe the control measures that must be applied to the work;
- Describe the equipment used in the work;
- Describe any standards or codes applicable to the work; and
- Training and qualifications required of persons undertaking the work.

SWMS prepared by the contractors must be reviewed and approved by the Principal Contractor.

### 5.2.2 Site Access Control, Barriers and Signage

The overall construction area will be secured by fencing, which limits access to public. The Principal Contractor shall also maintain site access control in areas where ACM has been identified or may potentially be present ('restricted asbestos area'), which currently comprises the entire site. Site access to restricted asbestos areas will be determined by the Site Supervisor. Only authorised and appropriately inducted and trained persons are to be permitted in restricted asbestos areas.

Appropriate warning signs and/or barriers are to be placed around restricted asbestos areas maintaining at least 3m buffer from the impacted area, in accordance with the following regulations and guidelines:

- Standards Australia (1994) 'AS 1319-1994: Safety Signs for the Occupational Environment'; and
- Safe Work Australia (2011b) 'Code of Practice: How to Safely Remove Asbestos', December 2011.

Access to restricted asbestos areas (i.e. currently the entire site) will be controlled and permitted by the Principal Contractor only after persons entering the site have been advised of the potential contamination hazards. This shall at least include notification of the potential presence of asbestos containing materials and asbestos impacted soils.

Any authorised person accessing the restricted asbestos area should do so in accordance with health and safety requirements as indicated in this AMP. The implementation of the health, safety and environmental requirements should be administered by the Principal Contractor. Site access will not be allowed until workers have been inducted, have signed in, and if entering the restricted asbestos areas must use the required PPE (Section 5.2.3). Upon exiting the site, personnel must remove and dispose of/clean the PPE in the provided decontamination area.

Workers entering the site must be inducted to this AMP.

Any excavation works at the site will require exclusion fencing with air monitoring, as discussed in Section 5.3. It is noted that restricted areas across the site will change as site remediation works progress.

### 5.2.3 Personal Protective Equipment (PPE) Requirement

Requirements of PPE will be determined by the Principal Contractor, depending on the type of work for each activity, and must be covered in the site-specific SWMS.

In areas where asbestos containing materials or asbestos impacted soils are not exposed (i.e. following clearance by the LAA), no additional PPE is required above the standard construction site PPE outlined by the Principal Contractor for the site.

The minimum level of additional PPE required for onsite personnel working in a restricted asbestos area is listed below:

- **Body Protection.** Fluorescent or white disposable coveralls (Tyvek suits) are to be worn during excavation activities. For workers undertaking work in the restricted area for asbestos, disposable Tyvek suits must be worn. Disposable gloves should also be worn for workers contacting soils. Disposable Tyvek coveralls and gloves must be removed when leaving the restricted asbestos area and are to be considered as potentially contaminated with asbestos and will therefore need to be disposed as asbestos contaminated waste.
- **Respiratory Protection.** Respiratory protection is required to prevent inhalation of airborne dusts. A minimum of a P2 rated disposable mask or respirator fitted with a P2 rated cartridge will be used in the restricted asbestos area.
- **Foot Protection.** Steel toed boots are to be worn by personnel working on-site.

Eating, drinking, chewing gum or tobacco, smoking or other practices that involves hand to mouth transfer increases the probability of ingestion of foreign matter into the body. Hands must be thoroughly washed before eating, drinking or smoking. Smoking, drinking or eating is not permitted onsite.

Plant operators must close cabin doors and windows when operating within restricted asbestos areas for asbestos.

## 5.3 Asbestos Management During Construction Works

The entire site is currently considered a restricted asbestos area due to the presence of ACM in surface soils. Asbestos Management procedures for proposed site works are discussed below.

### 5.3.1 Intrusive Works in Areas Classified as Restricted Asbestos Areas

Management of intrusive work in areas classified as restricted asbestos areas will be as follows. This is currently considered applicable to initial stripping of surface soils across the site, and any subsequent earthworks prior to remediation and clearance by the LAA.

- Intrusive work onsite within restricted asbestos areas shall only be carried out by suitably qualified and experienced contractors, who have received asbestos awareness training and have been trained in the recognition of asbestos, which may be encountered during their work.
- Access to the site area must be controlled as per Section 5.2.2.
- Exclusion fencing will be placed around proposed excavation areas to prevent access. Only excavation plant and supervision personnel are allowed within this exclusion area during excavation.
- Excavation work must be observed by a Class A asbestos contractor (as friable asbestos is present onsite).
- Air monitoring must be completed during works, as discussed in Section 5.3.3, with monitors placed on the exclusion fencing boundary.
- Stockpile management of asbestos impacted material shall be undertaken in accordance with Section 5.3.4.
- Transport and disposal of asbestos impacted material shall be undertaken in accordance with Section 5.3.5.
- An asbestos decontamination area must be present within the restricted asbestos area. Decontamination of asbestos shall be undertaken in accordance with Section 5.3.6.

Specific management controls during intrusive work within the restricted area for asbestos are as follows:

#### **Prior to work commencing**

- SafeWork NSW should be notified for all asbestos removal work comprising: any friable asbestos removal; and non-friable asbestos removal >10m<sup>2</sup> or if there is doubt about the total area. Notifications must be submitted at least 10 days prior to any asbestos being disposed of offsite.
- A SafeWork NSW Permit is required for all friable asbestos removal works. The SafeWork NSW Permit shall be sought by the licenced asbestos removal contractor. Friable asbestos removal permits must be submitted at least 7 days prior to any friable asbestos being disposed of offsite.
- Exclusion fencing will be placed around proposed excavation areas to prevent access. Although the spacing between the exclusion fencing and excavation works is not critical from a health and safety perspective, the contractor will need to ensure that sufficient space has been allowed for capping procedures, and associated equipment, following removal of topsoils.
- An observation of the surface soil in the area of the excavation should be undertaken. If a small number of ACM fragments are observed, they shall be picked up by a licenced asbestos removalist (if practicable) and placed into a labelled asbestos waste bag and stored in a designated waste storage area for offsite disposal by a licenced asbestos removalist. If significant number of ACM fragments is observed, they shall be dealt with during the excavation as described by the following section.

#### **During excavation**

- Only excavation plant and supervision personnel are allowed within this exclusion area during excavation. Excavation plant must have air vents set to recirculate.
- Personnel undertaking work within the restricted asbestos area must wear minimum PPE as listed in Section 5.2.3. Air monitoring must be undertaken within or adjoining the restricted asbestos area in accordance with Section 5.3.3.
- The excavation shall be kept damp by water spraying during excavation works to reduce the potential of dust generation in accordance with Section 5.3.4.
- Any open excavation shall be covered with HDPE sheeting or similar and secured at the end of each working day.
- Management of potential asbestos impacted soil shall be decided by the LAA in accordance with guidance provided in the JBSG (2019) RAP, the site CEMP, the National Environment Protection Measure (NEPM) (as amended 2013), SafeWork NSW (2014) and other appropriate guidelines.

#### **Post excavation**

All site soils will be subject to the remediation strategy presented in the JBSG (2019) RAP, comprising 'cap and contain' and exclusion barrier fencing.

### **5.3.2 Site Works in Areas where Asbestos Contaminated Fill Materials are not Exposed**

The remedial approach presented in the JBSG (2019) RAP requires the capping of asbestos contaminated soil across majority of the site. **This will be completed in a staged approach across the site allowing for asbestos controls to be relaxed progressively in areas.**

**Following clearance by the LAA, site works in these areas can be completed as general construction works with no asbestos controls required. It is assumed that all excavation**



works within these areas will have been completed and placement of the marker and capping layers be done prior to the issue of the clearance.

If required, any further intrusive works within capped areas must be supervised by the LAA and Class A asbestos contractor, with appropriate asbestos controls in place (refer to Section 5.3.1).

### 5.3.3 Air Monitoring

Asbestos air monitoring is to be carried out by an LAA during any works within a restricted asbestos area which results in disturbance of the ground surface. The purpose of the air monitoring is to verify that the control measures in place to minimise the generation of asbestos fibres into the air are working satisfactorily and that there is no exposure of asbestos fibres to adjacent areas. The air monitoring devices will be placed at the boundaries of the restricted area for asbestos determined as appropriate by the LAA. The LAA may also consider it to be appropriate to include monitoring on individuals or monitoring on machinery – this would only be carried out following consultation with the Principal Contractor.

Sample collection and analysis will be conducted in accordance with the National Occupational Health and Safety Commission (NOHSC) 'Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition, 3003 – 2005'.

The analysis will be performed by a NATA registered laboratory and reported on endorsed certificates. The results of air monitoring shall be available on a 24-hour turnaround time basis. Daily air monitoring reports shall be kept by the Principal Contractor or site supervisor who should be able to produce upon request or display the results in prominent locations to keep workers informed of the results.

Air monitoring test results should be below 0.01 fibres/mL throughout the duration of any ground disturbance works in the restricted asbestos area, to demonstrate the adequacy of the control measures implemented. The following table shows the actions that will come into force should fibre levels exceed this action level of 0.01 fibres/mL.

**Table 5.2: Action Levels**

| Action Level (fibres/mL) | Control / Action   |
|--------------------------|--|
| <0.01                    | Continue with control measures   |
| ≥ 0.01 and ≤ 0.02        | Review control measures, investigate cause and implement controls to minimise further release  |
| ≥ 0.02                   | Stop removal work, and where applicable notify SafeWork NSW. Investigate cause including enclosure & equipment where present and clean immediate area. Do not recommence work until air test results return readings of < 0.01 fibres/ml |

### 5.3.4 Management of Asbestos-Impacted Stockpiles

Stockpiles of potentially asbestos impacted material must be kept damp when in use and/or covered if remaining for more than 24 hours. Covers will need to extend beyond the perimeter of the stockpiles and be secured to prevent being blown away by wind.

Appropriate management of asbestos impacted stockpiles will be critical in instances where friable asbestos has been identified. The Asbestos Assessor should be consulted on the requirements for management and monitoring of friable asbestos stockpiles.

### 5.3.5 Transport and Disposal of Asbestos Impacted Soils

Each truck transporting potentially asbestos impacted material for transportation onsite or offsite shall be double lined with 1000 gauge polythene sheeting. Each truck shall be filled to within the maximum weight limit and the load will then be adequately covered during transportation to landfill.

Waste requiring offsite disposal must be disposed of in accordance with appropriate guidelines, including (but not limited to) the NSW EPA (2014) 'Waste Classification Guidelines Part 1: Classifying Waste' and the NSW EPA 'Asbestos and Waste Tyre Guidelines (2015)'.

Any waste classified as Special Waste (Asbestos) must also be logged under the Waste Locate system to satisfy tracking requirements for asbestos waste.

Disposal of asbestos impacted waste must be to appropriately licenced landfills. Copies of WasteLocate logs must be provided to the Site Auditor.

All vehicles entering and exiting the site will be required to comply with the NHVL (national heavy vehicle legislation)

### 5.3.6 Decontamination of Equipment and PPE

Machinery used for the handling (e.g. excavation) and treatment of asbestos impacted soil may become contaminated with asbestos and will need to be decontaminated by washing down prior to leaving the site. All wash down liquids will need to be collected and managed appropriately.

Decontamination will involve hosing / removal of soil from the tracks and bucket as far as reasonably practicable by the Site Supervisor. Tools used shall be hosed down / wiped clean with a damp cloth.

Upon completion of works, boots and clothing will be wiped down with a damp cloth and disposable PPE and Respiratory Protective Equipment (RPE) disposed of as asbestos waste. Non-disposable RPE should be wet-wiped and placed in a sealed container for future use.

### 5.3.7 Dust Management

The following dust management measures shall be undertaken, as appropriate:

- Keeping excavation areas, stockpiles and haulage pathways damp.
- Keeping haulage vehicles covered and providing designated site access for haulage vehicles.
- Appropriate decontamination of haulage vehicles.
- Maintaining access roads to ensure no significant dust at the site boundary.
- Providing dust suppressors to equipment, where appropriate.
- Monitoring of dust levels at the site boundary.

If significant dust is visible at the site boundary, then additional dust control measures shall be employed, which may include:

- Reducing the area of soil exposed (by covering or minimising size of excavations etc.)
- Temporarily suspending activities until wind speed reduce
- Additional use of water spray

## 6 Contingency Plans and Control Measures

A list of contingency items and control measures with respect to asbestos and this AMP is provided below in Table 6.1:

**Table 6.1: Non-Conformance and Contingency Plans and Control Measures**

| Contingency Item   | Control Measures  |
|--|---|
| Person undertaking work in the restricted area for asbestos has not undertaken induction into the AMP.               | Principal Contractor or a person appointed by the Principal contractor shall prepare a non-conformance report and assess reason of the non-conformance.<br>Person undertaking work shall be inducted into this AMP.   |
| ACM is found in a site area that has already been cleared by the LAA   | Works shall cease in the area to allow for management by the Class A asbestos contractor.<br>The ACM shall be collected and disposed of appropriately in accordance with Safe Work Australia (2011b).<br>Principal Contractor or a person appointed by the Principal Contractor shall request the LAA to attend site.<br>Review of procedure of transport of asbestos contaminated material shall be undertaken by the Principal Contractor. Rectification of the procedure shall be undertaken, if considered appropriate. |
| Significant dust generation  | Stop work, undertake more dust suppression.<br>Do not commence work again until dust suppression is adequately undertaken.  |
| Asbestos impacted stockpile disposed of inappropriately (e.g. to landfill which is not licenced to receive asbestos) | Principal Contractor or a person appointed by the Principal Contractor shall immediately contact landfill.<br>Principal Contractor or a person appointed by the Principal Contractor shall prepare a non-conformance report and assess reason of the non-conformance. Rectification of the procedure shall be undertaken, if considered appropriate.<br>The Asbestos Assessor shall be engaged to assess appropriate management strategy.<br>Incident may need reporting to NSW EPA.  |

A non-conformance report describing each incidence and the contingency measures implemented shall be provided to the Site Auditor.

Relevant emergency contacts are as follows. Relevant contact numbers are provided in the CEMP.

**Table 6.2: Emergency Contacts**

| Emergency Contact        | Details                       |
|--------------------------|-------------------------------|
| Project Owner            | Goodman                       |
| Superintendent           | Goodman                       |
| Principal Contractor     | Richard Crookes Constructions |
| Environmental Consultant | Geosyntec                     |
| SafeWork NSW             | 131 050                       |
| NSW EPA                  | 131 555                       |

## **7 Communication and Consultation**

### **7.1 Internal Communication**

Communication and consultation regarding asbestos management will occur between workers involved with asbestos management (including Project Manager, Principal Contractor's Environmental Manager / Coordinator, Site Foreman, Environmental Consultant, Occupational Hygienist) and other workers onsite through tool-box talks, inductions and general communication onsite where necessary. This may include communication of asbestos management procedures as outline in Section 5 (e.g. standard safety protocols during excavation), restricted area status and upcoming removal works.

### **7.2 External Communication**

#### **7.2.1 Regulatory Authorities**

Communication with a range of Regulatory Authorities shall be undertaken throughout the Project. This communication shall be through the Project Manager. Any communication from a regulator must be notified to the Principal Contractor's Environmental Manager / Coordinator, and records of all communications retained and appropriately filed.

#### **7.2.2 Consultation with Neighbours**

The Project Owner (Goodman) will inform neighbours of the works.

#### **7.2.3 Media**

All contact with the media shall be through the Project Owner (Goodman). Under no circumstances are site workers to engage with the media, unless instructed by Goodman.



## 8 References

- JBSG (2019) Remediation Action Plan (RAP), 28 McPherson Street, Banksmeadow NSW.
- NEPM (2013) National Environment Protection (Assessment of Site Contamination) Measure, Schedule A and Schedules B(1)-B(9). National Environment Protection Council, Adelaide.
- NOHSC (2005) 'Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition, 3003 - 2005', National Occupational Health and Safety Commission.
- NSW EPA (2014) NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste
- NSW EPA (2015) Contaminated Sites: Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997. NSW DECC, Sydney.
- NSW EPA (2015) Asbestos and Waste Tyre Guidelines.
- Protection of the Environment Operations Act 1997
- SafeWork Australia (2011a) 'Code of Practice: How to Manage and Control Asbestos in the Workplace'.
- SafeWork Australia (2011b) 'Code of Practice: How to Safely Remove Asbestos', December 2011.
- Standards Australia (1994) 'AS 1319-1994: Safety Signs for the Occupational Environment'.
- WA DoH (2009) Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.
- Waste Avoidance and Resource Recovery Act 2001
- Waste Management Act 2000
- WorkCover NSW (now SafeWork NSW) (2014) 'Managing Asbestos in or on Soil'.

## 9 Limitations

This report has been prepared by Geosyntec Consultants Pty Ltd (“Geosyntec”) for use by the Client who commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the Client and other parties. The findings of this report are based on the scope of work detailed. The report has been prepared specifically for the Client for the purposes of the commission, and use by any explicitly nominated third party in the agreement between Geosyntec and the Client. No warranties, express or implied, are offered to any third parties and no liability will be accepted for use or interpretation of this report by any third party (other than where specifically nominated in an agreement with the Client).

This report relates to only this project and all results, conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose. This report should not be reproduced without prior approval by the Client, or amended in any way without prior written approval by Geosyntec.

Geosyntec’s assessment was limited strictly to identifying environmental conditions associated with the subject property area as identified in the scope of work and does not include evaluation of any other issues.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigation.

This report does not comment on any regulatory obligations based on the findings. This report relates only to the objectives stated and does not relate to any other work conducted for the Client.

The absence of any identified hazardous or toxic materials on the site should not be interpreted as a guarantee that such materials do not exist on the site.

All conclusions regarding the site are the professional opinions of the Geosyntec personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Geosyntec has not independently verified and assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Geosyntec, or developments resulting from situations outside the scope of this project.

Geosyntec is not engaged in environmental assessment and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes. The Client acknowledges that this report is for its exclusive use.

## Appendix A Figures



## LEGEND

Site Location

This product has been created to support the main report and is not suitable for other purposes. Image obtained from Nearmap (2022).



100 m

Datum: GDA 1994 MGA Zone 56 - AHD

Figure 1: Site Location

Site Address: 28 McPherson Street, Banksmeadow NSW

Client: RCC

Job Number: AU122127

Date: December 2022





## LEGEND

Approximate Site Boundary

This product has been created to support the main report and is not suitable for other purposes. Image obtained from Nearmap (2022).



15 m

Datum: GDA 1994 MGA Zone 56 - AHD

Figure 2: Site Layout

Site Address: 28 McPherson Street, Banksmeadow NSW

Client: Jackson Environment

Job Number: AU122280

Date: December 2022





## LEGEND

- █ Approximate Site Boundary
- █ 0.1m Hardstand Barrier Layer
- █ 0.1m Sealed Hardstand Barrier Layer
- █ No Marker / Barrier Layer
- Surface Water Entry Points

This product has been created to support the main report and is not suitable for other purposes. Image extracted from the JBSG (2019) RAP.



15 m

Datum: GDA 1994 MGA Zone 56 - AHD

Figure 3: Site Remedial Areas  
(JBSG 2019 RAP)

Site Address: 28 McPherson Street, Banksmeadow NSW

Client: Jackson Environment

Job Number: AU122280

Date: December 2022

## Appendix B Asbestos Register

## Asbestos Register

### Orica Southlands Warehouse Estate – 28 McPherson Street, Banksmeadow NSW

| ID  | Date of Identification                       | Location              | Item Description, Including Condition of ACM (Friable/Bonded) | Approximate Size and Weight | Laboratory Testing                                  | Fate of ACM  |
|---|--|-----------------------|---|-----------------------------|---|--|
| All site soils                            | Historical investigation<br>(0.0 – 0.5m bgs) | Soils across the site | Chrysotile and amosite asbestos (friable and bonded).         | Unknown                     | Yes, indicating presence of asbestos in soil sample | To be capped during construction OR disposed of under NSW waste Classification Guidelines should offsite disposal be required. |
|   |  |                       |   |                             |   |  |
|   |  |                       |   |                             |   |  |
|   |  |                       |   |                             |   |  |
|   |  |                       |   |                             |   |  |
|   |  |                       |   |                             |   |  |
| List is to be updated during construction |  |                       |   |                             |   |  |



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