



# **Douglas Partners**

*Geotechnics | Environment | Groundwater*

**Integrated Practical Solutions**

Environmental, Construction and Management Plan

Proposed Sydney Swans HQ & Community Centre  
1 Driver Avenue, Moore Park

Prepared for  
Sydney Swans Limited  
c/- APP Corporation Pty Ltd

Project 86724.01  
May 2018



## Document History

### Document details

Project No.	86724.01	Document No.	R.001.Rev0
Document title	Environmental, Construction and Site Management Plan Proposed Sydney Swans HQ & Community Centre		
Site address	1 Driver Avenue, Moore Park		
Report prepared for	Sydney Swans Limited c/- APP Corporation Pty Ltd		
File name	86724.01.R.001.Rev0.docx		



### Document status and review

Status	Prepared by	Reviewed by	Date issued
Revision 0	Gavin Boyd	Tim Wright	17 May 2018

### Distribution of copies

Status	Electronic	Paper	Issued to
Revision 0	1	0	Thomas Gould, APP Corporation Pty Ltd

The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

	Signature	Date
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FS 604853

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Appendix A:       About This Report

## **Report on Environmental, Construction and Site Management Plan**

### **Proposed Sydney Swans HQ & Community Centre**

#### **1 Driver Avenue, Moore Park**

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## **1. Introduction**

### **1.1 General**

This Environmental, Construction and Site Management Plan (ECSMP) outlines the methods and procedures that will be used to manage the soil and groundwater aspects of the construction of the proposed Sydney Swans Limited (PLC) hotel development at Royal Hall of Industries, 1 Driver Avenue, Moore Park (the site).

Douglas Partners Pty Ltd (DP) has been commissioned by APP Corporation Pty Ltd (APP) on behalf of the Sydney Swans Limited to prepare this ECSMP which is required to support a development application for the site.

DP understands that NSW Department for Planning and Environment have issued a Secretary's Environmental Assessment of Requirements (SEARS) for the preparation of an Environmental Impact Statement (Application Number SSD9627 dated 6 November 2017).

The ECSMP has been developed based on the results of previous assessments undertaken by Douglas Partners Pty Ltd (DP) and Environmental Investigation Services (EIS), and has been prepared with reference to the NSW EPA 'Guidelines for Consultants Reporting on Contaminated Sites' (NSW OEH 2011).

It is expected that the contractor will necessarily have to carry out an ECSMP once specific construction logistics are known. Once these details are known and resolved by the contractor a separate ECSMP will need to be developed. Therefore, this ECSMP details are preliminary only providing broad details required by the SEARS with a specific focus on the soils management.

A Geotechnical Report and a Detailed Site Investigation (DSI) were being prepared concurrently with this ECSMP. References to these reports are provided throughout this report. For detailed comment about the relevant aspects these reports should be reviewed.

### **1.2 Objectives**

The objectives of this ECSMP are as follows:

- Provide a methodology for fill placement/reshaping;
- Provide a methodology for fill construction;
- Provide recommendations on site preparation and earthworks; and

- Provide recommendations on excavations and groundwater;

One of the project objectives is to manage the waste soils and potential groundwater within the site in an acceptable manner, with minimal environmental impact, to a condition suitable for the proposed commercial land use. This ECSMP provides a strategy for site management which:

- Minimises impacts from the remediation works on the environment and on public health and safety;
- Maximises the protection of workers involved with site management;
- Renders the site suitable for the land use and addresses identified potential exposure pathways to contaminants; and
- Minimises impacts on the local environment during the works.

This document also provides an outline working plan for the excavation, stockpiling, remediation and management of soil, water and sediment.

## 2. Site Description

The site is a trapezoidal shape with maximum plan dimensions of 140 m by 80 m with an area of approximately 1.9 ha. It is bounded by Driver Avenue, Lang Road and Errol Flynn Boulevard to the west, south and east, respectively. An asphalt walkway and the Hordern Pavilion are located to the north of the site.

The RHI building occupies a rectangular shaped area, some 85 m by 60 m in plan dimensions and comprises a single storey structure with mezzanine level and a concrete ground slab. A smaller single storey shed structure is located at the south-east corner of the site and the remainder of the site is covered by concrete or asphalt pavement.

The topography is flat to gently undulating and the site is currently used for miscellaneous activities within the RHI building, such as exhibitions and markets. The ground surface typically ranges between about Reduced Level (RL) 37.1 m and RL 37.7 m relative to Australian Height Datum (AHD). The site is elevated above street level to the west and south with maximum ground level difference of about 2 m in the south-west corner.

## 3. Proposed Development

Following a review of the client supplied return brief for the proposed development, The proposed development at the site will include fitout and redevelopment of the existing RHI building and construction of a new two-storey sporting facility to the south of the existing RHI building including an in-ground swimming pool and spas.

No additional basements are proposed, however excavation up to depths of about 3 m below ground level will be required for the proposed swimming pool and spas, modification of the existing basement toilets, lift pits and new services. The proposed swimming pool, in the south-west corner of the site, is

to be constructed within an existing fill platform that is up to 2 m high. The maximum depth of the pool excavation will be up to 1 m below the adjacent road levels (estimated bulk excavation level RL 34.3 m AHD).

The layout of the proposed development is shown on Drawing 1 (Appendix B).

## 4. Reference Documents

### 4.1 Geotechnical Investigation

DP has prepared a Report on *Geotechnical Investigation Proposed Sydney Swans HQ & Community Centre, Royal Hall of Industries, 1 Driver Avenue, Moore Park*, DP Ref: 86724.00.R.001.Rev2, dated 10 May 2018.

A summary of the ground conditions is included in Section 5.1.

### 4.2 Contamination Assessment

DP has prepared a Report on *Detailed Site Investigation Proposed Sydney Swans HQ & Community Centre, Royal Hall of Industries, 1 Driver Avenue, Moore Park*, DP Ref: 86724.00.R.002.Rev2, dated 10 May 2019.

A summary of the findings are included in 5.2.

### 4.3 Assessments by Other Consultants

The following other consultant reports have also been prepared for the proposed development on this site and discussed within this report:

- Populous “SSDA Design Report” dated May 2018 (Document No. AS11.0100).
- Taylor Thomson Whitting (NSW) Pty Ltd (TTW) “Soil and Water Management Plan” dated 18 April 2019, REF 1818978.
- GHD “Sydney Swans HQ & Community Centre” Noise and Vibration Impact Assessment dated April 2019.
- GHD “Sydney Swans HQ & Community Centre Noise Management Plan” dated 17 April 2019.
- GHD “Sydney Swans HQ & Community Centre Air Quality Assessment” dated April 2019.
- Urbis “Royal Hall of Industries Heritage Impact Assessment” dated 16 April 2019.
- Archaeological Management and Consulting Group (AMAC) “Archaeological Assessment” dated 9 April 2019.
- AMAC and Streat Archaeological Services Pty Ltd (SAS) “Due Diligence Aboriginal Archaeological Assessment” dated April 2019.

- GTA Consultants Pty Ltd (GTA) "Transport Assessment" (Reference N165280 Issue A) dated 23 April 2019.
- Allied Tree Consultancy (ATC) "Arboricultural Impact Assessment Report" dated 8 May 2019 (Reference D3355).
- Dickens Solutions "Waste Management Plan" dated April 2019.

Where relevant, the results of the above assessments have been included within this report.

## 5. Background

### 5.1 Geology and Groundwater

The intrusive investigation indicated that the site is underlain by filling (including building rubble, coal and charcoal) to variable depths overlying some natural sands and clayey sands with an approximately 0.8 m to 1.1 m thick layer of extremely low to low strength sandstone overlying low, medium and high strength sandstone from depths of 2.2 m to 6.6 m. The sandstone bedrock progressively increases in strength with depth.

Water levels measured in monitoring wells ranged between depths of 2.6 m and 6.0 m below ground surface and were below the top of sandstone bedrock. This is likely to be seepage water running above and through the rock rather than the regional groundwater table. The regional groundwater table is likely to be well below the bedrock surface.

Reference to the 1:25 000 Acid Sulphate Soils (ASS) Risk map indicates that the site is located within an area with no known occurrence of ASS.

### 5.2 Geotechnical

The geotechnical report included comments on excavation conditions, earthworks, retaining structures, foundations and the impact of the development on groundwater. The following comments are provided on geotechnical aspects of the development:

- Bulk excavation for the pool and modification of the building will generally encounter filling, natural soils and possibly bedrock. Excavation within the filling, natural soils and extremely low to low strength bedrock should be readily achieved by conventional earthmoving equipment. If excavation in low strength and stronger sandstone is required then heavy ripping equipment, rock hammers and/or rock saws will be needed for effective removal.
- It is anticipated that the excavation within fill and soils will result in relatively minor vibrations. Excavation of rock with rock hammers will result in vibration of the surrounding ground and it would be important to manage vibrations on the adjacent buildings/structures, especially the sensitive/heritage items in close proximity.
- It is generally expected that the excavation in soils and weathered rock will need to be supported by a retaining structure both during construction and as part of the final structure. Parameters for the design of the retaining walls have been provided.

- Vertical cuts in the medium strength or stronger sandstone should be able to stand vertically without retaining support unless unfavourable jointing is exposed. Such excavation should therefore be carried out under close geotechnical supervision to ensure that any stability measures required can be actioned accordingly.
- The groundwater levels measured during the current field work vary between RL 31.3 m and RL 34.7 m AHD. It is likely that the groundwater intercepted in the wells is water seepage along the top of the rock and through joints and partings within the rock mass. The regional groundwater table may be deeper. Further monitoring of water levels within wells should be carried out to assess fluctuations if this is important for design and construction.
- The comments on groundwater include reference to the NSW Department for Planning and Environment who have issued a Secretary's Environmental Assessment of Requirements (SEARs) for the preparation of an Environmental Impact Statement (Application Number SSD8800 dated 6 November 2017). Groundwater levels have been recorded below the proposed basement levels. Based on current groundwater recordings and previous measurements the development is not expected to interfere with the aquifer or require licensing in accordance with the definitions of aquifer interference or licensing as defined by the NSW DPI Aquifer Interference Policy 2012.
- Foundations that could be considered include shallow or piled footings. Parameters for the design of foundations have been provided.
- Advice on earthworks for subgrade preparation below pavements and ground slabs has been provided in the report.

### 5.3 Contamination

Previous investigations by DP and other consultants had indicated the presence of fill material on-site which included building rubble. Limited laboratory testing had indicated that these chemical levels were within the health investigation levels (HIL), health screening levels (HSL) and management limits for a commercial / industrial site (land use 'D') sourced from National Environment Protection Council (NEPC), *National Environment Protection (Assessment of Site Contamination) Amendment Measure*, 2013 (NEPC, 2013). Furthermore, no asbestos had been identified in previous investigations.

The site history review identified that the RHI was constructed in 1913 and had various uses over its history including for events and exhibitions, festivals and also as a morgue in 1919. The site has had various modifications of it such as including gardens in the 1930s/1940s, bomb shelters and trenches in 1943, small structures and sheds an electrical kiosk next to the southern wall of the building. It appears that off-site industry was present to the east and north-east from (at least) the 1930s to 1980s (according to aerial photographs). Much of this land previously used for industry is up-hydrogeological gradient from the site. A contaminated site, noted on the NSW EPA website (off-site) parkland on the western side of Driver Avenue, is downgradient of the site.

Based on the site history and previous information a preliminary conceptual site model was prepared which identified potential contamination sources such as imported fill, hazardous building materials, spills or leaks of chemicals, pesticides beneath concrete slabs and oil leaks from the substation.

The intrusive investigation indicated that the site is underlain by filling (including building rubble, coal and charcoal) to variable depths overlying some natural sands and clayey sands. Natural soils are

underlain by sandstone. Water levels measured in monitoring wells ranged between depths of 2.6 m and 6.0 m below ground surface and were below the top of sandstone bedrock.

Results of laboratory testing indicated that the concentrations of tested contaminants in soil are at levels which are not considered to pose a risk to human health, terrestrial ecology or in-ground structures for the proposed development. Concentrations of contaminants in groundwater are considered to not pose a human health risk at the site for the proposed development.

Based on the results of the investigation, it is considered that remediation (and a Remediation Action Plan) is not required for the proposed development, however, the following is recommended for the proposed development:

- Given the variable fill at the site, an Unexpected Finds Protocol (UFP) should be prepared for site development. The UFP would detail the requirements and procedures for encountering contamination, or signs of contamination, during excavation works; and
- Soils requiring off-site disposal will need to be given a waste classification in accordance with NSW EPA, *Waste Classification Guidelines*, 2014 (EPA, 2014) and disposed of accordingly.

If dewatering is required (e.g. at localised excavations), based on the results, there is a reasonable likelihood that groundwater will not be suitable to discharge to the stormwater system without treatment. It may be appropriate to dispose of the water as liquid waste by a liquid waste contractor.

Based on the findings of this DSI which included an assessment of soil and groundwater, it is considered that the site is suitable for the proposed development from a contamination perspective.

## **5.4 Flooding**

The TTW reports indicate that the site includes recommendations for stormwater diversions, construction phase stormwater management and a sediment, erosion and Dust Control Plan.

## **5.5 Aboriginal Assessment**

The “Due Diligence Aboriginal Assessment” indicated that while no confirmed Aboriginal archaeological site records that they are aware that there remains a possibility that sub-surface Aboriginal objects with potential for conservation value may be present within these undisturbed parts of the study area. The assessment recommended that the development proceed with caution and provided mitigation measures if natural soils or human remains are encountered.

## **5.6 Archaeology and Heritage**

The AMAC report included a historical review and site inspection and provided as assessment of significance, archaeological work method statement and recommendations. The report made the following conclusions:

*The proposed development requires only minor excavation in the basement and ground floor of the Royal Hall of Industries building for lift shafts as wells as the southern courtyard for the purposes of resurfacing the site, installing new services and a lift shaft. While no relics have been identified with the study site area, there is unknown potential for undocumented archaeological remains for both the 19<sup>th</sup> century Sydney Common phase and the 20<sup>th</sup> Century Hall of Industries phase. For this reason it is recommended that an Archaeological Work Method Statement containing an unexpected finds protocol be in place for the duration of works (see Section 6.0)". The work method statement will provide contractors with guidelines to follow for any undocumented material found on site, should it exist.*

*Though the construction date of the building deems it unlikely that underfloor deposits would have accumulated, it is recommended that an archaeologist be on site to inspect the floor cavity of the building for underfloor deposits when the floors are lifted (Section 6.0).*

Reference to the AMAC report should be made for detailed comment. Particular care will need to be made with respect to integration the requirements of engineering works with archaeological considerations.

The Urbis report identifies that the Royal Hall of Industries is identified to be of heritage significance but is not listed under the Sydney LEP. The report has carried out an impact assessment and includes a conservation management plan.

## **5.7 Noise and Vibration**

The GHD report noise and vibration assessment included an assessment of the proposed development and recommendations of the timing of construction works together with maximum noise and vibration levels. While the predicted noise levels are not expected to exceed noise management levels various mitigation measures and monitoring of the noise and vibration levels was recommended. A noise management plan has been provided for site operations.

An operational impact assessment, including modelling, was also carried out and concluded that "Operational noise levels are expected to comply with the operational noise criteria at the worst affected receiver"

## **5.8 Air Quality**

The GHD report includes an assessment of project emissions and the impact of these emissions. Various mitigation measures are proposed during construction and operation. Modelling of the worst case scenario during construction and operation below assessment criteria. Mitigation measures were recommended to reduce air quality impacts from the construction and operation of the project. GHD concluded "Assuming the supplied mitigation measures are considered throughout the construction and operation of the project, the project is considered to comply from an air quality perspective."

## 5.9 Transport and Accessibility

The GTA report provides an assessment of the transport impacts of the proposed development. This included an assessment of the transport impact of the proposed development, including during construction, and recommendations on a green travel plan and construction management,

## 5.10 Arborist

The ATC report assessed all seventy-nine (79) trees on-site and within the street corridor surrounding the site. The report identified tree locations, dimensions, species and condition. The assessment also included a safe useful life expectancy and Significance of a Tree Rating System (STAR) rating.

The ATC identified six trees for removal (Trees No. 19 to 21 and 59 to 61 – refer to ATC report for location) and provided discussion on the recommendations for removal, retention and/or pruning and established tree protection zones (TPZ) and specifications for retention.

## 5.11 Waste Management

The Dickens Waste Management Plan provides various recommendations for the recycling, re-re-use and disposal of waste on-site.

# 6. Sequence of Work

The likely sequence of works, in broad terms, is provided below. These works may occur concurrently or in a different order in accordance with the construction program of the contractor. These works include:

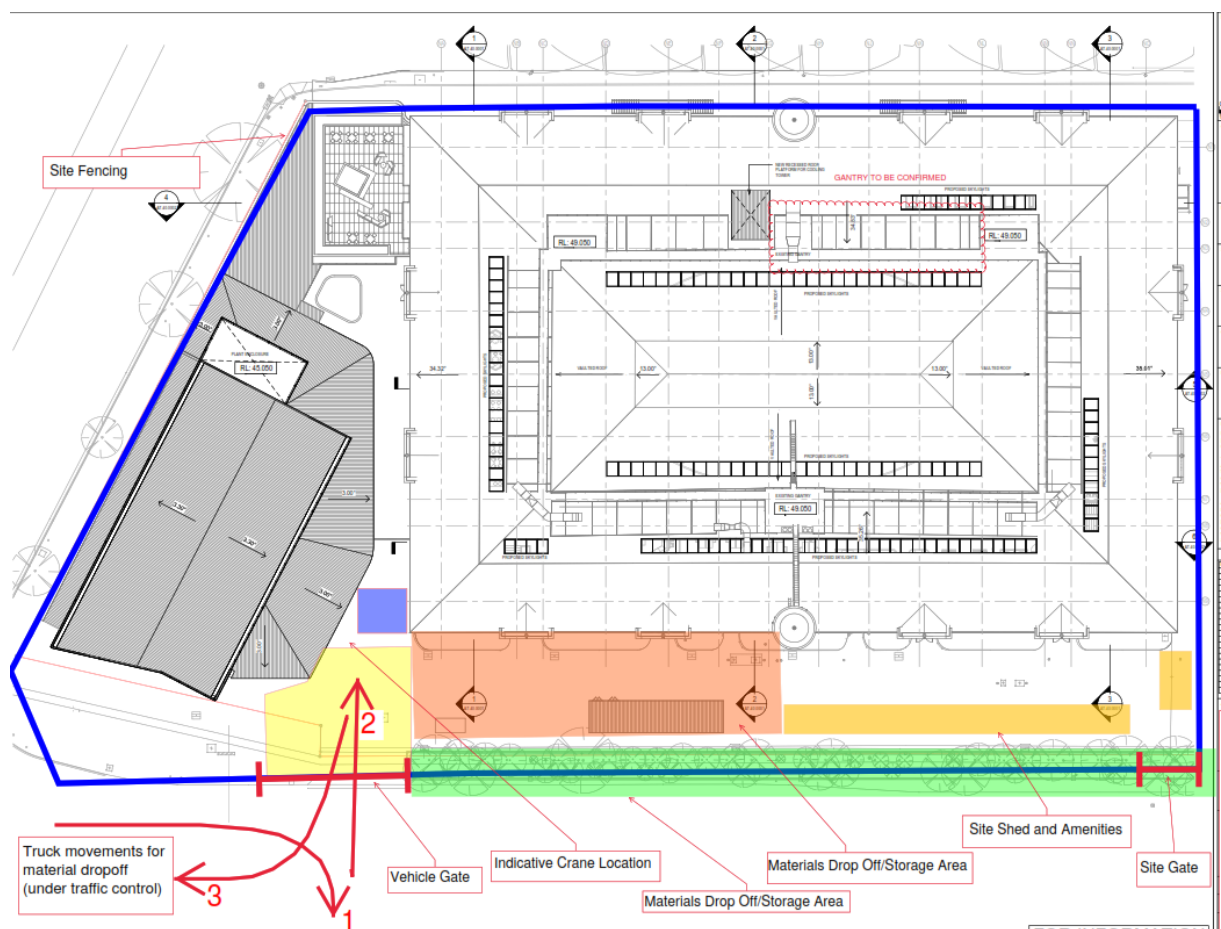
- Site establishment;
- Establishment of Monitoring devices (air quality, noise and vibration);
- Briefing of site staff by Aboriginal and Archaeological consultants
- Archaeological assessment of natural soils;
- Assessment of natural soils by Aboriginal consultant;
- Decommissioning and removal of service lines;
- Installation of retaining systems;
- Bulk excavation to achieve the bulk excavation levels;
- Installation of services;
- Placement and compaction of fill;
- Installation of drainage systems;
- Construction of footings and finished floor slabs;
- Construction of the building structure, services; and

- Construction of pavements, landscaping areas and other external works.

DP notes that the likely sequence of the early works, and the corresponding management and validation protocols are listed in the following sub-sections.

DP notes that inspection of all services and trenches (including archaeological digs, service trenches etc.) should be undertaken to identify whether they contain hazardous building materials.

It is understood that the preliminary site layout is as outlined in Figure 1. The site layout is to be determined by the contractor. Accordingly, the site layout could change and is an example of the type of structure the proposed development will have during construction.



**Figure 2: Example of Approximate Site Layout (Note: Subject to change).**

## **6.1 Monitoring**

At the commencement of works, all monitoring devices must be installed. These include noise, vibration, dust and air quality monitoring devices (refer to specific report)

## **6.2 Aboriginal Assessment**

The aboriginal archaeological assessment indicated that there is potential for Aboriginal objects with potential heritage value in the undisturbed parts of the site. It was recommended that excavation works proceed with caution and if natural soils are encountered, appropriate mitigation measures be implemented. Prior to ground disturbance, briefing of development and site personnel needs to be carried out by an appropriate consultant (as per the AAMC and SAS report). Excavation and ground disturbance works need to stop work when natural soils are encountered and the protocols established in the AAMC/SAS report need to be followed.

Reference to the AAMC/SAS report must be made for specific detail of excavation works on-site.

## **6.3 Archaeological Works**

At the commencement of excavation works, a briefing by the a suitably qualified archaeologist must be carried out by all personnel regarding potential

The archaeological must be present on-site to carry out inspections during exposure of soil beneath underfloor cavity of the ground floor of the Royal Hall of Industries.

During excavation works an unexpected finds protocol, outlined in the AMAC report, must be followed by all personnel on site. This protocol includes immediately ceasing works in the event of uncovering any significant archaeological relics during excavation, consulting the archaeologist before commencing works and recording and reporting of the finds in accordance with the protocols outlined in the AMA report.

All archaeological excavation works must be carried out in accordance with the protocols for geotechnical and environmental work outlined in DP's reports.

## **6.4 Soil and Water Management Plan**

Prior to site works commencing, all the various soil and water management controls outlined in TTW's report must be installed.

## **6.5 Working Platforms**

Working platforms are required for all site equipment applying a load or pressure to existing soils. Site equipment, includes cranes, piling rigs, boom-pumps, scissor lifts or any scaffolding. The suitability of

the working platform to support the load needs to be carried out on a case-by-case basis and verified by a suitably qualified geotechnical engineer.

## 6.6 Excavation Works

All excavation works on-site, including excavation for the installation of services, drilling activities, bulk and detailed excavation should be appropriately battered or supported by retaining walls, confirmed by a structural engineer to be suitable to support the applied loads as outlined in DP's geotechnical report (DP, 2018a).

DP's geotechnical report suggested maximum temporary and permanent batter slopes for unsupported internal excavations up to a maximum height of 3 m are shown in Table 1 below. These values assume that no surcharge loads are placed near the top of the batters.

**Table 1: Suggested Temporary Batter Slopes for Excavations up to 3 m Deep**

<b>Material</b>	<b>Temporary (During Construction) Batter Slopes (Horizontal:Vertical)</b>
Fill and Natural Soils	1.5:1
Extremely to Very Low Strength Sandstone	1:1
Very Low to Low Strength Sandstone	0.5:1
Medium and High Strength Sandstone	Vertical*

Note: \*Subject to geotechnical inspection at 1.5 m depth intervals to check for adversely inclined joints.

Any soil or rock batter slopes that are exposed will require protection from erosion. Protection may include a mesh-reinforced shotcrete pinned to the excavation face with dowels. Drainage will need to be installed behind the shotcrete to intercept any seepage.

Where excavation for service trenches are proposed, excavations greater than 1.5 m deep will require appropriate shoring protection using either a battered slope or an engineer designed retaining support (e.g. shoring boxes).

## 6.7 Pavement Reconstruction after Laying of the Services

The works will be undertaken under the environmental management, worker health and safety protocols.

## 7. Roles and Responsibilities

### 7.1 Regulations

All works must be also undertaken in accordance with the relevant regulatory criteria, including *inter alia*:

- NSW *Work Health and Safety Act 2011* (WHS Act);
- NSW *Work Health and Safety Regulation 2011* (WHS Regulation);
- NSW *Contaminated Land Management Act 1997*;
- *National Environment Protection Measures 2013 (NEPM)*;
- *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (WA DoH 2009);
- SafeWork NSW: *Code of Practice How to Manage and Control Asbestos in the Workplace* September 2016; and
- SafeWork NSW: *Code of Practice How to Safely Remove Asbestos* September 2016.
- *POEO Act*,
- *Dangerous Goods Act 2008*;
- *Work Health and Safety Act 2011*;
- *Work Health and Safety Regulation 2011*;
- *Water Management Act 2000* and any related requirements specified by EPA; and
- DUAP EPA (1998) *State Environmental Planning Policy No. 55 (SEPP 55)*.
- NSW *Aboriginal Land Rights Act 1983*.
- *The Environmental Planning and Assessment Act 1979*.
- *The NSW National Parks and Wildlife Act 1974* (as amended).
- *The Native Title Act 1993*.
- *The Environment Protection and Biodiversity Act 1999*.

In addition, reference to DECCWs *Know Your Responsibilities: Managing Waste from Construction Sites Guidelines* must be made by the contractor during the works.

## 7.2 General

A summary of the roles and responsibilities under this ECSMP is outlined below in Table 2.

**Table 2: Roles and Responsibilities**

<b>Role</b>	<b>Responsibility</b>
<b>Principal and Principal's Representative (PR)</b>	<ul style="list-style-type: none"> <li>Ensuring this ECSMP is appropriately implemented;</li> <li>Nominate a representative (the Principal's Representative - PR), who is responsible for overseeing the implementation of this ECSMP;</li> <li>Ensuring the ECSMP is accepted by the consent authority;</li> <li>Engages persons or companies as required to implement this ECSMP;</li> <li>To obtain specific related approvals as necessary to implement the earthworks, including for example, permits for removal of asbestos-containing materials, SafeWork NSW notification, etc.;</li> <li>Notification to Council of planned commencement of remediation works, if required under the development consent.</li> </ul>
<b>Principal Contractor (the Contractor) and Site Manager (SM)</b>	<ul style="list-style-type: none"> <li>Responsible for the day-to-day implementation of this ECSMP during early works program. It is noted that the Contractor may appoint appropriately qualified sub-contractors or sub-consultants to assist in fulfilling the requirements of the procedures;</li> <li>The Principal Contractor will nominate a Site Manager who will be responsible for day to day site management and first response to any unexpected finds encountered during works;</li> <li>Notify the Archaeologist when surface scraping is scheduled to ensure they are present on-site to inspect uncovered areas;</li> <li>Notify the Environmental Consultant if materials are proposed to be imported to the site;</li> <li>Notify the Principal and Environmental Consultant in the event of an unexpected find.</li> </ul>
<b>Project Manager (PM)</b>	<ul style="list-style-type: none"> <li>Sydney Swans Limited representative.</li> <li>Review of Principal Contractor activities.</li> </ul>
<b>Archaeological and Aboriginal Consultant (Historical)</b>	<ul style="list-style-type: none"> <li>Briefing of development and site personnel prior to ground disturbance.</li> <li>A suitably accredited archaeologist to oversee excavation works as outlined in the AMAC and SAS reports;</li> <li>Archaeologist to determine strategy for finds, for example – record and maintain (protection layer), expose photograph and</li> </ul>

Role	Responsibility
	<p>remove items to keep, or expose, photograph/document and demolish;</p> <ul style="list-style-type: none"> <li>• If natural soils are encountered the excavation works are to cease immediately and the consultant is to be immediately contacted. Excavations works can only proceed with caution once the consultant has investigated, assessed and provided recommendations to the SM.</li> <li>• Surplus Archaeologist returns to be stockpiled for waste classification/disposal to an appropriate receiving facility/site.</li> </ul>
<b>Environmental Consultant (EC)</b>	<ul style="list-style-type: none"> <li>• Inspect and document early works to assess compliance with the DSI;</li> <li>• Waste classification of surplus soils, if required;</li> <li>• Provision of a validation report detailing the works undertaken to render the site suitable for the proposed development.</li> <li>• Provision of a validation report detailing the works undertaken to render the site suitable for the proposed development.</li> <li>• Attend to unexpected finds when required;</li> </ul>
<b>Occupational Hygienist (OH)</b>	<p>An Occupational Hygienist may be engaged, for example to assist with WHS issues related to the odorous soils and asbestos related works. The Occupational Hygienist, depending on the nature of the engaged works, may also be responsible for:</p> <ul style="list-style-type: none"> <li>• Where appropriate updating site management plans, WHS plans and advice on request by the Contractor;</li> <li>• Undertaking inspection post demolition works;</li> <li>• Undertaking inspections of odorous soils and associated pile holes and excavations;</li> <li>• Undertaking air monitoring of the work area (pile holes, excavation etc.) for odours and air quality;</li> <li>• Undertaking odour monitoring on the site boundary (if requested);</li> <li>• Undertaking airborne asbestos monitoring and asbestos clearance inspections (if required);</li> <li>• Providing advice and recommendations arising from monitoring and/or inspections; and</li> <li>• Notifying their client with the results of any assessments and any observed non-conformances in a timely manner.</li> </ul> <p>Note: The Environmental Consultant and Occupational Hygienist can be the same entity.</p>

Role	Responsibility
<b>Geotechnical Consultant</b>	<ul style="list-style-type: none"> <li>Geotechnical Inspections of retaining walls, site preparation works and footings as required</li> </ul>
<b>Asbestos Contractor (only required in the event of an unexpected find)</b>	<ul style="list-style-type: none"> <li>Handling of fill materials (contaminated or otherwise) including excavations, stockpiles, segregation, placement, compaction, and disposal of excess fill materials. Considering the presence of FA/AF, all remediation works involving fill at the site must be undertaken by a licensed SafeWork NSW Class A – Asbestos Removalist.</li> <li>The Asbestos Contractor can be the same as the Principal Contractor.</li> </ul>
<b>Site Workers</b>	<p>All workers on site are responsible for observing the requirements of this and other management plans. These responsibilities include the following:</p> <ul style="list-style-type: none"> <li>Being inducted on site and advised of the general nature of the remediation/environmental issues at the site;</li> <li>Being aware of the requirements of this plan;</li> <li>Wearing appropriate PPE;</li> <li>Only entering restricted areas when permitted; and</li> <li>Requesting clarification when unclear of requirements of this or any other plans (e.g. SWMS).</li> </ul>

Prior to the commencement of remediation, a site meeting between the main contractor, PR, geotechnical and environmental consultant, and the archaeologist be carried out to confirm responsibilities and procedures in accordance with the agreed management plan.

### 7.3 Legally Required Notifications

In the event of encountering an unexpected find including asbestos impacted materials, all works shall be undertaken by an appropriately licensed asbestos contractor (Class A). All works must comply with all NSW legislative requirements including (but not limited to) all SafeWork NSW requirements, notification of works to SafeWork NSW five days prior to work commencing, preparation and implementation of an appropriate Work Method Statement, wearing of appropriate PPE and air monitoring for asbestos fibres.

The Project Manager and/or the Site Manager, is to notify workers, health and safety representatives, Contractors, providing details of the date, time and location of the removal works before they start as well as ensuring the Safe Work Method Statement (SWMS) is adequate for the works to be undertaken.

## 7.4 Community Notifications

Community consultation is to be handled by the Principal Contractor (PC). The PC will nominate an on-site contact to act as the liaison for any enquiries or complaints (refer Section 7.5 below).

Notifications of residents and businesses in the area nominated under the development conditions must be taken out in advance of site works. The notification must include the following

- 1) Summary of site works.
- 2) Contact information including emergency site contacts.
- 3) Proposed hours of work.
- 4) A contact procedure for any enquiries or complaints.

## 7.5 Complaints Handling

Complaints handling and enquiries are to be handled by the PC. The PC will nominate an on-site contact to act as the liaison for any complaints. In the event that a member of the public approaches works crews to make an enquiry or complaint the person will be directed to the nominated site contact.

A register of complaints must be developed by the contractor. The register must include the following information:

- Date and time of complaint;
- Name and contact details of complainant;
- Details of complaint; and
- Supporting documentation (where provided).

Where a breach of NSW law or a statutory provision the PC the contractor must notify the relevant authority as soon as possible. The Project Manager must also be notified as soon as possible. Where necessary, the PC or PR will respond to the complainant.

## 7.6 Emergency Contact List

An emergency contact list is to be developed by the contractor prior to construction commencing. An example list is provided in Table 3 below.

**Table 3: Example Emergency Contact List**

<b>Name</b>	<b>Contact Details</b>
Emergency Services: Fire Brigade, Ambulance and Police	000
Nearest Medical Centre	Bourke Street Medical Centre – Shop 3/782 Bourke Street, Waterloo (02) 8399 2060
Nearest Hospital	St Vincent's Hospital 390 Victoria Street, Darlinghurst (02) 8382 111
EPA	(02) 9995 5000
City of Sydney Council	02 9265 9333
Water Authority	13 20 90
Energy Australia	13 34 66
AGL	13 12 45
Waste Disposal and spill clean-up services	To be advised
Neighbours	To be advised
Site Contact (PR)	To be advised
Environmental Consultant (EC)	To be advised
Historical Archaeologist – GML Heritage	
Aboriginal Archaeologist –	
Occupational Hygienist	To be advised
NWS Environment Line	131 555
Archaeological Management and Consulting Group	02 9568 6093 0405 455 869 0411 727 395
Office of Environment and Heritage	02 9995 5000
Metropolitan Local Aboriginal Land Council	02 8394 9666
La Perouse Local Aboriginal Land Council	02 9311 4282

## **8. Work Health and Safety Plan - Soil**

### **8.1 Introduction**

All site work must be undertaken in a controlled and safe manner with due regard to potential hazards, training and safe work practices. The work should comply with WH&S policies specified by the relevant Authorities. It is recommended that the contractor prepares a project-specific environmental management and WH&S plan to supplement the measures presented in this ECSMP.

### **8.2 Personnel and Responsibilities**

Before undertaking works on site, all personnel will be advised of the officer responsible for implementing health and safety procedures. All personnel should read and understand the Work Health and Safety Plan prior to commencing site works. Contractors employed at the site will be responsible for ensuring that their employees are aware of, and comply with the requirements of the safety plan.

The PC is responsible for all on-site activities including handling of fill materials – excavation, stockpiling, segregation, placement of fill, disposal etc.

### **8.3 Hazards at the Site**

#### **8.3.1 Chemical Hazards**

Chemical compounds or substances that may be present on site include asbestos and petroleum hydrocarbons.

The possible risks to site personnel associated with the above analytes include:

- Ingestion of contaminated soil or water;
- Dermal contact with contaminated soil or water; and
- Inhalation of dusts or aerosols containing contaminants.

#### **8.3.2 Physical Hazards**

Potential hazards associated with the works may include but not limited to the following:

- Heat exposure;
- Excavations;
- Buried services;

- Noise;
- Dust;
- Electrical equipment; and
- Heavy equipment and truck operation.

#### **8.4 Safe Work Practices**

Personnel will endeavour, wherever possible, to avoid direct contact with potentially contaminated material. Surface or groundwater should not be ingested or swallowed, and direct skin contact with soil and water should be avoided.

Subject to the site controller's requirements, all personnel on site will be required to wear the following protection at all times:

- Steel-capped boots and high visibility clothing;
- Safety glasses or safety goggles with side shields meeting AS 1337-1992 requirements (as necessary);
- Hard hat meeting AS 1801-1997 requirements; and
- Hearing protection meeting AS 1270-2002 requirements when working around machinery or plant equipment if noise levels exceed exposure standards.

#### **8.5 Asbestos**

When working within fill materials, the possibility of encountering asbestos impacted materials must be considered. Working in asbestos impacted materials carried the following additional PPE to be worn during works involving the handling and/or removal of soils:

- Half-face P1/P2 respirator, rated for asbestos fines; and
- Nitrile gloves.
- Tyvek suits; and
- Boot covers.

In addition to works in identified remediation areas, it is possible that other forms of potential contamination are uncovered during excavation. An occupational hygienist will observe conditions as excavation proceeds (including screening with a PID in the breathing zone) and will advise if specific PPE, and/or other precautionary measures are needed. In this regard, all PPE stated in this section must be retained on site for use when needed.

Action levels for the PID screening in the breathing zone have been established to minimise the potential for exposure to airborne gases and vapours, as follows:

- If PID levels exceed 5ppm, personnel will evacuate to the upwind side of the excavation;
- Workers in the excavations will be required to fit the half-face P1/P2 respirator, rated for volatile organic compounds;

- DP will continue to monitor using the PID to determine if there are increases with depth;
- If sustained PID readings exceed 50 ppm, work will stop and DP will assess the need for increased PPE and/or mechanical ventilation methods.

Excavation, handling, stockpiling, transport etc. of materials containing asbestos should be undertaken by a licensed contractor in accordance with relevant regulatory requirements.

## 8.6 Emergency Response Plan

An essential component of the WHS Plan will involve development of an Emergency Response Plan for all aspects of site works. This will include provisions for the safety of personnel working on site in the event of an emergency situation. Any emergency will be reported immediately to the site office and/or the Site Safety Officer, and the appropriate emergency assistance should be sought by telephoning 000.

The works contractor will be responsible for ensuring that site personnel are aware of the emergency services available and appropriate contact details. A Site Safety Officer must be available on-site during remediation and construction works.

The Emergency Response Plan should be confirmed with the Sydney Swans Limited prior to commencement of construction.

## 9. Environmental Management Plan

### 9.1 Introduction

The contractor should undertake the work with due regard to the minimisation of environmental effects and to meet regulatory and statutory requirements.

The contractor should have in place a Contractors Environmental Management Plan so that work on the site complies with, but not limited to, the following:

- Protection of the Environment Operations Act;
- Contaminated Land Management Act;
- Dangerous Goods Act;
- Construction Safety Act;
- Work Health and Safety Act (WorkCover);

The contractor should also be responsible for the site works complying with the following conditions:

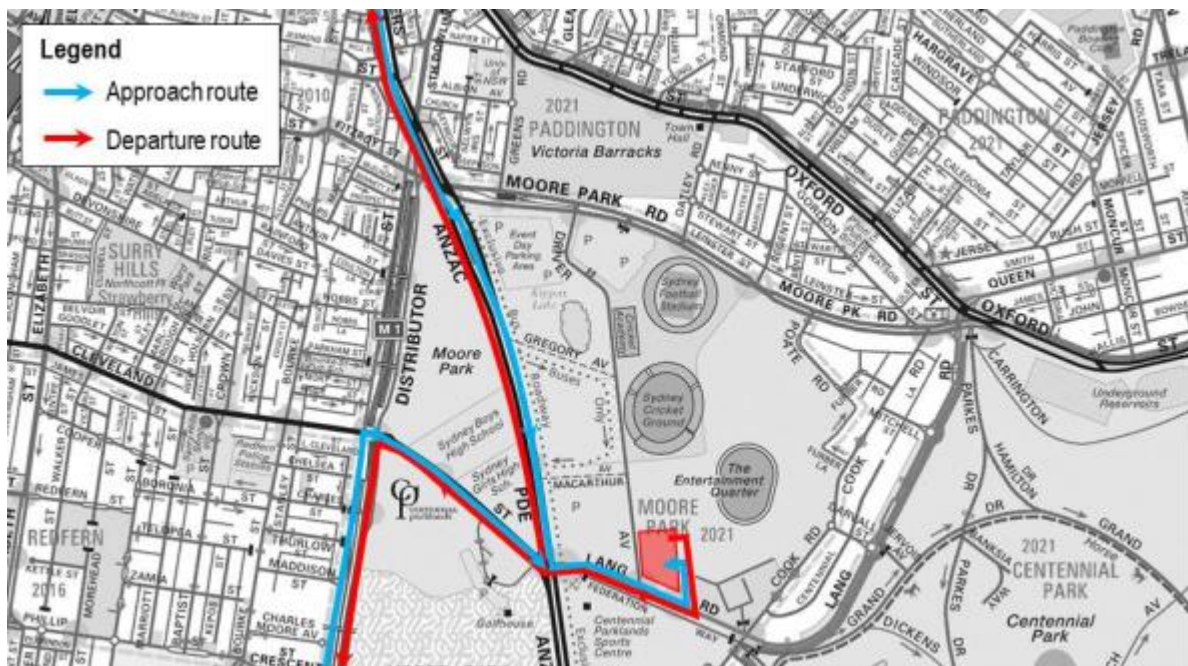
- Wastes generated at the site are disposed in an appropriate manner;
- Fugitive dust leaving the confines of the site is minimised;
- No water containing any suspended matter or contaminants leaves the site in a manner which could pollute the environment;

- Vehicles should be cleaned and secured so that no mud, soil or water are deposited on any public roadways or adjacent areas; and
- Noise and vibration levels at the site boundaries comply with the legislative requirements.

In order to achieve a minimisation of environmental effects, the following measures are recommended, and should be adopted by the appointed contractor.

## 9.2 Traffic Management

All vehicular traffic should use only routes approved by the PR, to and from the work site. If materials are to be disposed of off the site, vehicular traffic should use only approved route. The construction management and traffic plan by GTA includes a figure (replicated in Figure 2 below) of the construction vehicle routes.



**Figure 2: Construction vehicle routes (Source GTA consultants Report N165280)**

All loads should be tarpaulin covered and lightly wetted to minimise the potential for materials or dust to be dropped or deposited outside or within the site.

Each vehicle exiting the site should be inspected for cleanliness before being logged out as clean (wheels and chassis), or hosed down into a wheel wash or wash down bay until designated as clean.

Wheel wash silt residues should be collected periodically, appropriately classified and disposed of off-site returned to the fill area. Such material will be treated as contaminated unless analysis proves otherwise.

Reference to the GTA report must be made for further detail.

### 9.3 Excavations/Stripping

Records of all excavations and stockpile locations should be maintained by the contractor. A site diary should also be maintained to record daily progress, abnormal occurrences, incidents, and truck movements.

No person should be permitted to enter an unsupported excavation where it is more than 1.5 m deep or where it is considered to be unstable, irrespective of depth.

### 9.4 Stormwater Management and Control

Appropriate measures should be taken to minimise the potential for potentially contaminated water to leave the site. Such measures could include:

- Appropriate construction of the stockpile areas (if required), with regular checks for integrity and repairs if/when required;
- Construction of diversion bunds to divert stormwater from stripped areas and stockpiles;
- Provision of sediment traps including geotextiles or hay bales.

Discharge of any waters should meet the consent conditions from the appropriate authority.

Reference should be made to the Landcom publication “Soils and Construction: Volume 1” dated March 2004 (known colloquially as the “Blue Book”) for soil and erosion protection measures

### 9.5 Control of Dust and Odour

Control of dust and odour during the course of the construction works should be maintained by the contractor and may include, but not necessarily be limited to, the following:

- The use of a water cart, as and when appropriate, to eliminate wind-blown dust;
- Use of sprays/sprinklers to prevent dust blow from stockpiles;
- Covering of stockpiles with plastic sheeting or geotextile membranes;
- Restriction of stockpile heights to 2 m above surrounding site level;
- Stockpiles must be located outside the zone of influence of retaining walls, which in the absence of a statement from the design engineer, must be considered to be a horizontal distance set-back from the crest of the wall at least twice the height of the retaining wall;
- Ceasing works during periods of inclement weather such as high winds or heavy rain; and
- Regular checking of the fugitive dust and odour issues. Undertake immediate remediation measures to rectify any cases of excessive dust or odour.

## 9.6 Noise Control

Noise should be restricted to reasonable levels. All plant and machinery used on site should not breach statutory noise levels. Working hours will be restricted to those specified by the consent authority.

Reference to the GHD report should be made for specific noise control monitoring and mitigation measures.

## 9.7 Vibration Control

Vibrations are not expected to be excessive during bulk excavation as the depth to bedrock materials that would require excavation methods requiring significant equipment is below the bulk excavation level. Nonetheless, during excavation it will be necessary to use appropriate methods and equipment to keep ground vibration within acceptable limits. The standards listed below are considered appropriate documents on which to base the management of ground vibration:

- German Standard DIN4150-3-1999 "Structural vibration – effects of vibration on structures"; and
- Australian Standard AS2670.2-1990 "Evaluation of human exposure to whole-body vibrations – continuous and shock induced vibrations in buildings (1-80 Hz)".

From current information it is considered that the structures adjacent to the site can withstand vibration levels which are higher than those required to maintain the comfort of their occupants. A human comfort criterion is therefore indicated and the vector sum peak particle velocity (VSPPV) is proposed as the control parameter. It is recommended that a Provisional Allowed Vibration Limit of 5.0 mm/sec (VSPPV) be set during normal working hours, at foundation level of the potentially affected building/s.

Vibration monitoring should be carried out where vibrations levels are required to be measured.

The minimum safe distances outlined in the GHD report must be enforced.

## 9.8 Hazard Identification and Control

Hazard identification and control, in relation to in ground works, will be managed according to the Unexpected Finds Protocol in Section 12.

## 10. Soil and Water Management Plan

### 10.1 Introduction

The following procedures are recommended during the handling of soils. Contingency measures for the management of soils potentially impacted with contaminants (other than asbestos) are also provided.

Given the presence of acidic soils at the site, excavated natural soils will require management either in the form of on-site or off-site treatment following excavation and validation of the asbestos-impacted fill. DP recommends that the natural acidic soils are managed following removal of the asbestos-impacted fill.

Specific reference should be made to the TTW report for details about Soil and Water Management measures to be implemented.

### 10.2 Temporary Stockpiling of Soils

The following procedure is recommended for temporary stockpiling of segregated impacted soils or excess soils for off-site disposal (if required):

- DP to nominate designated stockpile area in consultation with the PC;
- The proposed stockpile area should be inspected and tested to confirm the absence of deleterious or potentially contaminated materials at the surface prior to the placement of materials;
- An impermeable membrane such as plastic sheeting should be provided at the surface prior to stockpiling. If this is not carried out then validation of the footprint of the stockpile will be required once removed;
- Stockpile areas should be demarcated (i.e. fence/pickets and hazard tape) to prevent access, and clearly delineate the stockpiles;
- Stockpiles that are observed to contain or potentially contain contaminated materials should be lightly conditioned by sprinkler and covered by plastic or similar to prevent dust blow (refer to Section 10.5);
- Measures should be taken to prevent the migration of stockpile materials (i.e. perimeter bunds, hay bales, silt fences, etc.);
- A record of stockpile locations, dimensions, descriptions, environmental controls, etc. should be maintained by the contractor; and
- The stockpiles may be required to remain in place for at least one to two weeks to allow sampling and laboratory testing; to confirm classification and disposal/re-use options.

Excavation, handling, transport etc. of contaminated materials should be undertaken by the licensed contractor with reference to the appropriate regulatory guidelines.

### 10.3 Fill/Stockpile Classification and Disposal/Re-use Options

Segregated impacted stockpiles containing potentially contaminated materials (or excess materials following excavation) must be assessed for reuse on site and / or classified with reference to the NSW EPA Waste Classification Guidelines for possible re-use or disposal purposes.

Representative samples will be collected from the segregated fill stockpiles, and analysed for a suite of potential chemical contaminants. The frequency of samples will depend on the size and composition/characteristics of the stockpile.

### 10.4 Loading and Transport of Contaminated Materials

During the course of earthworks and subsequent classification, filling will require off-site disposal.

Removal of waste materials from the site should only be carried out by a licensed contractor holding appropriate licences, consents and approvals from NSW EPA and/or other Authorities to transport and dispose the waste materials according to the classification guidelines.

In the event of contaminated materials being identified, Transport of contaminated material off the site should be via a clearly demarcated haul route and this route exclusively should be used for entry and egress of vehicles used to haul identified contaminated materials within and away from the site.

Details of all contaminated materials removed from the site should be documented by the contractor with copies of weighbridge slips, trip tickets and consignment disposal confirmation (where appropriate). In addition, written confirmation from the receiving landfill that it is able to accept the waste must be provided. Such information should be provided to DP for reporting purposes. A site log/tracking sheets should be maintained by the PC and the asbestos contractor for stockpiles (numbered locations), to enable the tracking of disposed loads against on-site origin and location of the materials and corresponding (validation) sample numbers.

Measures should be implemented to minimise the potential for contaminated material to be spilled onto public roadways or tracked off-site on vehicle wheels. Such measures could include the deployment of a vehicle washing/cleaning facility (if required), which could be placed at a location before the egress point of the site. The facility should be able to handle all vehicles and plant operating on site (if required). Residue from the cleaning facility will be deemed contaminated unless shown by validation to be within the adopted landuse criteria. If the residue is to be re-used as fill on-site it should be assessed by a geotechnical engineer.

The proposed waste transport route should be notified to the local Council and truck dispatch should be logged and recorded by the contractor for each load leaving the site. The contractor's waste tracking procedure should be confirmed by DP prior to remediation works.

## 10.5 Imported / Exported Fill

Materials which are imported onto the site for grading or exported from the site for use on another site, should be classified as Virgin Excavated Natural Materials (VENM) or Excavated Natural Material (ENM), and an appropriate report must be made available to the DP prior to the importation of the material.

If an appropriate VENM or ENM assessment report cannot be provided by the supplier, the VENM or the ENM should be assessed with reference to the NSW EPA Waste Classification Guidelines and the Excavated Natural Material Order and analysed for the following:

- Total recoverable hydrocarbons (TRH);
- Benzene, toluene, ethylbenzene and xylene (BTEX);
- Polycyclic aromatic hydrocarbons (PAHs);
- Organochlorine pesticides (OCP);
- Polychlorinated biphenyls (PCB);
- Heavy Metals (arsenic, cadmium, chromium, copper, lead, nickel, mercury, and zinc);
- pH, electrical conductivity;
- Asbestos; and
- Percentage foreign material (NSW RTA Test Method T276).

## 10.6 Excavation

Excavation should proceed as part of the general bulk earthworks with all excavated fill disposed off-site to a licensed facility under an assigned waste classification.

Based on the depth of the proposed excavation (3.0 m bgl), and the recorded depths of groundwater dewatering is not expected. Notwithstanding these levels, seepage may occur during excavation, therefore dewatering may need to be undertaken as part of the excavation works (refer Section 11.8).

## 10.7 Groundwater Management

Water entering the site, particularly the basement excavation is expected to enter via rainfall, site activities and possibly groundwater seepage if elevated groundwater occurs following prolonged wet weather conditions.

Monitoring of the water inflows during the initial phases of excavation should be carried out to confirm the source of water and discharge quantities. The following dewatering risk management methods are recommended for the project:

- Timing soil excavation to follow periods of no rain to minimise the amount of dewatering at any one time;

- Monitoring any groundwater inflow rates into excavations and groundwater levels around the excavations to assess the likely impact on groundwater level; and
- Monitoring groundwater and water quality within the excavation and treating groundwater prior to discharge from the site (see below).

All water collected on-site should be either treated on site through holding tanks and filtration processes and tested before it is disposed of to the stormwater or sewer (after obtaining appropriate licences / approvals) or removed from site by a licensed contractor. Approval from the relevant authority (either Council or Sydney Water) will be required prior to off-site disposal into their system (stormwater or sewer). In order to assess the acceptability of the water for disposal, the analytical data should be compared against Groundwater Investigation Levels (GILs) sourced from the National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended in 2013)* (NEPC, 2013) which is in turn based on:

- ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality; and
- NHMRC (2011), *National water quality management strategy, Australian drinking water guidelines*, National Health and Medical Research Council and National Resource Management Ministerial Council, Australia.

Water cannot be reinjected into the ground without specific approval from the relevant government authority.

## 11. Unexpected Finds Protocol

Given the history of the site it is possible that unexpected structures and/or soil or groundwater impacts could exist, and these may not be identified until the site is opened up for inspection (i.e. demolition and removal of concrete slabs), remediation, civil or construction works are undertaken.

The nature of any additional hazards which may be present at the site are generally detectable initially through visual or olfactory means, for example:

- Asbestos impacted soils (as observable fragments of potential asbestos in the soil); or
- Drums or other underground tanks / pits / structures; or
- Unusual odours or staining in the soil.

All site personnel are to be inducted into their responsibilities under this Unexpected Finds Protocol (UFP), which should be included or referenced in the Contractors Site Management Plan.

All site personnel are required to report unexpected signs of environmental concern to the Site Manager if observed during the course of their works (see above examples).

Should signs of concern be observed, the Site Manager, as soon as practical, will:

- Stop work in the affected area and ensure the area is barricaded to prevent unauthorised access;
- Notify authorities needed to obtain emergency response for any health or environmental concerns (e.g. fire brigade);

- Notify the PR of the occurrence;
- Notify any of the authorities that the Contractor is legally/ contractually required to notify (e.g. EPA, Council); and
- Notify the Environmental Consultant.

Following the immediate response in the UFP a contingency plan is to be implemented, as detailed in the following sub-sections.

### **11.1 Contingency Plan - General**

The general contingency plan under the UFP is as follows:

- The EC will inspect the reported or observed find and determine the nature of the issue, whether it comprises an area of environmental concern (AEC), and the appropriate approach to assessing or (if appropriate) managing the issue;
- The EC will undertake an assessment considered necessary to determine the management strategy for the AEC;
- If contamination is found and remediation action is considered necessary, a remediation strategy for the AEC will be prepared by the EC;
- Development of a Remediation Action Plan may be required;
- The Contractor will implement the proposed remediation strategy (if required) in accordance with the above advice and any approvals/ requirements of the Consent Authority; and
- The EC will validate the completion of the remediation works.

### **11.2 Unexpected UST Finds Protocol**

In the event that a UST is unexpectedly discovered during site works the following procedure shall be adopted.

- Works in the area should cease and appropriate notifications given as above;
- Prior to the removal of a UST, any residual product (liquid/vapour) will be removed from the tank and disposed of appropriately in accordance with Australian Standard (AS 4976 – 2008 *The Removal and Disposal of Petroleum Underground Storage Tanks*). Records of disposal should be provided for the validation report. Testing of the contents by the EC may be required to determine the nature of the contents;
- The UST will be exposed and examined for potential leaks and general condition. The EC shall be engaged to inspect the UST prior to and during its removal;
- The UST will be removed and the structures disposed of by a qualified contractor in accordance with AS 4976 – 2008. Disposal records should be provided to the EC;
- All associated infrastructure (i.e. the remnants including fuel lines etc) will be removed and disposed in a similar manner, if present;

- Excavate and stockpile impacted materials (based on field observations to the practical extent possible based on structural engineers recommendations) and materials backfilled around the tank for classification;
- Collect validation samples as advised by the EC;
- Collect validation samples below the fuel lines (following removal);
- The validation samples will be analysed at a NATA accredited laboratory for the following analytical scope; Total recoverable hydrocarbons (TRH), polycyclic aromatic hydrocarbons (PAH), monocyclic aromatic hydrocarbons (benzene, toluene, ethylbenzene and xylenes – BTEX), lead and volatile organic compounds (VOC). Additional analysis may be required as advised by the EC based on the contents of the tank;
- Excavated material from the tank pits/fuel line will be placed into a stockpile for assessment for potential reuse and/or waste classification as appropriate;
- If water is encountered in the pit, a grab sample will be collected. The grab sample will be analysed for contaminants of concern as identified by the EC; and
- A UPSS validation report will be prepared by a suitably qualified environmental consultant in accordance with the *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008 (UPSS Regulation)* under the POEO Act 1997.

### 11.3 Unexpected Finds Protocol - Asbestos

It is possible that asbestos-based materials may be uncovered. In the event that this occurs the following unexpected asbestos finds protocol has been established:

- Upon discovery of suspected asbestos containing material, the PR is to be notified and the affected area closed off by the use of barrier tape and warning signs. Warning signs shall be specific to asbestos hazards and shall comply with the Australian Standard 1319-1994 – Safety Signs for the occupational environment;
- An occupational hygienist or EC with appropriate competency to NEPC (2013) is to be notified to inspect the area and confirm the presence of asbestos (and type of asbestos) and determine extent of investigation and/or remediation works to be undertaken. A report detailing this information will be compiled by the occupational hygienist or EC and provided to the PR;
- Should asbestos impacted soils require off-site disposal, the impacted soil will be stockpiled for waste classification purposes (including sampling and chemical analysis) and will be disposed of, as a minimum, as asbestos waste at an appropriately licensed solid waste landfill site. In dry and windy conditions the stockpile will be lightly wetted and covered with plastic sheet whilst awaiting disposal;
- All work associated with asbestos in soil will be undertaken by a contractor holding a class AS1 Licence and all workers working in the asbestos impacted zone must meet the following minimum PPE requirement (unless otherwise advised by the hygienist):
  - Steel-capped lace-less boots;
  - Hard hat meeting AS1801-1981 and AS/NZS 1801:1997/Amdt 1:1999 requirements;
  - High visibility clothing;

- Half-face P2 rated respirator or similar;
- Disposable full length body coveralls with elasticated hood and cuffs (Tyvek suit or equivalent); and
- Gloves.
- Monitoring for airborne asbestos fibres is to be carried out during the soil excavation, if deemed necessary by the Occupational Hygienist. Asbestos air monitoring will be undertaken in accordance with *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2<sup>nd</sup> Edition* [NOHSC: 3003 (2005)] and sampling density and locations will be determined by the Occupational Hygienist. All filters will be submitted to a NATA accredited laboratory for analysis. Air samples will be collected from the breathing zone of a person, over a minimum of four hours duration;
- At the completion of the excavation, a clearance inspection is to be carried out and written certification is to be provided by the occupational hygienist that the area is safe to be accessed and worked. Clearance will include soil samples and asbestos analysis;
- Details of the incident are to be recorded in the site record system; and
- The area may be reopened for further excavation or construction work.

#### 11.4 Contingency Plan – Waste Fill

In the event that an unexpected waste fill is uncovered, the following will procedure will be followed:

- Work in the area of the unexpected find is to be stopped and the site manager is to be notified;
- The SM will inspect the unexpected find, confirm the stop work area and arrange for the impacted area to be appropriately barricaded;
- The SM will engage an environmental consultant (or occupational hygienist in the case of asbestos) to inspect the unexpected find and provide advice on appropriate actions. Ideally the environmental consultant will have previously worked at the site and will have ready access to previous investigation reports for the site;
- The environmental consultant will provide written advice on their recommendations to the SM. These recommendations may include assessment, management and/ or remediation. The recommendations may include more than one option for actions which can be undertaken to address the unexpected find;
- The SM will determine the option to be implemented in consultation with Cbus and the environmental consultant;
- The SM will notify any authorities requiring notification, and obtain any required approvals;
- The SM will implement the strategy, including engaging the environmental consultant (or occupational hygienist in the case of asbestos) to validate its implementation;
- The environmental consultant will provide a report recording the strategy implemented and the outcome; and
- The SM will retain a copy of the environmental consultants (or occupational hygienist in the case of asbestos) advice and report for future record.

## 11.5 Contingency Plan – Underground Services

In the event that unexpected underground services are uncovered, the following procedure will be followed:

- Work in the area of the unexpected find is to be stopped and the site manager is to be notified;
- The SM will inspect the buried services to confirm if these are live or disused services and whether they contain hazardous materials (e.g. asbestos);
- If required (e.g. active services) the SM will confirm the stop work area and arrange for the impacted area to be appropriately barricaded;
- The SM will engage an environmental consultant (or occupational hygienist in the case of asbestos) to inspect the unexpected find and provide advice on appropriate actions. Ideally the environmental consultant will have previously worked at the site and will have ready access to previous investigation reports for the site;
- For active services the relevant authority will be notified;
- The SM will determine the option to be implemented in consultation with Cbus and the environmental consultant;
- The SM will notify any authorities requiring notification, and obtain any required approvals;
- The SM will implement the strategy, including engaging the environmental consultant (or occupational hygienist in the case of asbestos) to validate its implementation;
- The environmental consultant will provide a report recording the strategy implemented and the outcome; and
- The SM will retain a copy of the environmental consultants (or occupational hygienist in the case of asbestos) advice and report for future record.

## 12. Reporting

The following documentation should be maintained according to the requirements of this ECSMP.

### 12.1 Documentation Requirements

The following documents are to be kept on record by the relevant parties and provided to APP and DP on request.

- Transportation Record: comprising a record of all truck-loads of soil entering or leaving the site, including truck identification (e.g. registration number), date, time, load characteristics (i.e. classification, on-site source, destination);
- Written confirmation from the receiving landfill that they can legally receive the waste.
- Disposal dockets: for any soil materials disposed off-site. The contractor to hold records of: transportation records, spoil source, spoil disposal location and receipt provided by the receiving waste facility;

- Imported materials records: records for any soil imported onto the site, including source site, classification reports, inspection records of soil upon receipt at site and transportation records;
- Records relating to any unexpected finds and contingency plans implemented;
- Incident Reports: any WHS or Environmental Incidents which occur during the works will be documented and PR and the appropriate regulatory authority will be informed in accordance with regulatory requirements;
- Laboratory certificates and chain-of-custody documentation for all relevant samples;
- Letters/ memos as required to provide instruction or information to PR and the PC ;
- Water monitoring and disposal records (if applicable);
- Noise monitoring records.
- Vibration monitoring records.
- Odour monitoring records (if applicable);
- Airborne asbestos monitoring records;
- Waste classification documentation:
- Asbestos clearance records comprising visual inspection and validation sampling and analysis documentation (if applicable); and
- Inspections records from the Environmental Consultant and Hygienist.

### 13. Conclusion

This ECSMP provides the objectives, methods and procedures by which the soil and groundwater aspects of the development will being an acceptable manner, with minimal environmental impact, to a condition suitable for the proposed development and commercial land use.

Prior to commencement of construction works, it is recommended that a site inception meeting is held between the main contractor, PR, geotechnical and environmental consultant, and the archaeologist to discuss the excavation process and to identify the tasks and responsibilities for the remediation and management of the site.

### 14. Limitations

Douglas Partners (DP) has prepared this plan for this project at Royal Hall of Industries, 1 Driver Avenue, Moore Park in accordance with DP's proposal dated 25 March 2019 and acceptance received from Mr Thomas Gould of APP Corporation Ltd on 3 April 2019 behalf of the Sydney Swans Limited. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of the Sydney Swans Limited, and their agents, for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at

its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

DP's advice is based upon the conditions encountered during previous investigations. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached notes and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the geotechnical, environmental or groundwater components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

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**Douglas Partners Pty Ltd**

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## Appendix A

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About This Report

# About this Report

# Douglas Partners



## Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

## Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

## Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

## Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;

- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

## Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

# *About this Report*

## **Site Anomalies**

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

## **Information for Contractual Purposes**

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

## **Site Inspection**

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.