Hazardous Materials Management Plan

Project Details	
Project Name:	Barangaroo Cutaway Cultural Facility
Project Number:	200290
Project Location:	1 Merriman St, Barangaroo NSW 2000
Client:	Infrastructure NSW
Name of principal contractor:	FDC Construction (NSW) Pty Limited
Company address:	22-24 Junction Street, Forest Lodge NSW 2037
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Revision Date	REVISION DESCRIPTION	PM's INITIALS (revision approval)
08/02/2024	Revision A – Original Issue	PC
23/04/2024	Revision B – Amended to Suit 5.6 Preliminaries	JK
26/04/2024	Revision C1 – Table 1 – hygienist review information updated unexpected finds.	HP

CONTENTS

1 Introduction

a) A **hazardous material** is any item or agent (biological, chemical, radiological, and/or physical), which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

b) **Hazardous materials professionals** are responsible for and properly qualified to manage such materials. This includes managing and/or advising other managers on hazardous materials at any point in their life cycle, from process planning and development of new products, through manufacture, distribution and use; and disposal, clean-up and remediation.

c) The purpose of this Management Plan is to highlight FDC's compliance to all requirements stated within these documents. Procedures, policies and safeguards set out within the plan are in accordance with recommendations for the safe removal of the hazardous materials. Through stringent compliance FDC can ensure that all of our HAZMAT removal projects are conducted in a professional and safe manner.

d) The following plan will set out in details all procedures relating to this HAZMAT removal project including, site set up, work area set up, removal, decontamination, personal protection equipment, disposal, air monitoring and site clearance.

e) PRA exposure control plan is to be used in the implantation of works in and around hazardous materials

2 Abbreviations

Abbreviations	Expanded text
ACM	Asbestos Containing Material
ADG	Australian Code for the Transport of Dangerous Goods by Road or Rail
ARCP	Asbestos Removal Control Plan
CEMP	Construction Environmental Management Plan
Chemical	Is a distinct compound or substance, especially one which has been artificially prepared or purified. A chemical can be a solid, liquid or gas.
Dangerous Good	Is a substance that presents an immediate threat to safety (e.g., through fire or explosion), health (e.g., toxicity) or property if spilled or involved in some sort of accident or emergency situation. Dangerous goods are allocated a dangerous goods classification under the ADG Code:
CHMMP	Construction Hazardous Material Management Plan
Decanting	Is the process of transferring a hazardous substance from one container to another - normally from a larger drum to a smaller container for use on the job
Hazardous Material	Are substances that have the potential to pose a significant risk to the health and safety of people or the environment.
Hazardous Substance	Is any substance present in the workplace, which is on the List of Designated Hazardous Substances [NOHSC:10005] or may be classified as such using the Approved Criteria for Classifying Hazardous Substances [NOHSC:10008].

HAZMAT	Pre-Demolition Hazardous Material Survey
PCB	**Polychlorinated biphenyls (PCBs):** Any of a family of industrial compounds produced by chlorination of biphenyl, noted primarily as an environmental pollutant that accumulates in animal tissue with resultant pathogenic and teratogenic effects
SDS	**Safety Data Sheet (SDS):** Is a document provided by the supplier or manufacturer of a hazardous substance, and by specialist service providers, that specifies the particular hazardous substance, how it shall be stored, handled, used and disposed of, particular precautions that should be taken, and the method of first aid treatment. SDS includes
SMF	**Synthetic Mineral Fibres:** Fibres such as mineral wool (rockwool and slagwool), glasswool (including superfine glass fibre) and ceramic fibres.

3 Hazardous Material Survey Plan

The Hazardous Exposure Survey prepared by PRA Pty Ltd dated April 2024, identified No asbestos containing material (ACMs), No Lead and Synthetic Mineral Fibres (SMF) on the Cutaway project site. See appendix A

4 Scope

a) The scope of this document covers the following hazardous materials:

i. Bonded Asbestos Materials;
ii. Friable Asbestos Materials;
iii. Synthetic Mineral Fibre (SMF) Materials;
iv. Lead Based Paint;
v. PCB's.
vi. Silca dust
vii. Sandstone

5 Asbestos

a) Asbestos poses a risk to health whenever fibres become airborne in close proximity to people. Accordingly, the best preventative measure to avoid such exposure is for high risk materials to be removed. Due to the inherent risk involved in removing an unstable and highly hazardous material, remediation works shall be completed in accordance with Legal Register including:

i. Guide Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC: 3003(2005)];
ii. Code of Practice – How to Manage and Control Asbestos in the Workplace 2016;
iii. Code of Practice –How to Safely Remove Regulation 2011;
iv. Local Acts and Regulations.

b) Compliance to the procedures stated within these documents is vital for the safe removal of any asbestos material.

6 Hazardous Materials Works Plan

a) The following sections relate to the procedures and precautions required by contractors involved in the removal of hazardous building materials from the building. This document does

not cover all procedures and precautions required for the proposed demolition and refurbishment works i.e. the safe operation of machinery, site safety and other general work site requirements etc.

6.1 General Site Set Up for the Removal of Hazardous Building Materials.

a) Prior to the commencement of removal activities, the following procedures are to be observed:

i. Appropriate Safe Work Method Statements and Site and Environmental Risk Assessments are to be prepared by all parties involved and followed in accordance with site safety procedures.
ii. Establish an exclusion zone for the works area(s) to prevent access to the area by personnel not involved in the works.
iii. Establish area for decontamination facilities (area for wetting down and disposal of PPE).
iv. Establish area for wash down (decontamination) of equipment.
v. All appropriate signage is to be erected within and surrounding the exclusion zone, including appropriate warning signs.

6.2 Requirements for the Removal of Asbestos Containing Materials

6.2.1 General requirements for the removal of asbestos containing materials.

a) All identified occurrences of asbestos materials outlined within Hibbs and Associates Report are considered to be ***Bonded and Friable Asbestos.*** Prior to the commencement of asbestos removal activities, the following procedures are to be observed.

i. All bonded asbestos removal work is to be undertaken by an appropriately qualified AS1 or AS2 licensed contractor.
ii. An exclusion zone (a minimum of 10m where practicable) from the asbestos containing areas is to be established, barricaded and access restricted to essential personnel.
iii. Establish area decontamination facilities (area for wetting down and disposal of PPE).
iv. Establish area for wash down (decontamination) of equipment.
v. All appropriate signage is to be erected, including appropriate asbestos warning signs.
vi. Remove all asbestos materials are to be double bagged/wrapped in 200µm thick plastic and placed in appropriately lined binds/trucks and disposed of as asbestos waste.
vii. 200µm thick drop sheets are to be used on floor surfaces immediately beneath the asbestos removal area.
viii. Precautions should be taken to prevent slip and trip hazards.
ix. Care is to be taken to remove all asbestos cement sheeting debris that remains around nail heads.
x. All dust and decontaminated debris on all horizontal surfaces are to be vacuumed clean with a vacuum fitted with a HEPA filter and subsequently wet wiped.
xi. All remaining timber/metal framework is to be sprayed with a dilute PVA emulsion.
xii. All used drop sheets are also to be disposed of as asbestos waste.

6.2.2 Removal of asbestos cement debris

a) All identified occurrence of asbestos cement debris is to be collected via the process of “sparrow picking” in conjunction with hand raking.
b) All allocated asbestos cement debris are to be double bagged / wrapped in 200µm thick plastic and placed in appropriately lined bins/trucks.

6.2.3 Airborne asbestos monitoring & clearance inspection

a) NATA accredited asbestos air monitoring is required during all asbestos decontamination works.
b) If the results of the asbestos air monitoring during the asbestos decontamination works indicate that airborne asbestos levels are equal to or exceed 0.02 fibres/mL, the Decontamination Contractor shall cease work immediately and the work practice shall be reviewed with appropriate measures taken to rectify the problems.
c) Following all asbestos decontamination activities, an Asbestos Clearance Assessment will be carried out. The Asbestos Clearance Assessment will involve:
    i. A visual inspection to check that all visually identified asbestos containing materials have been removed to a satisfactory industry standard.
    ii. Subsequent to satisfactory inspection results an Asbestos Clearance Certificate will be issued and normal activities will be able to proceed within designated area.

6.3 Lead Dust Removal

a) The following procedures are to be followed in the removal of lead dust from the building:
    i. All workers to wear appropriate Personal Protective Equipment (PPE), including but not limited to respiratory protection, disposal overalls, safety shoes, gloves, and hard hat.
    ii. All penetrations to the contaminated areas containing lead dust are to be sealed to prevent the movement/transport of lead dust contamination.
    iii. The contaminated areas containing lead dust are to be vacuumed clean with a HEPA filter vacuum and then wet-wiped clean accordingly.
    iv. Use established area for decontamination facilities.
    v. Use established area for wash down (decontamination) of equipment.
    vi. Ensure appropriate personal lead hygiene precautions are observed, i.e. washing of face and hands after the lead removal activities.

6.4 Lead Paint Removal

a) Paints that contain more than 1.0% of lead content are generally considered to be lead containing paints as per Australian Standards AS 4361.2 – Guide to Lead Paint management, Part 2: Residential and Commercial Buildings

b) The following procedures are to be followed in the removal of lead paint from each of the above-mentioned properties:
    i. Place disposable polyethylene sheets below the work area. If working on scaffolding, tie a sheet underneath to catch falling paint debris.
    ii. Work in such a way to minimize debris and fume generation and the transfer of debris from the immediate work area. Avoid working in windy conditions as it can cause paint debris to be blown away and contaminate adjacent areas.
    iii. P2 respirators, disposable coveralls and gloves need to be worn during the removal activities. Ensure these items are disposed of when leaving the work area.
    iv. Remove accumulated paint debris frequently to minimize spreading from the immediate work area. Use a vacuum fitted the HEPA filter for particular removal.
    v. After vacuum removal there are still likely to be traces of lead dust remaining. Remove lead traces by wiping surfaces with a damp cloth. Dispose of the cloth after use.
    vi. Use established area for decontamination facilities.
    vii. Use established area for wash down (decontamination) of equipment.
    viii. Ensure appropriate personal lead hygiene precautions are observed, i.e. washing of face and hands after the lead removal activities.

6.5 Airborne Lead Monitoring & Clearance Inspection(s)

a) Airborne Lead Monitoring is to be conducted during all Lead Dust and Lead Paint removal works by a suitably qualified consultant.
b) If the results of the airborne Lead levels exceed 0.15mg/m3 the Contractor shall cease work, the work practices shall be reviewed, and appropriate measures will be taken to rectify the problems.
c) Following Lead Dust and Lead Paint activities, a suitable qualified consultant is to conduct a clearance assessment. The clearance assessment will involve an inspection of the remaining surfaces to check that all identified Lead Dust and Lead Paints have been removed to a satisfactory industry standard.
d) NOTE: As part of the clearance assessment for Lead Dust, surface dust sampling should be conducted to confirm inspection results. The acceptance criteria for lead loading as outlined in Section 5.6 of Australian AS 4361.2-1998. Guide to Lead Paint Management Part 2.
e) Following satisfactory inspection, surface sampling (if requested) and monitoring results, a Lead Dust or Lead Paint Clearance Certificate will be issued.

6.6 Removal of Materials Containing Synthetic Mineral Fibres (SMF)

Synthetic mineral fibres (SMF) are used extensively for insulation in building walls and ceilings as well as on items such as air-conditioning duct work. SMF materials should be removed if damaged or in poor condition and prior to refurbishment or demolition works if they are to be distributed as part of that work.

PPE such as P2 dust masks (combination of disposable or non-disposable and half-face & full-face) and coveralls if required, depending on the state of the material, will be provided to workers and worn when insulation is being removed during the demolition process and dust will be suppressed by damping down. Suspected SMF materials were identified in various forms throughout the site. Full details of all identified SMF materials are provided in the Hazardous Materials Survey.

Removal of SMF should be carried out in accordance with the current requirements of the legislation and the NOHSC documentation, these being:

- *Safe Management of Synthetic Fibres (SMF) – Glasswool And Rockwool (SafeWork NSW-1 May 2015);*
- *National Standard for Synthetic Mineral Fibres [NOHSC:1004(1990)];*
- *National Code for Practice for the Safe Use of Synthetic Mineral Fibres [NOHSC:2006 (1990)]; and*
- *Guidance Note on the Membrane Filter Method for the Estimation of Airborne Synthetic Mineral Fibres [NOHSC:3006(1989)].*

6.7 Removal of Materials Containing Polychlorinated Biphenyls (PCBs)

Workers can be exposed to Polychlorinated Biphenyls (PCBs) when dismantling electrical capacitors and transformers or when cleaning up spills and leaks. Appropriate control measures will be implemented when handling damaged capacitors to ensure that any spillage does not contact workers and is appropriately cleaned up and disposed of. Any equipment or parts containing PCBs will be placed in a polyethylene or suitable bag, and then placed into a marked sealable metal container. If PCBs cannot be transported immediately for disposal, all containers will be stored in a protected area which prevents any discharge of PCBs to the environment.

There were no fluorescent light fittings likely to contain PCB capacitors sighted during the time of the survey.

Where PCB containing capacitors are found, they should be handled and/ or disposed of in accordance with the *PCB Chemical Control Order In Relation to Materials and Wastes Containing Polychlorinated Biphenyl, 1997*, issued by the Environmental Protection Authority of NSW and the PCB Management Plan issued by ANZECC.

6.8 Petroleum, oil, lubricants

A 100L drumsmart container containing 2 x 20L drums of unleaded petrol and 2 x 20L drums of diesel will be stored at site in portable, double wall self-bunded shipping container in accordance with AS/NZ 4452:1997 – The Storage and Handling of Toxic Substances. The tank shall be inspection monthly or more frequently as deemed necessary. Any release of hazardous materials will be reported immediately, and appropriate measures will be taken to remediate the situation. Delivery records will be kept on site for examination or reference purposes if required.

The site is elevated above the surrounding floodplain and as such is free from flood risk.

6.9 Acid sulphate soils

Acid Sulfate Soils (ASS) is a common name given to naturally occurring sediments and soils containing iron sulphides (generally as iron sulphide or iron disulphide). These soil profiles are typically located in coastal, low lying alluvial or estuarine areas such as mangroves, salt marshes, coastal rivers and creeks, estuaries, tidal lakes and coastal floodplains where historical iron rich sediment deposition in the presence of a sulphate source (commonly salt water), organic matter and microbial action over time has resulted in the formation of particular environmental conditions. ASSs are predominantly encountered in areas where the soil profile has an elevation of less than 5 m Australian Height Datum (AHD) and may be found close to the ground level or at depth in the soil profile where continued deposition actions have resulted in raising of the ground levels.

Changes in environmental conditions which result in the exposure of these materials to air, via excavation or drainage of subsurface soils, can lead to the reaction of the iron sulphides with oxygen, causing the generation of sulfuric acid.

This may result in significant environmental and infrastructure damage if the produced acid is spread by groundwater or surface water. Neutralisation techniques can be used to treat ASS

by the addition of chemicals that react with the produced acid to ensure that acid is not released from the treated material. For the purposes of this plan, if acid sulfate soils are encountered all treatment is to be done in accordance with the Acid Sulfate Soils Management Plan located within the Detailed Site Investigation for Contamination Far North Coast Schools project Kingscliff Public School, 12 Orient Street, Kingscliff NSW 2487, dated August 2001 and prepared by Douglas Partners.

6.10 Chemical storage

Correct storage of hazardous materials must consider:

- All relevant Australian Standards;
- For liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and
- The Environment Protection Manual for Authorised Officers: Bunding and Spill Management, technical bulletin (Environment Protection Authority, 1997). In the event of an inconsistency between the requirements listed from a) to c)

above, the most stringent requirement shall prevail to the extent of the inconsistency.

In addition to this;

- Hazardous materials shall be stored in a secure, limited access area until disposal;
- Storage is as per SDS recommendation;
- The storage area and bunding should be constructed as per Australian Standard AS1940;
- Incompatible hazardous materials must not be stored together;
- Appropriate first aid equipment must be

available. Main hazardous substances that will

be used on site are

- Fuel;
- Hydraulic oil; and
- Machine grease.

A hazardous chemical storage cabinet will be used to store chemicals prior to usage.

6.11 Chemical clean up

If necessary, enact emergency procedures If the spill threatens the safety or health of people or creates a fire hazard then the site emergency procedure shall be followed. Where a chemical spill occurs, consult the SDS for spill procedures. If the SDS indicates requirement for containment and clean up then the following steps should also be considered

Stop the source and spread of the spill if safe to do so

- Check for danger;
- Prevent the spill from getting larger (turn off valves, block damaged tanks or pipes); and
- Use any suitable material or equipment to confine the spill by “damming it off” (e.g. use available spill response equipment such as booms or absorbent or if unavailable then use soil or other suitable material).

Clean up the spill

Once the spill has been contained, retrieve as much of the spilled liquid as possible and place in an appropriate onsite container (e.g. 20L drum). The liquid should then be either re-used or disposed of in an appropriate manner.

Absorb remaining spill with absorbent material and place used absorbent in the appropriate waste bin and replenish equipment used from Spill Response Kit.

Report the spill

Report and investigate all spills to the Site Supervisor.

6.12 Disposal

The transport and disposals of hazardous waste presents a high risk to the environment. These wastes must be tracked when transported into, within or out of NSW. The waste consignor, transporter and receiving facility all have obligations to ensure that the waste is properly tracked and disposed of at an appropriately licenced facility. To ensure all Hazardous Building Materials sent for disposal offsite are tracked to their destination and RCC meet all legal and contractual obligations, RCC will employ the use of RCC Waste Register located within Appendix A of the Construction Waste Management Sub Plan.

Steps in Waste Tracking to an appropriately licensed facility include:

- Determine whether the waste to be transported requires tracking (see the Waste that must be tracked fact sheet and the current list of exemptions). Waste streams for this project are concrete, brick, bitumen, asbestos, general demolition waste & soils;
- Obtain prior approval to transport the waste in the form of a consignment authorisation (CA) issued by a person authorised to do so;
- Create a transport certificate which must accompany the waste while it is being transported;
- Complete the transport certificate when the waste has arrived and been processed by the receiving facility;
- Report any non-compliances to the Environment Protection Authority (EPA).

6.13 Training

The site safety induction will also include discussion of hazardous materials on site, identification of their whereabouts, and explanation of handling methods to be employed, including Personal Protective Equipment (PPE) to be used. The following areas shall be covered in the induction.

- Awareness of the hazardous materials held on site, and their potential to cause harm to people and the environment;
- Use of correct PPE and any appropriate and/ or necessary health and safety training;
- Safe and correct use of all spill clean up equipment or pollution prevention structures on site;
- Safe handling and legal disposal of contaminated materials and wastes resulting from an incident; and
- Emergency management procedures.

7 Procedure for Dealing with Unexpected Finds on Site

A site risk assessment and a site hygienist report were conducted for the Cutaway project during this time the risk assessment and hygienist report it did not show any hazardous materials present onsite but comments were made around the stair 3 slab and sandstone excavation that is near the old harbour control tower these have been captured in the below table 1.

Potential Unexpected Finds	Observations – reviews	Types of contaminants and dangers	Control
Heritage / Archaeological	Aboriginal stone artefacts, engraved rocks, scarred trees, etc. Artefact scatters such as clustering of broken and complete bottles, glass, ceramics, animal or skeletal remains and clay pipes, etc Remains of other infrastructure including stone culverts, sandstone, bluestone or brick buildings, etc	Damage to potential cultural heritage value	Items found are to follow the unexpected find procedure
Ground containing buried Hazardous material	Demolition plans of the stair 3 footing and old harbour control tower	Asbestos and lead form the build / demolition of the Harbour control tower	Items found are to follow the unexpected find procedure

Table 1

8 Notification on unexpected finds

8.1 INSW

If any Nominated Hazardous Substance is discovered unexpectedly on the Site, suspend all work that may result in exposure to the substance and notify the Principal immediately of the type of substance and its location.

8.2 Authorities

Where Unexpected finds have been found and exposure to works is evident notification to Safework NSW is to be completed within 24hours.

9 Unexpected Finds flow chart

⇩

STOP WORK IMMEDIATELY

⇩

Report the suspected find to FDC Management for assessment and/or action

⇩

FDC Management shall set-up exclusion zone around suspect area to prevent unauthorised access

⇩

FDC shall undertake verification of the suspected material

⇩

Work must not recommence until you have received instructions from FDC Management that it is safe to do so.

Failure to adhere to the above procedure may result in disciplinary action and your removal from site.

If in doubt – ASK.

What does Asbestos look like?

10 Appendix A – Hazardous Exposure Survey

EXPOSURE CONTROL PLAN

BARANGAROO CUTAWAY CULTURAL FACILITY

FDC CONSTRUCTION (NSW) PTY LTD

PROPERTY RISK AUSTRALIA

STATEMENT OF LIMITATIONS

This report has been prepared by Property Risk Australia Pty Ltd (PRA) for the benefit of the FDC Construction (NSW) Pty Ltd (hereafter the 'Client') in accordance with the agreement/contract between PRA and the Client. The works carried out in preparing this report have been performed in accordance with the proposal, scope of works, general terms and conditions and special terms and conditions (where applicable), agreed in consultation with the Client.

This report has been prepared with information available at the time of report preparation and within the time and budgetary constraints imposed by the Client. PRA does not accept responsibility for inaccurate or incomplete information provided by the Client or third parties, nor for updates or changes to information made after the preparation of this report.

This report is solely for the use of the Client and has not been prepared for use by any other person or third party. This report must only be presented in full and may not be used by any person or third party, other than the Client, unless agreed to in writing by PRA. This will allow PRA to ensure that the intended use or interpretation of the report is fit for purpose and agreed to by the Client. PRA accepts no responsibility for damages arising from use of this report or supplementary information.

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DOCUMENT QUALITY CONTROL

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Site Address:	Barangaroo Cutaway Cultural Facility, 1 Merriman St, Barangaroo NSW 2000		
Client Name:	FDC Construction (NSW) Pty Ltd		
Job Number:	**Version No.**	**Version Date:**	**Status:**
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Technical Review By:		**Approved By:**	
Name: Jackson Myles Position: Occupational Hygienist Signature: 		Name: Gary Mace Position: Certified Occupational Hygienist Signature: 	

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1 INTRODUCTION

Property Risk Australia Pty Ltd (PRA) have been engaged by FDC Construction (NSW) Pty Ltd (FDC) to prepare an Exposure Control Plan (ECP) for the Barangaroo Cutaway Cultural Facility development at 1 Merriman Street, Barangaroo NSW 2000 (Project) to adequately control exposures to occupational health hazards that present a significant risk to workers on site.

The objective of this ECP is to outline how FDC will manage and control potential exposure to the following occupational health hazards throughout the Project:

- Construction dust (inhalable dust, respirable dust and respirable crystalline silica (RCS))
- Isocyanate Compounds
- Occupational noise
- Hand Arm Vibration (HAV)
- Ultraviolet Radiation (UVR)
- Thermal Heat Stress

1.1 Project Background

The Cutaway is a unique cultural venue that sits below the eastern end of Barangaroo Reserve. It is situated on Sydney's waterfront and on the doorstep of the Metro station at Barangaroo (to open in 2024).

The Cutaway is meticulously constructed and features an enormous sandstone wall that opens to the sky. When the Cutaway opened as a large concrete shell, it was always envisaged the space would require fit out to improve function, operations and visitor experience. The new be-spoke fit-out will elevate the venue allowing for a wider range of opportunities for future use.

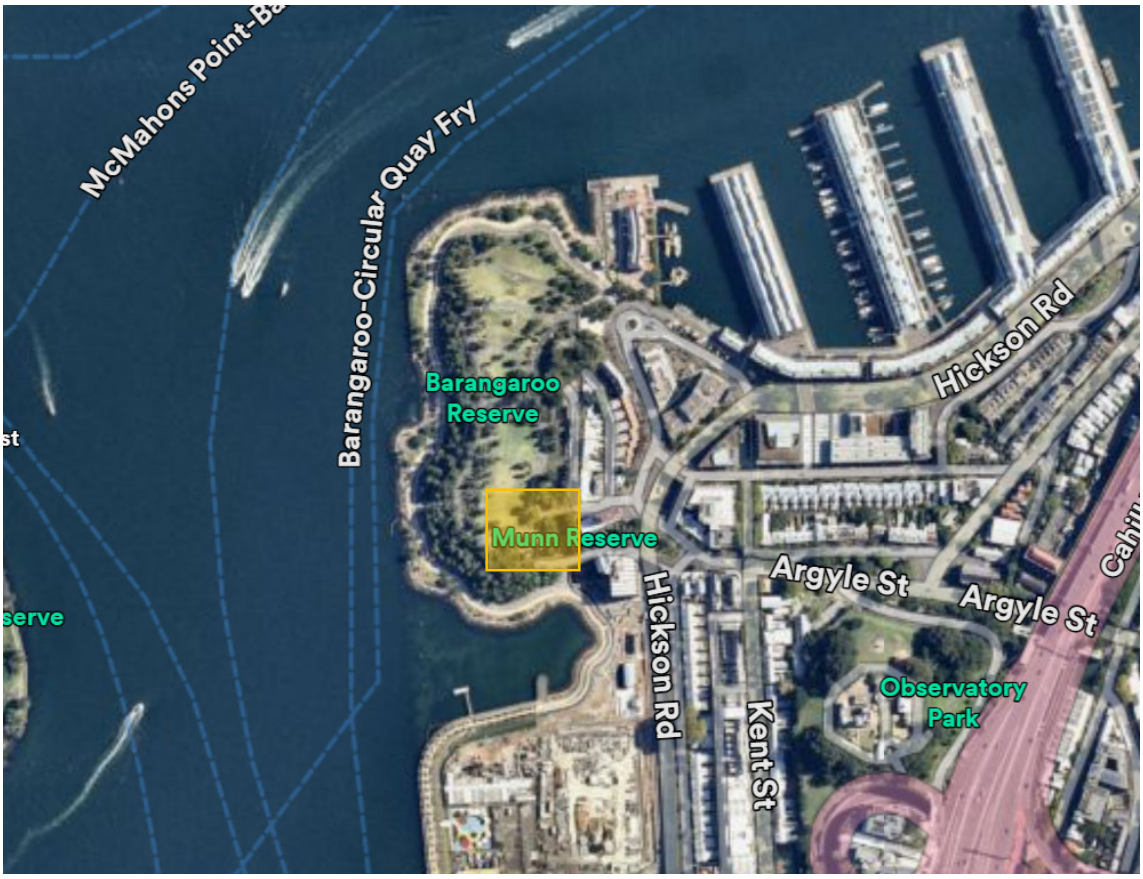

Figure 1: Barangaroo Cutaway Cultural Facility Location

The scope includes, but is not limited to the design and construction, and testing and commissioning of:

- Primary Use Areas inclusive of the Main Entry, Entry Foyer, Event Hall, Gallery & Exhibition Space, Education Space, Waranara Terrace, and associated amenities;
- Back of House Areas inclusive of a Security Control Centre, Loading Dock, Offices, Green Rooms, Event Kitchen, Storage Spaces;
- Service and Amenity areas inclusive of a Café and Retail/merchandising space;
- Management Offices including Precinct Management Office, Cutaway Management Office and Facilities Management Office;
- New services including upgrades, connection to and augmentation of existing services;
- New skylight structure on the existing sandstone wall (the skylight support will impact on the top of the rock shelf and the adjacent existing concrete upstand, which will require additional structural strengthening to support the new enclosure);
- Bespoke timber elements of the fitout; and
- External precinct works

It is understood in order to facilitate these works, a scope of demolition works will be required. This includes but is not limited to the following:

- Demolition of the existing fire corridor and façade areas of the existing Ausgrid substation;
- Demolition of a lift pit;
- Detailed demolition and excavation of the new Eastern fire stair; and,
- Skylight demolition works.

2 LEGISLATIVE CONTEXT

This report has been prepared to assist FDC in fulfilling their legislative obligations set out in the New South Wales (NSW) *Work Health and Safety Act*, 2011 (Act) and the NSW *Work Health and Safety Regulation*, 2017 (WHS Regulation).

Section 19 – Act: A person conducting a business or undertaking (PCBU) must ensure, so far as is reasonably practicable (SFAIRP), that the health and safety of other persons is not put at risk from work carried out as part of the conduct of the business or undertaking. [1]

Clause 35 – WHS Regulation: A duty holder, in managing risks to health and safety, must:

a) Eliminate risks to health and safety so far as is reasonably practicable; and
b) If it is not reasonably practicable to eliminate risk to health and safety – minimise those risks using the hierarchy of controls SFAIRP.[2]

Clause 49 – WHS Regulation: A PCBU at a workplace must ensure that no person at the workplace is exposed to a substance or mixture in an airborne concentration that exceeds the exposure standard for the substance or mixture.[3]

Clause 50 (1) – WHS Regulation: A PCBU at a workplace must ensure that air monitoring is carried out to determine the airborne concentration of a substance or mixture at the workplace to which an exposure standard applies if:

a) The person is not certain on reasonable grounds whether or not the airborne concentration of the substance or mixture at the workplace exceeds the relevant exposure standard, or
b) Monitoring is necessary to determine whether there is a risk to health.[4]

Clause 50(2) – WHS Regulation: A person conducting a business or undertaking at a workplace must ensure that the results of air monitoring carried out under the subclause (1) are recorded, and kept for 30 years after the date the record is made. [5]

Part 4.1 – Clause 57 (1) – WHS Regulation: A person conducting a business or undertaking at a workplace must manage, in accordance with Part 3.1, risks to health and safety relating to hearing loss associated with noise.[6]

[1] *Work Health and Safety Act 2011 (NSW)*, s19(2).
[2] *Work Health and Safety Regulation 2017 (NSW)*, pt 3.1, c 35
[3] Ibid, d 7, c 49
[4] Ibid, d 7, c 50(1)
[5] Ibid, d 7, c 50(2)
[6] Ibid, p 4.1, c 57(1)

Part 4.1 – Clause 57 (2) – WHS Regulation: A person conducting a business or undertaking must ensure that the noise that a worker is exposed to at the workplace does not exceed the exposure standard for noise. [7]

The legislation, codes of practice, guidelines and standards used in the development of this report are listed in **Appendix A.**

2.1 Health Monitoring Requirements

A PCBU must ensure that health monitoring is provided to a worker carrying out work for the business or undertaking if:

a) The worker is carrying out ongoing work using, handling, generating or storing hazardous chemicals and there is a significant risk to the worker's health because of exposure to a hazardous chemical (e.g. Crystalline silica) referred to in Schedule 14 of the WHS Regulation;
b) The person identifies that because of ongoing work carried out by a worker using, handling, generating or storing hazardous chemicals there is a significant risk that the worker will be exposed to a hazardous chemical (other than a hazardous chemical referred to in Schedule 14 of the WHS Regulation) and either:
    (i) valid techniques are available to detect the effect on the worker's health; or
    (ii) a valid way of determining biological exposure to the hazardous chemical is available and it is uncertain, on reasonable grounds, whether the exposure to the hazardous chemical has resulted in the biological exposure standard being exceeded.[8]

The health monitoring reports and records are regulated by the *Privacy Act* 1988 (Cwth) and must be kept confidential unless the worker provides written consent, or the regulator or another health professional requires the documentation. All health monitoring records must be kept for a minimum of 30 years from the date of recording, regardless of the workers employment status.

Note: The PCBU who engages the worker must pay for all expenses associated with the health monitoring inclusive of appointment fees, testing/ analysis costs as well as time and travel. [9]

3 ROLES AND RESPONSIBILITIES

A summary of the roles and responsibilities relevant to the management of the occupational health hazard control is presented in **Table 1.**

[7] Ibid, p 4.1, c 57(2)
[8] Ibid, d 6, c 368
[9] Ibid, d 6, c 372(1)

Table 1: Roles and responsibilities for occupational health hazard control.

Task	Accountability	Persons who provide input into the task	Frequency	Output/Deliverables
Identify relevant legislation and other documents	QSE Manager	Occupational Hygienist	Prior to commencement, upon change	This ECP, and Level 1 HRA
Identify control measures for implementation SFAIRP in accordance with above and the control hierarchy	QSE Manager	Occupational Hygienist	Prior to commencing task	This ECP
Substitution of work methods	Site Manager	QSE Manager and Occupational Hygienist	Prior to commencing task	Safe Work Method Statements (SWMS)
Implementation of engineering controls	Site Manager	QSE Manager and Occupational Hygienist	Prior to commencing task	SWMS
Implementation of administrative Controls	Site Manager	QSE Manager and Occupational Hygienist	Prior to commencing task	SWMS, medical and fit testing records, signage installed, access restriction/turnstile in place, training records
Selection and implementation of PPE as a control measure	Site Manager	QSE Manager and Occupational Hygienist	Prior to commencing task	SWMS, PPE Programs, PPE Training records, Fit testing records
Implement control measures as listed in this ECP	Site Manager	QSE Manager and Occupational Hygienist	Prior to commencing tasks	Level 2 HRA, SWMS, visible signage, records of facial fit testing; records of training in the use of PPE; inspection records; PPE Programs
Inspection and maintenance requirements	Site supervisor	Plant Manager or equivalent	Ongoing	Pre-start logs and monthly inspection forms

Task	Accountability	Persons who provide input into the task	Frequency	Output/Deliverables
Training and competency requirements	QSE Manager	Occupational Hygienist	Prior to commencement, upon change	Trainee attendance records, verification of competencies
Consultation	QSE Manager	Occupational Hygienist; Site Manager	On-going	Safety Committee Meeting Minutes, Toolbox Talks
Review	Occupational Hygienist	QSE Manager, Site Manager	Monthly	Level 2 and Level 3 HRA

4 HEALTH RISK CONTROL

The most important part of managing health risks, is to work to eliminate the hazard itself, or if not possible, to minimise the risk so far as is reasonably practicable (SFAIRP). Control measures to reduce the risk from hazardous agents should be selected in accordance with the hierarchy of controls (**Figure 2**).

The aim of health risk control is to ensure that workers and others are provided with the highest level of protection that is reasonably practicable.

In addition to complying with relevant legislation, when selecting methods to control exposure to dust hazards, the following needs to be considered:

- relevant codes of practice, regulatory guidance and Australian Standards;
- compatibility with process and maintenance requirements;
- design criteria and engineering practices;
- protecting against all exposure routes;
- inspection and maintenance requirements to remain effective;
- emergency situations and the appropriate response;
- review and evaluation of effectiveness; and
- cost effectiveness.

Where eliminating the occupational health hazards is not possible, sufficient time must be provided to design higher-order controls such as substitution and engineering controls to reduce the risk SFAIRP. The activity should not commence unless assurance can be provided that the assessed health hazards can be managed to an acceptable level of risk.

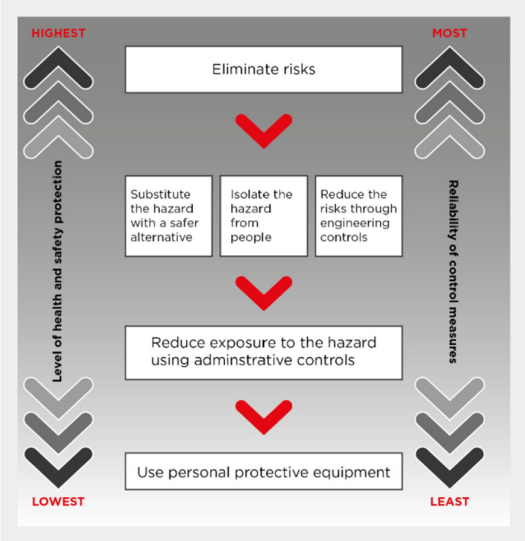

Figure 2: Hierarchy of controls.

4.1 Hazard Specific Exposure Control Plans

The following ECPs presented in **Table 2 to Table 7** outline the processes to be followed by FDC to adequately control anticipated exposures to the following occupational health hazards that are deemed a *Significant Risk to Health* as per J02337_Barangaroo_Cutaway_FDC_L1HRA_2024_04_18_V1:

- Dust – includes Respirable Crystalline Silica, Respirable Dust and Inhalable Dust;
- Isocyanate Compounds;
- Occupational Noise;
- Hand-arm Vibration; and,
- Ultraviolet Radiation.
- Thermal Heat Stress

Control measures listed in each ECP are numbered for ease of reference, future reviews, reporting and audit purposes.

It is recommended that the control measures are audited on a regular basis and are incorporated into the sub-contractor safe work method statements (SWMS). Sub-contractor SWMS should be reviewed to ensure compliance.

4.2 Dust – Exposure Control Plan

Table 2: Dust – Respirable crystalline silica, respirable dust and inhalable dust.

Dust – Exposure Control Plan
Health Effects
Respirable Crystalline Silica Silica is silicon dioxide (SiO_2), a naturally occurring widely abundant mineral that forms the major component of most rocks and soils. There are non-crystalline and crystalline forms of silica. The most common form of crystalline silica is alpha (α) quartz. Crystalline silica is found in varying proportions in aggregates, mortar, concrete and stone. Granite contains between 25 to 40% quartz, shales average 28% and sandstones average 67% quartz. Other polymorphs of SiO_2 such as cristobalite and tridymite are less common. The crystalline silica dust particles that are small (<10µm in diameter) and can readily penetrate deep into the lung are defined as respirable crystalline silica (RCS). RCS primarily enters the body via inhalation. There is a known dose-response relationship in terms of health effects; that is, the greater the cumulative dose, the greater degree of lung damage (AIOH, 2018). The International Agency for Cancer Research (IARC) classified RCS (quartz and cristobalite) emanating from occupational sources as a Group 1 Carcinogen for lung cancer based on sufficient evidence of carcinogenicity in humans and experimental animals. Occupational exposure to RCS can potentially result in silicosis, an irreversible and progressive condition in which healthy lung tissues is replaced with areas of fibrosis. Studies have also shown that silicosis is a precursor to the development of lung cancer. There are three types of silicosis: ○ Chronic Silicosis (simple and complicated) – the most common form, typically develops after 10 to 30 years of exposure; ○ Accelerated Silicosis – usually occurs after 5 to 10 years of very high exposure; and ○ Acute Silicosis – can develop after exposures to high concentrations of RCS over a short period of time (7 months to 5 years). Prolonged exposure to RCS may also be associated with chronic obstructive pulmonary diseases (COPD) such as emphysema and chronic bronchitis, autoimmune disorders, and renal disease. Respirable Dust Exposure to respirable dusts (particles < 16µm) which exhibit inherently low toxicity and are free from toxic impurities may cause various respiratory illnesses and disease. The inhalation of respirable sized dust particles may result in respiratory irritation or instances of hay fever or hay fever like symptoms. Furthermore, excessive exposure to respirable dust may be responsible for inflammation of the lungs, subsequently leading to COPD (AIOH, 2014). Inhalable Dust Exposure to inhalable dust (particles <100 µm) can cause health effects such as irritation of the respiratory system, hay fever or hay fever type symptoms and increases in asthma and bronchitis in occupationally exposed persons (NSW Department of Primary Industries).
Sources of Exposure
○ Excavation activities such as hydraulic concrete breaking, sawing, ripping, stockpiling, loading out and tipping, scraping and tracking. ○ Demolition of concrete structures. ○ Mixing of concrete and grout. ○ Windblown dust from site or adjacent sites. ○ Poor housekeeping (e.g. not maintaining roadways, scaffolding, site amenities and plant cabins.) ○ Dry sweeping, handheld blowers and the use of compressed air for cleaning.

Dust – Exposure Control Plan
Elimination
Not applicable
Substitution
1. All heavy plant seats that are made of cloth or fabric must be replaced or covered with a material that prevents the accumulation of dust (e.g., vinyl, plastic). 2. Dry sweeping should be discouraged. Type M or Type H industrial rated vacuum cleaners fitted with vacuum bags shall be used for general housekeeping works. These vacuum cleaners are designed to ensure dust is safely captured and contained. Note: Vacuum cleaners with high-efficiency particulate air (HEPA) filters which are not Type M/H are not appropriate for the works. 3. Closed cabin plant must be used where it is practicable and safe. 4. Heavy plant should be used in lieu of manual dust generating tasks (e.g. jackhammering) where it is practicable and safe.
Isolation
5. Exclusion zones should be established around dust generating activities where practicable. The exclusion zones shall be demarcated using temporary fencing/bunting or similar and mandatory respiratory protective equipment signage. The size/area of the exclusion zone shall be large enough such that those workers outside of the zone do not need to wear RPE. 6. The load out area should be a permanent exclusion zone.
Engineering
7. Heavy plant attachment should be fitted with on-board dust suppression where practicable. 8. Dust suppression control measures (e.g. misting cannons) implemented when undertaking dust generating activities where practicable. Wet dust suppression is only effective when the droplet size is comparable to the dust particles (<16µm for respirable dust). Water should be readily available with sufficient pressure across the entire demolition site. Small misting cannons are recommended for smaller areas as they are easily manoeuvrable. Larger, oscillating misting cannons may be required where multiple dust generating activities are being conducted at one time. Regardless of size, all misting cannons must be strategically placed around the site (considering wind speed and direction) to minimise dust generation. 9. Any handheld tools used to drill, cut, sand or pulverise materials (e.g. concrete, brick and timber) will be fitted with: o on-tool extraction connected to a M or H class industrial vacuum; or o on-tool dust suppression in the form of water misting. 10. A misting or fixed sprinkler system should be installed within the load out area(s) where practicable. 11. Where natural ventilation is inadequate, mechanical ventilation should be installed in semi-enclosed/enclosed spaces to supply fresh air to the work area and to sufficiently dilute the concentrations of airborne contaminants.
Administration
12. Workers required to undertake high dust generating activities should be regularly rotated to minimise overall dust exposure. 13. The use of hand-held dust suppression (e.g. spotters on hoses) is discouraged. 14. Using compressed air, forced air (e.g. blowers), dry sweeping or general-purpose vacuum cleaners to clean can agitate settled dust and should be prohibited.

Dust – Exposure Control Plan

15. All material should be wet down prior to processing where practicable.
16. Where large amounts of settled dust are identified, a Type M/H vacuum cleaner should be used to clean the area.
17. Sealed accessways should be regularly cleaned using a low-pressure hose or wet sweeping.
18. Transit routes (internal) will be regularly wet down.
19. Slurry generated from the wet dust suppression should be regularly cleaned before it dries.
20. Plant internal cabin surfaces and upholstery are cleaned daily using wet methods and/or a Type H/M vacuum cleaner to minimise accumulated dust on interior surfaces.
21. Windows and doors remain closed on all plant during all operational activities. Air conditioning must be set to recycle to maintain positive pressure within the cabin.
22. Windows and doors remain closed on all site sheds during operational activities. Air conditioning must be set to recycle, and filters regularly maintained.
23. Plant and equipment will be maintained at regular service intervals to the manufacturer's requirements.
24. Pre-start inspection of plant will include reference to cleanliness, cabin seals.
25. Air conditioning filters to be regularly cleaned and maintained.
26. All operators and spotters will have two-way radio communications.
27. Mandatory respiratory protection signage with a blue background and white pictogram should be in place at all access points to the exclusion zone. The signs should be weatherproof and secured.
28. All personnel onsite that are required to don tight fitting respiratory protection must be clean shaven. Workers who are not clean shaven for their chosen RPE must be excluded from undertaking or working adjacent to, dust generating tasks.
29. A no smoking policy implemented whilst onsite (excluding designated smoking areas).
30. The number of workers required to enter live demolition areas will be limited. Works will be conducted from the perimeter where possible.
31. Amenities will be regularly cleaned to reduce dust build up.
32. All relevant workers will be trained on the health effects of dust and suitable control measures/work practices.
33. Toolbox Talks will be implemented at routine intervals to maintain awareness of the occupational health risks associated with conducting or working adjacent to dust generating activities.

Personal Protective Equipment

34. P2 respirators (as a minimum) will be worn by all workers required to enter the exclusion zones, this includes closed cabin plant operators.
35. Workers that are required to don RPE will be fit-tested prior to commencing work.
36. Disposable P2 respirators will be readily available at site amenities and at entrances to areas where their use is required.
37. All reusable respirators shall be regularly cleaned and stored in a sealed box in a clean area.
38. Site management/occupational hygienists will conduct regular audits of RPE compliance.

Monitoring

Air Monitoring

Control monitoring for respirable dust (either gravimetric or real-time) should be conducted on a regular basis to determine the effectiveness of the control measures onsite.

Dust – Exposure Control Plan
Furthermore, personal exposure sampling for RCS, respirable dust and inhalable dust is required for SEGs: o where exposure presents a significant risk to health. **Health Monitoring** Any worker that is deemed to be at significant risk to RCS exposure during the health risk assessments will need health monitoring in the form of an RCS Health Monitoring Assessment. Health monitoring must be undertaken before starting work, at suitable intervals as determined by the medical practitioner or legislation and at the cessation of the work. The medical practitioner should also conduct an assessment to determine the worker's capacity to don respiratory protection.

4.3 Isocyanate Compounds – Exposure Control Plan

Table 3: Isocyanate Compounds (Isocyanates)

Isocyanates – Exposure Control Plan
Health Effects
Isocyanate Compounds Isocyanates are a family of highly reactive, low molecular weight chemicals. They are widely used in the manufacture of flexible and rigid foams, fibers, coatings such as paints and varnishes, waterproofing agents and elastomers. Isocyanates can easily become volatile and enter the atmosphere as a vapour. Isocyanates are a powerful irritant to the mucous membranes of the eyes and gastrointestinal and respiratory tracts. Acute (short-term) inhalation exposure to Isocyanates can result in irritation of the nose, throat and eyes, irritation to the respiratory system including coughing, wheezing and shortness of breath, gastrointestinal distress such as nausea and vomiting, and headaches. Direct contact with the skin or eyes can result in contact conjunctivitis, blistering, swelling and irritation (Safework NSW) In addition, chronic exposure to Isocyanates may cause liver and kidney disease, chronic lung damage and cancer.
Sources of Exposure
○ Spraying operations – spray painting and spraying of resins, lacquers waterproofing agents and adhesives containing isocyanates - inhalation ○ Handling products with isocyanates – inhalation/ dermal
Elimination
Not applicable
Substitution
39. Consider the implementation of compounds free of isocyanates. Careful consideration should be given not to introduce additional hazards to health in substitution of products.
Isolation
40. Access to isocyanate working areas is to be restricted to authorised personnel. Any worker not involved in the activity is strictly prohibited from the work area. The locations of the exclusion zones should be communicated to other subcontractors via the daily builder's brief. A map of the work area is also recommended to help demonstrate this area to other personnel. 41. Install plastic screens around the working areas (floor to ceiling) to isolate airborne contaminants from the working area. 42. Clean/ Dirty Area Segregation: A clearly defined clean area should be established at the entrance to each individual work area. The area should include (as a minimum): ○ Storage area for reusable PPE ○ Waste bags for disposable PPE ○ Running water and wet wipes for personal decontamination. 43. Additionally, an eye wash station and hand-held water hose should be readily available nearby in case of inadvertent contact with skin. (Shower facilities which are nearby could be used).
Engineering

Isocyanates – Exposure Control Plan

44. Mechanical ventilation must be installed within and surrounding the work area to supply fresh air to the work area and to dilute the concentrations of airborne contaminants within the exclusion zone to as low as reasonably practicable. Consideration must be given to the influences of weather (e.g. changes of wind speed/ direction) when deciding on the position and number of fans each working shift.
45. Consideration should also be given to extraction ventilation. Extraction ventilation is to be fitted with high-efficiency particulate air filters and activated charcoal filters, and be exhausted to an external environment, away from sensitive receptors (e.g. other workers). Air from extraction exhausts should not be recirculated back into the work area.

Administration

46. Ensure eye wash and shower facilities are readily available in case of inadvertent contact with skin.
47. Mandatory respiratory protection signage with a blue background and white pictogram should be in place at all access points to exclusion zones established for works likely to encounter Isocyanates. The signs should be weatherproof and secured and developed in accordance with AS1319:1994 Safety Signs for the occupational environment.
48. The personnel carrying out the work must be appropriately trained in the safe handling and use of isocyanates, in order to carry out the works in a safe manner.
49. All workers are to be inducted into SWMS for each specific task. A toolbox can be used to register persons inducted.
50. Warning signs will be placed to inform all people nearby that work involving isocyanates is taking place in the area. Signs should be placed at all the main entry points to the work area. Mandatory PPE signage must also be erected at the entrance to the work area.

Personal Protective Equipment

51. Respiratory protective equipment should only be used to supplement higher-level control measures or when no other safety measures are available. Full-face respiratory protection should be used as opposed to half-face respiratory protection as a means to minimise the surface area available for skin and eye contact.
52. All workers that are required to don RPE must be clean shaven, trained in the correct use and maintenance and fit-tested for their chosen respirator. All reusable respirators shall be regularly cleaned and stored in a sealed box in a clean area.
53. Workers will be required to wear full-face cartridge respirators fitted with minimum P2 filters and Organic Vapour filters (or similar).
54. Workers opting to use battery powered air purifying respirators (PAPR) carry secondary secondary batteries in case of battery failure. This is especially important when using loose fitting PAPR such as 3M Versaflo.
55. All reusable respirators shall be regularly cleaned and stored in a sealed box in a clean area.
56. Isocyanates may be absorbed through the skin and have the potential to cause adverse health effects. Disposable chemical resistant coveralls with elasticated cuffs and hood should be used (Category III: Type 5 or 6 Tyvek Style with or similar) as per EN340:2003 or similar.
57. Chemical protective gloves meeting or exceeding the minimum permeation test requirements as per EN374-3:2003 should be donned by all workers that may be required to handle isocyanates. The permeation times should be noted for incidental contact with isocyanates.
58. Personnel involved in works should don chemical resistant gumboots.

Isocyanates – Exposure Control Plan
Monitoring
Air Monitoring When undertaking spraying works (and the Occupational Hygienist has determined the methodology has potential for risk), the contractor must undertake control air monitoring during the process. Exposure air monitoring must be undertaken to validate the determination of risk and required levels of PPE. **Health Monitoring** Any worker that is deemed to be at significant risk to Isocyanate exposure will need health monitoring. This involve a medical check, respiratory function tests and a urinary test for isocyanate metabolites.

4.4 Occupational Noise – Exposure Control Plan

Table 4: Occupational noise.

Occupational Noise – Exposure Control Plan
Health Effects
Occupational noise is a physical hazard that results in both chronic and acute health problems which can be classified as either auditory or non-auditory. Acute auditory effects of noise exposure may include acoustic trauma where sudden (irreversible) hearing damage is caused by a short burst of extremely loud noise. Similarly, Temporary Threshold Shift (TTS) can occur immediately after exposure to a high level of noise. Recovery from TTS occurs once exposure to elevated noise has abated, typically over a period of 24 to 48 hours. Noise Induced Hearing Loss (NIHL) is a form of permanent threshold shift that is the result of elevated noise exposure after repeated exposure over a long period of time. It is often due to damaged hair cells within the cochlear in the inner ear, leading to degeneration of the auditory nerve. Tinnitus, also known as “ringing in the ear”, can be both acute and chronic in nature, resulting from a TTS or accompanying NIHL. Non auditory effects of exposure to noise include the increasing occurrence of cardiovascular disease and hypertension, changes in breathing, increased annoyance, disturbed sleep, as well as a decrease in overall physical and mental health.
Sources of Exposure
○ Heavy plant undertaking demolition works (e.g. hydraulic hammering of concrete) ○ Loading bins/ truck and trailers ○ Metal on metal impact (e.g. formwork installation) ○ Operation of handheld power tools.
Elimination
Not applicable
Substitution
59. Closed cabin plant must be used where it is practicable and safe. 60. Heavy plant should be used in lieu of manual high noise generating tasks (e.g. jackhammering) where it is practicable and safe.
Isolation
61. Exclusion zones should be established around noisy activities. The exclusion zones shall be demarcated using temporary fencing/ bunting or similar and mandatory hearing protection signage. The size/ area of the exclusion zone shall be large enough such that those workers outside of the zone do not need to wear hearing protection. 62. The zones utilised to load trucks/ bins should be permanent exclusion zones.

Engineering
63. Where fixed plant (e.g. generators, compressors etc) is in use, acoustic shielding or barriers is recommended to reduce the transmission of noise from the source to the worker. The width of the barrier should be double the height and the height should be as tall as practicable.
64. Tonal beeper directional reversing systems (e.g. broadband alarms) can be fitted to heavy plant and can be used in conjunction with non-audible alarms (e.g. flashing lights, reverse cameras) where practicable.
65. Acoustic barriers could be considered around the perimeter of saw cutting/ rock breaking works.
Administration
66. Each tool or piece of equipment should be marked (e.g. sticker) to alert personnel, stating the level of noise generated along with the need to wear hearing protection when using the equipment or tool and to alert other works near the equipment or tool.
67. Workers required to undertake high noise generating activities should be regularly rotated to minimise overall noise exposure.
68. Site respite hours (if implemented) should be adhered to at all times.
69. Windows and doors remain closed on all plant during all operational activities.
70. Windows and doors remain closed on all site sheds during operational activities.
71. Plant and equipment will be maintained at regular service intervals to the manufacturer's requirements. This will include regular lubrication of machine parts to reduce friction and an inspection of all cabin seals.
72. All operators and spotters will have two-way radio communications.
73. Mandatory hearing protection signage with a blue background and white pictogram should be in place at all access points to the exclusion zone. The signs should be weatherproof and secured.
74. All powered hand tools will be inspected prior to use and tagged out if worn, loose, unbalanced or have other characteristics that could contribute to excessive noise.
75. The number of workers required to enter noisy areas will be limited.
76. All relevant workers will be trained on the health effects of noise and suitable control measures/work practices.
77. Toolbox Talks will be implemented at routine intervals to maintain awareness of the occupational health risks associated with conducting or working adjacent to noisy activities.
78. Particular care should be given to hearing conservation.
Personal Protective Equipment
79. A project specific hearing protection program should be developed and implemented on site.
80. The selection of hearing protection for specific tasks should be completed in conjunction with a risk assessment by a suitably competent person. Class 5 hearing protection may not be required for all workers within all tasks, however it is likely to be required for tasks such as rock breaking, concrete cutting etc. In order to get the full protection, workers must wear their hearing PPE at all times during a noisy shift. If they remove them, even for a short duration, their protection will be substantially reduced.
81. Disposable Class 3 hearing protection should be readily available at site amenities and at entrances to areas where their use is required.
82. All reusable hearing protection shall be regularly cleaned and stored in a sealed box/bag in a clean area.
83. Site management/occupational hygienists will conduct regular audits of hearing protection compliance.

Monitoring
Noise Monitoring Personal exposure sampling for occupational noise is required for SEGs: o where exposure presents a significant risk to health. **Health Monitoring** Any worker that is deemed to be at significant risk to occupational noise exposure must participate in a baseline audiometric assessment and follow up assessments either: o Two yearly thereafter; or o Where Level 3 HRA results demonstrate surveillance is required more frequently. The medical practitioner should also conduct an assessment to determine the worker's capacity to don hearing protection.

4.5 Vibration – Exposure Control Plan

Table 5: Vibration.

Vibration – Exposure Control Plan
Health Effects
Hand-Arm Vibration The longer a worker undertaking manual tasks is exposed to hand–arm vibration (HAV), the greater the risk of developing musculoskeletal disorders. Occasional and/or infrequent low exposure is unlikely to cause adverse health effects. Prolonged exposure to HAV may result in disrupted blood and oxygen circulation in the hand and forearm, as well as damage to nerves and tendons, muscles bones and joints. It can cause a range of conditions collectively known as hand–arm vibration syndrome (HAVS) and disorders such as carpal tunnel syndrome and tennis elbow. The most common condition resulting from exposure to HAV is called 'vibration white finger'. The development of hand–arm vibration syndrome is gradual and increases in severity over time. It may take a few months to several years for the symptoms to become noticeable as there is commonly a latency period between exposure and onset of symptoms. Affected workers typically report one or more of the following symptoms: o tingling and numbness in the fingers; o decrease in light touch resulting in not being able to feel things properly; o loss of grip strength; o whitening of one or more fingers, particularly when exposed to cold; and o pain and cold sensation between attacks of vibration white finger. There is also evidence that exposure to HAV and noise simultaneously are more likely to suffer from hearing loss than workers exposed to the same levels of noise alone. can exacerbate the effects of noise on hearing.
Sources of Exposure
o Operation of handheld power tools.
Elimination
Not applicable
Substitution
84. Concrete shear/pulveriser attachments on mobile plant should the primary demolition method for concrete structures.

Vibration – Exposure Control Plan
85. Heavy plant will be used in lieu of manual high vibration generating tasks (e.g. jackhammering) where it is practicable and safe.
Isolation
Not applicable
Engineering
86. Where practicable, handheld tools with low vibration emission levels shall be used. Consider the following when purchasing/hiring equipment: o Reduced vibration designs are selected provided the tools are otherwise suitable. o Declared vibration emission is not high compared with competing drills of similar capacity to do the job.
Administration
87. Workers required to undertake high vibration emitting activities will be regularly rotated to minimise overall exposure. 88. Workers conducting high vibration emitting tasks are to take regular breaks to reduce "finger on trigger" time. 89. Site respite hours will be adhered to at all times. 90. Plant and equipment will be maintained at regular service intervals to the manufacturer's requirements. This will include regular lubrication of machine parts to reduce friction and an inspection of seats. 91. All powered hand tools will be inspected prior to use and tagged out if worn, loose, unbalanced or have other characteristics that could contribute to excessive vibration. 92. All relevant workers will be trained on the health effects of HAV, and suitable control measures/work practices. 93. Toolbox Talks should be implemented at routine intervals to maintain awareness of the occupational health risks associated with conducting or working adjacent to vibration emitting activities.
Personal Protective Equipment
The use of PPE as a control measure for HAV is not considered practicable. Gloves should not be relied on to protect workers from vibration. They only provide protection from cold temperatures, water, cuts and abrasions. The use of thick gloves may make HAV exposure worse if a worker applies too much grip force to the tool.
Monitoring
Vibration Monitoring Personal exposure sampling for HAV is required for SEGs: o where vibration exposure presents a significant risk to health. **Health Monitoring** Any worker that is deemed to be at significant risk to HAV must participate in a baseline (pre-employment) medical assessment to determine the individual's fitness for work. Personal risk factors likely to affect workers exposed to HAV including Raynaud's disease, hand injuries, circulatory impairment, bone and joint deformity and disorders of the musculoskeletal and peripheral nervous systems must also be considered by the medical practitioner.

4.6 Ultraviolet Radiation – Exposure Control Plan

Table 6: Ultraviolet (UV) radiation.

Health Effects
Solar UVR is part of the electromagnetic spectrum emitted by the sun and is composed of three wavelengths: UVA, UVB and UVC. While all UVC and most UVB radiation is absorbed by the atmosphere, all UVA and about 10 percent of UVB radiation reaches the earth's surface. Both UVA and UVB are known causes of skin cancer. Solar UVR: ○ can cause damage to living organisms ○ is carcinogenic to humans i.e. can cause cancer ○ cannot be seen or felt ○ does not depend on temperature ○ can be high even on cool and cloudy days ○ can pass through clouds ○ can pass through loosely woven material ○ can bounce off reflective surfaces like metal, concrete and water
Sources of Exposure
Working outdoors during daylight hours
Elimination
Not applicable.
Substitution
Not applicable.
Isolation
Not applicable.
Engineering
94. Fixed / portable shade structures (e.g. canopies, tents or screens) will be installed, so that workers have access to shaded rest areas where practicable. 95. Plant windows and doors will be resistant to UV in accordance with AS/NZS 2080:2006.
Administration
96. The daily UVR index is included in the daily prestart meetings. 97. Toolbox Talks are implemented at routine intervals to maintain awareness of UV and Skin Cancer risks for outdoor workers. 98. Where possible, outdoor tasks will be shared and staff rotated so that the same person is not always out in the sun. 99. Utilise the services of an experienced occupational hygienist to develop and present a training course. The training should include the following information (as a minimum): ○ The health effects of exposure to occupational UVR ○ The level of assessed risk to health; ○ The methods to be used to report signs or symptoms of exposure; and ○ The methods of communication and feedback.

- An up-to-date training register should be retained.

Personal Protective Equipment

100. Site required minimum personal protective equipment are worn.

101. Protection clothing is UPF 50+.

102. Safety helmet sun protective brims are made available to workers if requested.

103. Workers will be provided with sunscreen with a SPF of 30 or higher that is broad-spectrum, meaning it filters UVA and UVB radiation and is water resistant. Sunscreen will be kept in a cool place below 30°C in easily accessible area. Sunscreen stock will be checked and replaced as required to ensure it is in date.

104. UV rated tinted protective eyewear in accordance with AS/NZS 1337.1:2010 will be provided to workers.

* *Where PPE is used to minimise the risk of solar UVR exposure, the type of work being performed will be considered to balance sun protection with the need to stay cool in hot conditions. It is important that design and use of the PPE does not create a secondary hazard, for example loose clothing becoming caught in machinery.*

Monitoring

Health Monitoring

Any worker that is deemed to be at significant risk to UVR during the health risk assessments will need health monitoring in the form of a skin cancer check. Health monitoring must be undertaken before starting work, at suitable intervals as determined by the medical practitioner or legislation and at the cessation of the work.

4.7 Thermal Heat Stress – Exposure Control Plan

Table 7: Thermal Heat Stress.

Thermal Heat Stress – Exposure Control Plan
Health Effects
Working in heat can be hazardous and can cause harm to workers. The human body needs to maintain a body temperature of approximately 37 degrees Celsius. If the body has to work too hard to keep cool or starts to overheat a worker begins to suffer from heat-related illness. This is a general term to describe a range of progressive heat related conditions including fainting, heat rash, heat cramps, heat exhaustion, and heat stroke. Some other common effects of working in heat include: o Heat rash. Skin can become irritated and cause discomfort when working in heat. o Heat cramps. Muscles can cramp as a result of heavy sweating without replacing salt and electrolytes. o Fainting. Can occur when workers stand or rise from a sitting position. o Dehydration. Increased sweating can lead to dehydration if workers aren't drinking enough water. o Heat exhaustion. Occurs when the body is working too hard to stay cool. – Heat stroke. Occurs when the body can no longer cool itself. This can be fatal. o Burns. Can occur if a worker comes into contact with hot surfaces or tools. o Slips. A worker will sweat more in hot conditions which can increase the risk of slips - for example, a worker might slip when using sharp tools if their hands are damp. o Reduced concentration. When working in heat it is more difficult to concentrate and a worker may become confused. This means workers may be more likely to make mistakes, such as forgetting to guard machinery. o Increased chemical uptake into the body. Heat can cause the body to absorb chemicals differently and can increase the side effects of some medications. Sourced from Safe Work Australia document: Managing the risks of working in heat – Guidance material
Sources of Exposure
o Exposure to prevailing weather o Working adjacent to heat generating plant/processes o Limited air flow o Wearing PPE that restricts evaporative processes (e.g. respirators, coveralls) o Heavy manual work.
Elimination
Not applicable
Substitution
Not applicable
Isolation
Not applicable
Engineering
105. Fixed / portable shade structures should be installed (where possible), so that workers can conduct activities out of the direct sunlight. 106. All closed cabin plant and site sheds should be air conditioned. 107. Machinery will be utilised where practicable to limit the amount of heavy manual work.

Thermal Heat Stress – Exposure Control Plan
Administration
108. Heavy manual work practices will be scheduled for early morning/late afternoon where practicable.
109. Where heavy manual work is to be conducted, extra manpower will be utilised to reduce exposure time for each worker.
110. Fluids are readily available nearby for rehydration.
111. Showers are readily available for workers.
112. Regular breaks and/or job task rotation are planned and implemented during hot/humid weather. A job rotation policy should be in place for all hazardous material removalists regardless of the prevailing weather.
113. Workers to limit their caffeine intake before and during their shift.
114. Urine colour charts should be mounted in rest rooms.
115. All relevant workers will be trained on the warning signs and health effects of heat stress and suitable control measures/work practices.
116. Toolbox Talks are implemented during humid/hot weather to maintain awareness of Heat Stress.
Personal Protective Equipment
117. Workers required to wear respiratory protection during heavy manual work should be given the option of wearing a powered air purifying respirator.
Risk Assessment and Monitoring
Heat stress will be evaluated in accordance with the three-stage assessment described in the publication, A Guide to Managing Heat Stress: Developed for Use in the Australian Environment, AIOH 2013.
Stage 1 - Basic Thermal Risk Assessment
A desktop risk assessment followed by a walkthrough assessment of the work area shall be used to identify high risk groups and suitable control measures that can be implemented to reduce the risk.
Stage 2 – Thermal Work Limit
The thermal work limit (TWL) is an index that uses the relevant environmental factors (air temperature, wind speed, radiant heat, relative humidity and barometric pressure), and vapour permeation. The TWL can be used to further determine suitable work / rest regimes and determine appropriate control measures.
Stage 3 – Physiological Monitoring
Physiological monitoring is recommended when a worker is required to enter a work area where a critical risk to thermal heat stress is present. This typically involves monitoring the worker's exposure and response to heat stress by collecting measurements of heart rate and core body temperature.
Health Monitoring
All workers must participate in a baseline (pre-employment) medical assessment to determine the individual's fitness for work. The medical practitioner should also conduct an assessment to determine the worker's capacity to don respiratory protection.

5 CONSULTATION PROCESS

All personnel, inclusive of the Health and Safety Committee, that are required to carry out works during this Project will be consulted on the information contained within this ECP prior to commencing work and annually thereafter. If this ECP is required to be amended, all personnel will be notified via Health and Safety Committee meetings, Toolbox Talks and/or electronic communication.

6 ECP REVIEW AND EVALUATION

The presence and perceived effectiveness of the listed controls will be verified as part of on-site assessment. This ECP will be subsequently revised if necessary and will be reviewed when considering any alteration of activities on site.

APPENDIX A LEGISLATION AND INDUSTRY GUIDELINES

The following legislation, codes of practice, guidelines and standards are relevant to the development of this ECP:

All Hazards

- Work Health and Safety Act NSW 2011;
- Work Health and Safety Regulation NSW 2017;
- Code of Practice: How to manage work health and safety risks (SafeWork NSW, 2022);
- Code of Practice: Managing the work environment and facilities (SafeWork NSW 2022);
- Code of Practice: Demolition Work (SafeWork NSW 2019);
- Workplace Exposure Standards for Airborne Contaminants (SafeWork Australia, 2024);
- Guidelines on the interpretation of workplace exposure standards for airborne contaminants (SafeWork Australia, 2013);
- Code of Practice: Managing risks of hazardous chemicals in the workplace (SafeWork NSW, 2019);
- Hazardous Chemicals Requiring Health Monitoring (SafeWork Australia, 2013);
- Health Monitoring for Exposure to Hazardous Chemicals: Guide for persons conducting a business or undertaking (SafeWork Australia, 2013);
- Australian Standard (AS) *2601-2001 The Demolition of Structures;*
- Australian/New Zealand Standard (AS/NZS) *1715-2009 Selection, use and maintenance of respiratory protective equipment*;
- Australian/New Zealand Standard (AS/NZS) *1716-2012 Respiratory Protection Devices*;

Dust

- Guidance on the classification of hazardous chemicals under the WHS Regulations (Safe Work Australia, 2013);
- Australian/New Zealand Standard (AS/NZS) 1715:2009 Selection, use and maintenance of respiratory protective equipment;
- Australian/New Zealand Standard (AS/NZS) 1716:2012 Respiratory Protection Devices;
- Australian Standard (AS) 4260-1997 - High efficiency particulate air (HEPA) filters - Classification, construction and performance;
- Australian Standard (AS) 2985:2009 Workplace atmospheres – Method for sampling and gravimetric determination of respirable dust;
- Australian Standard (AS) 3640: 2009, Workplace atmospheres – Method for sampling and gravimetric determination of inhalable dust;
- AIOH Position Paper - Dusts not otherwise specified and occupational health issues (2014); and
- AIOH Position Paper - Respirable crystalline silica and occupational health Issues (2018).

Occupational Noise

- Code of Practice: Managing noise and preventing hearing loss at work (SafeWork NSW, 2019);
- Australian/New Zealand Standard (AS/NZS) 1269.1:2005(R2016) Occupational noise management Part 1, Measurement and assessment of noise emission and exposure;
- Australian/New Zealand Standard (AS/NZS) 1269.2:2005(R2016) Occupational noise management Part 2, Noise control management.
- Australian/New Zealand Standard (AS/NZS) 1269.3:2005(R2016) Occupational noise management Part 3, Hearing protector program.

- Australian/New Zealand Standard (AS/NZS) 1269.4:2014 Occupational noise management Part 4, Auditory assessment.
- Australian/New Zealand Standard (AS/NZS) 1270:2002 Acoustics – Hearing protectors.

Ultraviolet Radiation

- Australian/New Zealand Standard (AS/NZS) 1337.1:2010, Personal eye protection – Part 1: Eye and face protectors for occupational applications;
- Australian/New Zealand Standard (AS/NZS) 2080:2006, Safety glazing for land vehicles; and
- Guide on exposure to solar ultraviolet radiation (UVR) (Safe Work Australia, 2013).

Heat Stress

- Managing the risks of working in heat – Guidance Material (SafeWork Australia, 2013); and
- AIOH - 'A guide to managing heat stress: developed for use in the Australian environment' (2013).