New Sydney Fish Market Stage 1

Construction Environmental Management Plan

Prepared by

Liberty Industrial Pty Ltd

For

Hansen Yuncken Pty Ltd

1A, B and C Bridge Road, Glebe NSW 2037

Revision No.	Revision Date	Authority	Changes
A	28.07.2016	JS	Initial Document
B	05.08.2020	SZ	Added Dust Management Plan, Waste Management Plan and Microbat Management Plan.

REQUIREMENT MATRIX

COA CEMP CONDITIONS

Table 1 - COA CEMP Conditions

CoA no.	Requirement	Reference
B16	Prior to the commencement of works, the Applicant shall prepare and implement an updated Construction Environmental Management Plan (CEMP) for the development and be submitted to the Certifier. The CEMP must:	This plan and sub plans
(a)	describe the relevant stages and phases of construction, including work program outlining relevant timeframes for each stage/phase;	Section 3 Section 2
(b)	include plans demonstrating the boundary of the construction site and any associated areas to be fenced or closed to the public	Section 3
(c)	describe all activities to be undertaken on the site during site establishment and construction of the development;	Section 4; Section 5
(d)	include a Dust Management Plan, incorporating the mitigation measures outlined in the Air Quality Impact Assessment, prepared by SLR Consulting, dated April 2019	Appendix A3 Appendix B8
(e)	clearly outline the stages/phases of construction that require ongoing environmental management monitoring and reporting;	Section 9
(f)	detail statutory and other obligations that the Applicant is required to fulfil during site establishment and construction, including approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies;	Section 9.2
(g)	include specific consideration of measures to address any requirements of relevant agencies during site establishment and construction;	Appendix A2
(h)	describe the roles and responsibilities for all relevant employees involved in the site establishment and construction of the works	Table 6
(i)	detail how the environmental performance of the site preparation and construction works will be monitored, and what actions will be taken to address identified potential environmental impacts, including but not limited to noise, traffic and air impacts;	Appendix A2
(j)	include measures to ensure adequate is sourced in order to account for groundwater flows in the construction excavation, unless any exception applies.	Section 6
(k)	management of groundwater during construction.	Not Applicable to this stage See
(l)	incorporate procedures and measures for the demolition phase for minimisation of harm to the microbats that may have not been excluded from the site, and these procedures and measures must be developed in consultation with the project ecologist	Appendix B1-B4
(m)	document and incorporate all relevant sub environmental management plans (Sub-plans), control plans studies, and monitoring programs required under this part of the consent:	

CoA no.	Requirement	Reference
(n)	include arrangements for community consultation and complaints handing procedures	
NOTE	In the event of any inconsistency between the consent and the CEMP, the consent shall prevail.	
NOTE	Prior to the commencement of works, details demonstrating compliance with the above requirements (Condition B17 (a)-(n)) must be submitted to the Certifier. A copy of the CEMP must be submitted to the Certifier, TfNSW (Maritime) and the Planning Secretary.	

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GLOSSARY AND ABBREVIATIONS

ACM	Asbestos Containing Material
ALARP	Mitigate risk to “As Low As Reasonably Practical”;
ARCP	Asbestos Removal Control Plan
BoM	Bureau of Meteorology
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
Code of Practice	A practical guide to achieve the standards of health and safety required under the model Work Health and Safety (WHS) Act and model WHS Regulations
DPE	Department of Planning and Environment
DPI	Department of Primary Industries
EPA Act	Environment Planning and Assessment Act 1979
ENM	Excavated Natural Material
Environmental Aspect	Means the interaction, relationship or impact of an operation or activity with the Environment including Soil, Water Air
Environmental Law	Relating to the storage, handling or transportation of waste, dangerous goods or hazardous material relating to Workplace health and safety; or which has as one of its purposes or effects the protection of the Environment
Environmental Notice	Means any direction, order, demand, license or other requirement from a Government Agency to take action or refrain from taking any action in respect of the Site or the Works in connection with any Environmental Law
EPA	Environmental Protection Agency
EPBC	Environmental Protection and Biodiversity Act 1999 (EPBC)
HESQ	Health Environment Safety Quality
HSEQ	Health Safety Environment Quality
JHA	Job Hazard Analysis
OEH	Office of Environment and Heritage
PCB	Polychlorinated Biphenyl
PFC	PFC Perfluorinated Chemicals
Site	Means a project site or work area where the company is undertaking activities on behalf of a client
SMF	Synthetic Mineral Fibres (SMFs),
Standards	Standards are published documents setting out specifications and procedure
TEU	Twenty-Foot Equivalent Unit
The Company	‘Liberty Industrial’
The Secretary	The Secretary of the Department of Planning & Environment
VENM	Virgin Excavated Natural Material

1 BACKGROUND

1.1 PURPOSE OF THIS CEMP

This Construction Environmental Management Plan (CEMP) has been prepared by Liberty Industrial for the New Sydney Fish Market (Stage 1) Project (NSFMS1).

This CEMP and sub-plans have been prepared in accordance with the relevant project approval documentation, Liberty Industrials Environmental Management Systems and the Guideline for the Preparation Environmental Management Plans (DIPNR, 2004). The CEMP will provide the necessary framework to enable the project to be completed with minimal environmental impact in accordance with the environmental objectives for this project.

It is the policy of Liberty Industrial to ensure that the Project achieves a high standard of care to minimise the impact on the environment, immediate work sites, and the local community.

This CEMP addresses the applicable requirements of:

- The conditions of Project Approval (SSD 8924) issued by the Minister of Planning on the 12th of June 2020;
- Applicable New South Wales and Commonwealth Legislation;

To meet these objectives, a systematic and planned approach for the management of environmental issues will be implemented on this project.

This CEMP is designed to provide the management framework with strategies to effectively manage all environmental risks during the demolition and remediation process during the Early Works. Implementing this CEMP effectively will ensure that the Project team meets the NSW regulatory and policy requirements in a systematic manner and continually improves its performance.

In particular, this CEMP:

- Describes the Project in detail including activities to be undertaken and relative timing;
- Describes the environmental management roles and responsibilities of personnel;
- States objectives and targets for issues important to the environmental performance of the Project;
- Identifies environmental aspects and impacts associated with each activity of the Project;
- Provides specific mitigation measures and controls that can be applied on-site to avoid or minimise negative environmental impacts;
- Provides specific mechanisms for compliance with applicable policies, approvals, licences, permits, consultation agreements and legislation;
- Outlines a monitoring regime to check the adequacy of controls as they are implemented during construction.

This CEMP is the overarching document in the environmental management system for the Project that includes a number of management documents. It is applicable to all staff and sub-contractors associated with the construction.

1.2 REVISION

Changes to the CEMP shall only be implemented with the approval of the Project Manager.

This CEMP will be revised to address requirements of NSW Government, Department of Planning, Industry and Environment and changes identified through continual improvement and as necessary.

Within three months of;

- the submission of a compliance report under Conditions B10 and B12;
- the submission of an incident report under Condition A17;
- the approval of any modification of the conditions of this consent; or
- the issue of a direction of the Planning Secretary under Condition A1 which requires a review,

the strategies, plans and programs required under this consent must be reviewed, and the Department must be notified in writing that a review is being carried out.

If necessary, to either improve the environmental performance of the development, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary. Where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review.

2 PROJECT OVERVIEW

The new Sydney Fish Market will be located in Glebe, NSW at the head of Blackwattle Bay on Bridge Road. The site is adjacent to the existing fish market, located south east of Anzac Bridge at the intersection of Pyrmont Bridge Road and the Western Distributor.

Liberty Industrial has been engaged By Hanson Yuncken to carry out the early works which involves the demolition of land and water-based structures including removal of marine piles and wharf structures.

2.1 GENERAL DESCRIPTION OF THE SITE

The site has 3 main components which are known as

- 1A, Bridge Road Glebe (lot 5), Hanson Concrete Batching Plant;
- 1B, Bridge Road Glebe (lot 4), Former Sydney Event Cruises Wharf; and
- 1C, Bridge Road Glebe (lot 3), Redundant Coal Depot

Hanson Concrete Batching Plant

RMS is the land owner of Hanson BWB site, this site has been operating as a concrete batching plant located on a wharf deck structure over the bed of Blackwattle Bay. The term of the lease agreement for the use of the site as a concrete batching plant is coming to end. According to the lease agreement, Liberty Industrial was engaged to carry out demolition works to make good the site for vacant possession. At completion of the project, all components of the concrete batching plant will be removed.

Former Sydney Event Cruises Wharf

Lot 4 used to be used by Sydney Event Cruises, this site is currently not in use. The main component of this site is the Finger Wharf. There are 3 land-based structures, Ausgrid Substation, Demountable Office and Weighbridge Office (west to east).

Redundant Coal Depot

Historical record indicates the site used be operated as a Coal Depot. All remaining structures were built on the land base. The remaining structures includes steel gantry and coal loader. Due to the site has been in a state of neglect for many years, more than 50% of the hardstand is covered by vegetation.

2.2 SCOPE OF WORK

This scope of work is to undertake demolition works on SFMS1 Project, in order to provide unencumbered access for the works package. It includes the following:

1 Establishment of boundary perimeter barrier – Type A and Type B hoarding

2 Heritage salvage works;

3 Demolition of existing infrastructure and buildings;

2.2.1 Plant and Personnel

At the peak of works the plant and personal resourcing for the project described in the below table.

Table 2 - Plant and Personnel Table

Plant	Quantity (Up to)
20-45 Tonne (T) Excavators	4
280T Crawler Crane	1
50-100T Crawler Cranes	3
On Road Trucks	36
Diesel Silenced Generators	2
10- 20m Elevated Work Platforms	2
3T Telehandler	2
Skilled Labourers	30
Liberty Industrial Management Staff	6
Consultants	5
Subcontractors	20

2.3 OVERALL PROGRAM

Appendix B7 – New Fish Market Stage 1 – Project Schedule

3 CONSTRUCTION ACTIVITIES

3.1 WORK HOURS

Early works shall be undertaken during the following standard construction hours:

Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:

- between 7.00 am and 5.30 pm, Mondays to Fridays inclusive; and
- between 7.30 am and 3.30 pm, Saturdays.

No work may be carried out on Sundays or public holidays

Activities may be undertaken outside of these hours if required:

- by the Police or a public authority for the delivery of vehicles, plant or materials;
- in an emergency to avoid the loss of life, damage to property or to prevent environmental harm.

Notification of such activities must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

- 9.00 am to 12.00 pm, Monday to Friday;
- 2.00 pm to 5.00 pm Monday to Friday; and
- 9.00 am to 12.00 pm, Saturday.

3.2 UTILITY SERVICES AND STORMWATER IDENTIFICATION, PROTECTION, RELOCATION AND/OR TERMINATION

Dial 'before you dig' protocols and consultation with the principal and landowner for all potential utilities affected by the project will been implemented.

Prior to the commencement of any works, Liberty will identify of any public authorities (e.g. Sydney Water, Ausgrid, Telstra etc) in regard to the connection, relocation or removal of services affected by the demolition works. All services disconnection and isolation work will be carried out by Hansen Yuncken.

3.3 DEMOLITION OF EXISTING INFRASTRUCTURE AND BUILDINGS

Liberty Industrial will demolish identified existing hardstands, pavements and building structures. The works involves:

- Removal of hazardous materials in contaminated buildings incl. ACM;
- Demolition of the building structures including coal loader, weighbridge office, demountable office and Ausgrid Substation. The buildings are required to be demolished to ground level;

- Demolition of the civil infrastructure including all existing wharves, they are Blackwattle Bay Wharf, Finger Wharf and Hanson Batch Plant Wharf.

Hazardous and Non-Materials will be managed and disposed of as detailed in Appendix B5 –Waste Management Plan.

General demolition waste will be removed from site except for materials that can be salvaged or deemed as suitable to remain on site for recycling.

Liberty will ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601:2001: The Demolition of Structures*.

The following figure shows the location of the buildings to be demolished.

Figure 1 - Locations of Land-based structures to be demolished

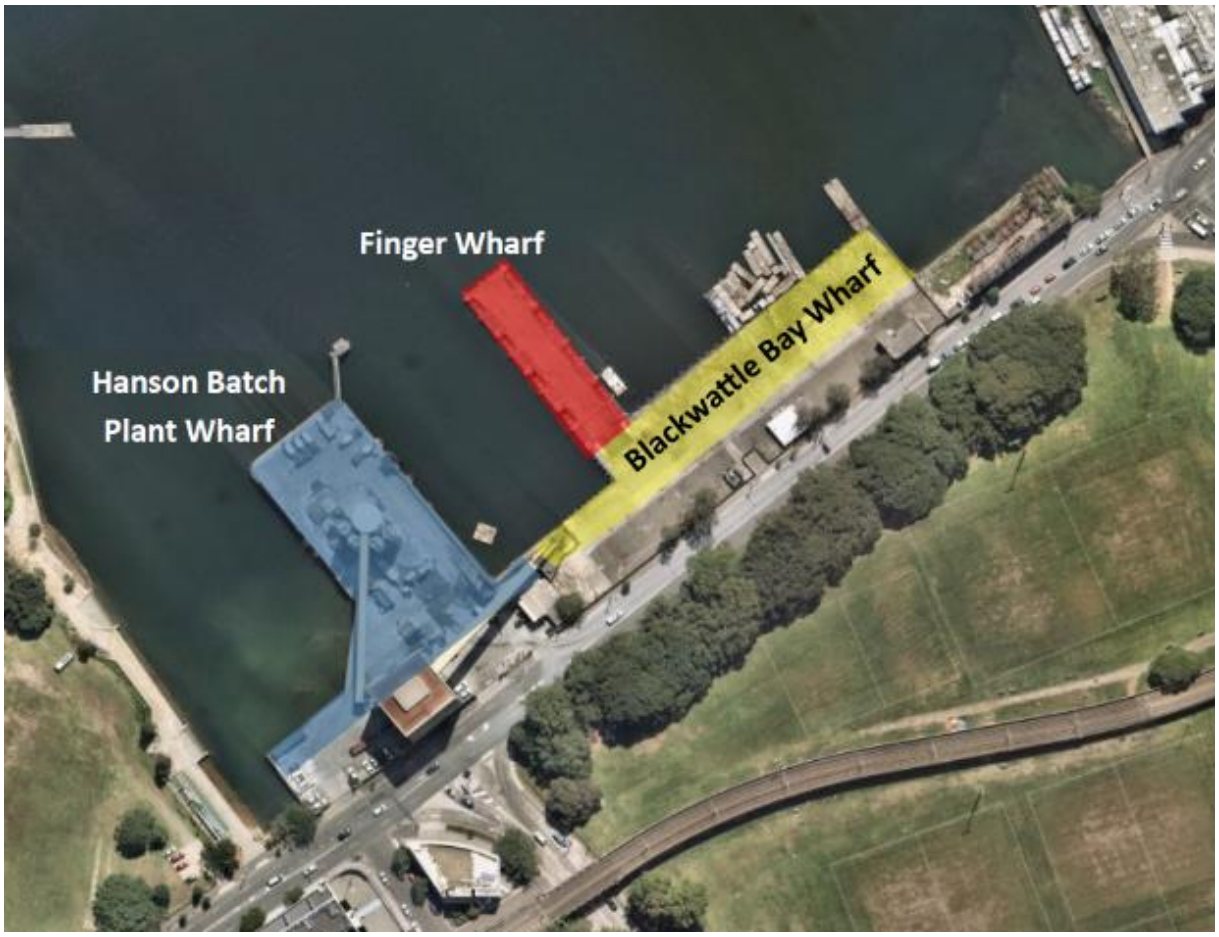

Figure 2 - Locations of Wharves to be removed

4 PLANNING AND LEGISLATIVE REQUIREMENTS

4.1 ENVIRONMENTAL OBLIGATIONS

All construction personnel working on the Project have the following general obligations:

- Comply with all Environmental Laws including authorisations, license and approvals required by any government agency for the lawful use of the site to carrying out of contracted work;
- Not contaminate or cause any pollution on or from the site due to the undertaking;
- To undertake all works in a manner that ensures the protection of the water quality objectives and environmental values for Sydney Harbour estuarine waters in accordance with the NSW Water Quality Objectives and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) for the environmental values under the ANZECC Guidelines.
- To not pollute waters. All water discharge from the site must meet all requirements of the Protection of Environment Operations Act 1997 and ensure no contaminated or treated site waters (surface, collected groundwater or contaminated construction waters) are permitted to be discharged into Blackwattle Bay.
- To notify the Department in writing to compliance@planning.nsw.gov.au within seven days after the Applicant becomes aware of any noncompliance. The Certifier must also notify the

Department in writing to compliance@planning.nsw.gov.au within seven days after they identify any non-compliance.

- To notify the Department in writing to compliance@planning.nsw.gov.au immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident.
- Not use, keep or handle on the site any dangerous goods or hazardous material except as may be required to carry out contracted work;
- Operate in a proper and efficient manner and maintain in good working order, all plant used in connection with the carrying out the contracted work;
- Install and maintain pollution control equipment required by an environmental law to be installed and operated in connection the site undertaking;
- Promptly implement any recommendation of an environmental audit, assessment, investigation or report in respect of the site and/or undertaking (whether or not such recommendation is required in order to comply with an environmental law);
- Remediate any contamination of the site if caused by the undertaking;
- Clean up, manage or abate any pollution occurring on and/or from the site;
- Remedy any breach of an environmental law that occurs on or affects the site as soon as it occurs (including by restoring the site to a state as close as practicable to the state it was in prior to that alleged breach);
- Comply with every environmental notice relating to the site or issued in consequence of contracted work;

4.2 LEGISLATION, STANDARDS AND CODES OF PRACTICE

Liberty Industrial commit to comply with all relevant sections of legislation, policies, guidelines and standards applicable to the project and are listed below;

- AS/NZS ISO 19011:2014 – Guidelines for Auditing Management Systems
- *Australian Standard AS 2601:2001:* The Demolition of Structures
- State Environmental Planning Policy No. 55 – Remediation of Land;
- Contaminated Land Management Act, 1997
- Section 120 of the Protection of the Environment Operations Act 1997
- Environment Protection Manual for Authorised Officers: Bunding and Spill Management, Technical Bulletin (Environment Protection Authority, 1997).
- Waste Classification Guidelines (CoA Department of Climate Change and Water 2009)
- AS ISO 10002-2006 Customer satisfaction – Guidelines for complaints handling in organisations (ISO 10002:2004, MOD)
- Interim Construction Noise Guideline (DECC, 2009)

- Assessing Vibration: a Technical Guide (DECC 2006)
- Fisheries Management Act 1994
- Guideline for the Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2004).

Key legislation, objectives, application and relevance for the project are further listed and discussed in Table 2.

Table 3 - Outline of Relevant Legislation

Legislation	Objectives & Application	Relevance
Protection of the Environmental Operations Act 1997	Objectives of the Act are: • To protect, restore and enhance the quality of the environment in New South Wales, having regard to the need to maintain ecologically sustainable development, • To provide increased opportunities for public involvement and participation in environment protection, • To ensure that the community has access to relevant and meaningful information about pollution, • To reduce risks to human health and prevent the degradation of the environment by the use of mechanisms that promote the following: • Pollution prevention and cleaner production, • The reduction to harmless levels of the discharge of substances likely to cause harm to the environment, • The elimination of harmful wastes, • The reduction in the use of materials and the re-use, recovery or recycling of materials, • The making of progressive environmental improvements, including the reduction of pollution at source, • The monitoring and reporting of environmental quality on a regular basis, • To rationalise, simplify and strengthen the regulatory framework for environment protection, • To improve the efficiency of administration of the environment protection legislation, • To assist in the achievement of the objectives of the Waste Avoidance and Resource Recovery Act 2001.	There is a duty to report pollution incidents under section 148 of the Protection of the Environment Operations Act 1997 (POEO Act). Schedule 1 of the POEO defines activities that require an Environmental Protection Licence. The POEO Act Classifies Environmental Offences and Penalties.

Legislation	Objectives & Application	Relevance
Protection of the Environmental Operations (Clean Air) Regulation 2010	This Act: • Provides for the certification of domestic solid fuel heaters; • Controls burning generally by imposing an obligation to prevent or minimise emissions, by prohibiting the burning of certain articles and requiring approval for certain fires/incinerators; • Requires the fitting of anti-pollution devices to certain motor vehicles and prescribes an offence of emitting excessive air impurities; • Imposes certain requirements and standards on the supply of petrol; • Prescribes standards for certain groups of plant and premises to regulate industry's air impurity emissions; and • Imposes requirements on the control, storage and transport of volatile organic liquids.	Regulates atmospheric pollutants including dust and odour onsite
Protection of the Environmental Operations (Waste) Regulation 2005	This Act: • Provides for the contributions to be paid by the occupiers of scheduled waste facilities for each tonne of waste received at the facility or generated in a particular area; • Exempts certain occupiers or types of waste from these contributions; • Allows rebates to be claimed in relation to certain types of waste; • Provides for certain reporting and record-keeping requirements in relation to scheduled waste facilities and scheduled landfill sites; • Exempts certain waste streams from the full waste tracking and recordkeeping requirements; • Makes requirements relating to the transport of waste to interstate destinations; • Makes special requirements including reporting requirements relating to asbestos waste as well as prohibiting the re-use and recycling of asbestos waste; • Imposes requirements on brand owners and retailers to recover, re-use and recycle packaging; • Allows the EPA to issue exemptions from certain provisions of the Act and Regulations; • Allows the EPA to approve the immobilisation of contaminants in waste; and • Makes it an offence to apply, or to cause or permit the application of, residue waste to land that is used for the purpose of growing vegetation, subject to any exemptions.	Regulates Management and Disposal of Wastes onsite

Legislation	Objectives & Application	Relevance
Protection of the Environmental Operations (Noise Control) Regulation 2008 (NSW)	This Act • Provides for the sale and use of various motor vehicle and motor vehicle accessories devices such as horns and alarms; • Regulates noise emitted as a result of the use of marine vessels; • Prohibits the selling of certain articles that emit noise above prescribed levels, such as lawn mowers, edge-cutters, string trimmers and brush cutters; • Requires labelling of certain other noise emitting articles such as chainsaws, air conditioners, air compressors, pavement breakers, garbage compactors; and • Provides for the inspection and testing of certain articles.	Relates to Noise generating activities during the works.
Fire Brigades Act 1989	This Act applies to; • Land-based hazardous material incidents (and to any fires that may result from them) that occur anywhere in the State except on State waters, as defined in the Marine Pollution Act 2012. • A hazardous material incident that occurs in or on a building, bridge or other structure or on any body of water (not being part of State waters) is taken to be land-based.	Applies to emergency incidents and accidents involving hazardous materials
Local Government Act 1993	The purposes of this Act are as follows: • To provide the legal framework for an effective, efficient, environmentally responsible and open system of local government in New South Wales, • To regulate the relationships between the people and bodies comprising the system of local government in New South Wales, • To encourage and assist the effective participation of local communities in the affairs of local government,	Referenced and assessed during Approval Process
Contaminated Land Management Act 1997	Objects of this Act: • The general object of this Act is to establish a process for investigating and (where appropriate) remediating land that the EPA considers to be contaminated significantly enough to require regulation under Division 2 of Part 3. • Particular objects of this Act are: • To set out accountabilities for managing contamination if the EPA considers the contamination is significant enough to require regulation under Division 2 of Part 3, and • To set out the role of the EPA in the assessment of contamination and the supervision of the investigation and management of contaminated sites, and • To provide for the accreditation of site auditors of contaminated land to ensure appropriate standards of auditing in the management of contaminated land, and • To ensure that contaminated land is managed with regard to the principles of ecologically sustainable development	Contamination on site must be assessed and managed in accordance with this act

Legislation	Objectives & Application	Relevance
Environmental Planning and Assessment Act 1979	The objects of this Act are to encourage: The proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment, The promotion and co-ordination of the orderly and economic use and development of land, (iii) the protection, provision and co-ordination of communication and utility services, (iv) the provision of land for public purposes, (v) the provision and co-ordination of community services and facilities, and (vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and (vii) ecologically sustainable development, and (viii) the provision and maintenance of affordable housing, and to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and To provide increased opportunity for public involvement and participation in environmental planning and assessment.	Planning approval for the project is regulated by the DPE under the Environmental Planning and Assessment Act 1979 Refer to Appendix B6 for more details in protection of Microbats

Legislation	Objectives & Application	Relevance
Waste Avoidance and Resource Recovery Act 2001	The objects of this Act are as follows: • To encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development, • To ensure that resource management options are considered against a hierarchy of the following order: (i) Avoidance of unnecessary resource consumption, (ii) Resource recovery (including reuse, reprocessing, recycling and energy recovery), (iii) Disposal, • To provide for the continual reduction in waste generation, • To minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste, • To ensure that industry shares with the community the responsibility for reducing and dealing with waste, • To ensure the efficient funding of waste and resource management planning, programs and service delivery, • To achieve integrated waste and resource management planning, programs and service delivery on a State-wide basis, • To assist in the achievement of the objectives of the *Protection of the Environment Operations Act 1997*.	Waste Avoidance and Resource Recovery Act 2001 Establishes the waste hierarchy. Promotes waste avoidance and resource recovery by developing waste avoidance and resource recovery strategies. Provides requirements for waste avoidance and resource recovery
State Environmental Planning Policy No 55— Remediation of Land	Object of this Policy; • The object of this Policy is to provide for a Statewide planning approach to the remediation of contaminated land. In particular, this Policy aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment: • By specifying when consent is required, and when it is not required, for a remediation work, and • By specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out a remediation work in particular, and • By requiring that a remediation work meet certain standards and notification requirements.	The site is to be remediated in accordance with State Environmental Planning Policy No 55 - Remediation of Land

4.3 PROJECT SPECIFIC APPROVAL

4.3.1 Development Consent to the Development Application (SSD 8924) by the Minister for Planning

Planning approval for the project is regulated by the Department of Planning and the Environment (DPE) under the *Environmental Planning and Assessment Act 1979*

4.3.2 Asbestos

The Hazardous Materials Survey anticipates the presence of asbestos located within buildings.

All asbestos works will be carried out under and consistent with Liberty Industrial Class A licence. This involved the submission of a *Notification of Removal of Asbestos to WorkSafe NSW.*

4.4 ENVIRONMENTAL POLICY

The company's aim is to achieve a high standard of care and minimise our impact on the natural environment in all activities in which we are engaged. This depends on the commitment of all worker(s) within the company this project.

The company will:

- Conduct its operations in compliance with all relevant environmental regulations, licences and legislation as a minimum condition;
- Identify, monitor and manage environmental risks arising from its undertakings;

Seek continuous improvement in environmental performance, operational processes, waste management and use of resources by:

Monitoring and improving our demolition methods to minimise environmental impact;

- Analysing and continuously improving recycling rates;
- Funding post graduate studies in waste minimisation;
- Providing adequate training and awareness for all workers and sub-contractors on environmental issues;
- Communicating and consulting regularly with our workers about our policy and individuals' responsibilities;

Communicating with our Clients, suppliers, contractors and sub-contractors, community and external agencies about our environmental performance;

- Establishing and reviewing environmental objectives and targets;
    - Developing, implementing and maintaining a Management System based on the elements of ISO 14001:2004.

Liberty Industrials Environmental Policy in detailed in Appendix A1.

4.5 OBJECTIVES AND TARGETS

Environmental objectives and targets have been established as a means of assessing environmental performance during the Sydney Fish Market Early Works. These objectives and targets have been developed with consideration of the key issues identified through the environmental assessment and risk assessment process.

Management review process shall occur via weekly operations meeting which will include senior management staff, site management staff, engineers and environmental and HSEQ advisors with minutes provided to the GM and Directors for review.

Measurable targets shall be consistent with the Compliance Tracking Program and detailed in the Compliance Tracking Report.

Table 4 - Environmental Performance Targets

Objectives	Targets	Measurement tools
Comply with all relevant environmental standards and approvals during the life of the Project	Full compliance with statutory approvals	Audits, compliance reporting, management review, inspection Reports
Comply with statutory requirements, regulatory approvals and regulatory reporting (Commonwealth and NSW).	No regulatory infringements No formal regulatory warning	Audits, compliance reporting, management review, inspection Reports
Protect people, the environment and property	Comply with the CEMP and all relevant legislation, standards and codes of practices	Compliance report, management review and audits, inspection Reports
Continuously improve environmental performance	Develop and maintain a program of ongoing environmental training. Capture lessons learnt from environmental incidents to minimise repeat issues. Encourage and reward innovation and effort throughout the workforce	Compliance report, management review and audits, inspection Reports
Establish, implement and maintain an EMS.	Establish and implement an EMS and address non-conformances and corrective actions within specific timeframes.	Audits, management reviews

4.6 ASPECTS AND IMPACTS

A risk management approach has been used to determine the severity and likelihood of an activity's impact on the environment and to prioritise its significance. This process considers potential regulatory and legal risks as well as taking into consideration the concerns of the community and other key stakeholders. The objectives of the risk assessment are to:

- Identify activities, events or outcomes that have the potential to adversely affect the local environment and/or human health/property;
- Qualitatively evaluate and categorise each risk item;
- Assess whether risk issues can be managed by environmental protection measures; and

- Qualitatively evaluate residual risk with implementation of measures.
- Appendix A2 contains an Environmental Risk Assessment Aspects and Impacts associated with the Project. Measures to mitigate the identified environmental risks are also provided. The key environmental aspects for this project include:
- Erosion and sediment control
- Contaminated land management
- Air Quality Management
- Hazardous Material Management

5 IMPLEMENTATION AND OPERATION

This CEMP is the overarching management plan for a suite of environmental management documents for the Project. It provides a structured and systematic approach to environmental management. The primary purpose of the system of documentation is to:

- Ensure compliance with all applicable environmental laws, specifications, obligations and approvals.
- To minimise environmental impacts.

5.1 DOCUMENTATION

5.1.1 CEMP

This CEMP provides the system to manage and control the environmental aspects of the Project during Early Works. It identifies all requirements applicable to activities described in Section 3. It also provides the overall framework for the system and procedures to ensure environmental impacts are minimised and legislative and other requirements are fulfilled. The strategies defined in this CEMP have been developed with consideration of the Project approval requirement, safeguards and mitigation measures presented in the approval documents. This CEMP establishes the system for implementation, monitoring and continuous improvement to minimise impacts from the Project on the environment. This CEMP is consistent with:

- Guideline for the preparation of Environmental Management Plans (DIPNR, 2004);
- AS/NZS ISO14001: 2004, 'Environmental Management Systems - requirements with guidance for use;

This CEMP and sub-plans will be provided to the certifier prior to commencement of Early Works.

5.1.2 CEMP Sub-Plans

A number of sub-plans support the CEMP. These documents are prepared to identify requirements and processes applicable to specific impacts or aspects of the activities described in Section 3 and address the requirements of the project Conditions of Approval. They are used to define the operational controls required to ensure that each potential aspect and impact identified is eliminated, reduced or mitigated. The sub-plans are communicated to all employees, including sub-contractors; the project engineers and subcontractors are responsible for incorporating the requirements into the site-specific risk assessments, staff training and briefings. Copies of the sub-plans are provided in Appendix B1 to Appendix B4.

The following sub-plans have been developed for this project:

Table 5 - CEMP Sub Plan Table

Sub Plans
Construction Pedestrian and Traffic Management Plan
Construction Noise and Vibration Management Plan
Construction Air Quality Management Plan
Construction Soil and Water Management Plan
Waste Management Plan
Dust Management Plan

5.2 ROLES AND RESPONSIBILITIES

5.2.1 Roles and Responsibilities Matrix

Table 6 - Roles and Responsibility Matrix

Responsibility	Project Directors	Project Manager	Site HSEQ Advisor	Heritage Consultant	Project/Site Engineer	Site Supervisor	National HSEQ Manager
Develop environmental policy; objectives, targets and programs;	X	X					
Review and Approve Environmental Documents		X	X				
Conduct and keep record of inductions & attendance.			X				
Implementation & recording of toolbox talks			X			X	
Recording of toolbox talks			X		X	X	
Daily prestart/conduct risk assessments in Job Hazard Analysis (JHA)						X	
Monitor works to ensure they are compliant with JHAs and environmental KPI					X	X	
Identify & coordinate training			X				X
Conduct Environmental Inspections			X				
Conduct Internal Audits			X		X		
Tracking of Non-conformances			X		X		

Responsibility	Project Directors	Project Manager	Site HSEQ Advisor	Heritage Consultant	Project/Site Engineer	Site Supervisor	National HSEQ Manager
Review environmental reports and inspections and initiate actions to rectify		X	X		X		
Reporting of Incidents		X	X		X		
Notification of Incidents		X				X	
Manage Complaints		X					
Involvement in the investigation of environmental incidents		X	X		X	X	
Compile Monthly Reports		X			X		
Compliance tracking and Monitoring (A2)					X		
Implementation of Mitigation measures in the CEMP and Sub plans		X	X		X		
Ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601:2001* (B1)		X	X		X	X	
Follow instructions as indicated in Mitigation and Management Measures of CEMP sub plans	X	X	X	X	X	X	X
Ensure Heritage works are undertaken				X			
Ensure dangerous goods and chemicals are stored correctly (B10, D4)			X			X	

Responsibility	Project Directors	Project Manager	Site HSEQ Advisor	Heritage Consultant	Project/Site Engineer	Site Supervisor	National HSEQ Manager
Ensure Dust Management is in accordance with AQMP.					X	X	
Ensure Waste Management is in accordance with WMP.					X	X	
Ensure Traffic and Transport Measures are adhered to CPTMP			X		X	X	
Ensure Construction Hours and Protocols are adhered to.		X				X	
Implement and adhere to Noise and Vibration mitigation measures (NVMP)			X		X	X	
Assure compliance with applicable legal requirements and other requirements to which the organization subscribes		X	X				X
Maintain and implement a Construction Environmental Management Plan	X	X	X	X	X	X	X
Undertake environmental Monitoring					X	X	
Manage Environmental Audits			X		X		
Updating CEMP through review of the environmental impacts of construction activities		X			X		
Attend site, inspect and asses any Heritage unexpected finds				X			

Responsibility	Project Directors	Project Manager	Site HSEQ Advisor	Heritage Consultant	Project/Site Engineer	Site Supervisor	National HSEQ Manager
Attend site, inspect and asses any Contamination unexpected finds		X			X		
Measure and Monitor and manage dust emissions					X	X	
Measure and monitor and manage waste generated during construction but not necessarily limited to: general procedures for waste classification, handling reuse, disposal; use of secondary waste material in construction wherever feasible and reasonable; procedures or dealings with green waste including timber and mulch from clearing activities; and measures for reducing demand on water resources					X	X	
Measure and monitor and manage hazards and risks			X		X	X	

5.3 PROJECT CONTACTS

Table 7 - Project Contacts

Name	Title	Phone Number
Antoine Delort (LI)	Project Manager	0429 776 216
John Harris (LI)	Safety Manager	0488 662 253
Bayden Tilley (LI)	Site Supervisor	0431 005 221
Mohamad Darwish (LI)	Project Engineer	0450 571 271
Sean Zhou (LI)	Site Engineer	0417 221 190
Nia Tila (LI)	HSEQ Administrator	0418 410 870

6 MONITORING AFFECTS ON SURROUNDING INFRASTRUCTURE AND ROADS

Prior to the commencement of works, the Applicant is to engage a suitably qualified professional(s) to prepare a Pre-Construction Dilapidation Report detailing the current structural condition of all retained and existing and adjoining building, infrastructure and roads with the zone of influence. The report must be submitted to the Certifier prior to the commencement of works.

The Pre-Construction Dilapidation Report must also include a photographic recording of the public domain site frontages. The recording must include clear images of the foreshore, footpath, nature strip, kerb and gutter, driveway crossings and laybacks, kerb ramps, road carriageway, street trees and plantings, parking restriction and traffic signs, and all other existing infrastructure along the street. The form of the recording is to be as follows:

- a PDF format report containing all the images that clearly demonstrates the existing site conditions;
- each image is to be labelled to identify the elements depicted, the direction that the image is viewed towards, and include the name of the relevant street frontage;
- each image is to be numbered and cross referenced to a site location;
- a summary report, prepared by a suitable professional, must be submitted in conjunction with the images detailing the project description, identifying any apparent existing defects, detailing the date and authorship of the photographic record, the method of documentation and limitations of the photographic record.

At the completion of the works a post-dilapidation survey will be undertaken in order to determine if any damage to the assets have occurred.

Post completion of the works:

- A suitably qualified person to prepare a post-construction dilapidation report. This report must ascertain whether the construction works created any structural damage to adjoining buildings, infrastructure and roads.

- the report is to be submitted to the Certifier. In ascertaining whether adverse structural damage has occurred to adjoining buildings, infrastructure and roads, the Certifier must:
- compare the post-construction dilapidation report with the pre-construction dilapidation report required by these conditions;
- have written confirmation from the relevant authority that there is no adverse structural damage to their infrastructure and roads; and
- a copy of this report is to be forwarded to the Certifier, Council, the Planning Secretary and each of the affected property owners.

7 COMPETENCE TRAINING AND AWARENESS

Onsite environment training will be coordinated and recorded by the Project Engineer and Site Supervisor. Records include details of topics, attendees, and duration will be stored in a training register, signed attendance sheets will be filed.

Internal and on-the-job training is provided on a regular basis for all staff including subcontractors.

Environmental Awareness training will be delivered to staff and subcontractors through the site induction, toolbox talks, and pre-start briefings. General awareness for site operatives and office-based staff will also be provided via notice boards, posters and environment bulletins.

7.1 SITE INDUCTIONS

All workers and visitors shall undergo the following inductions/trainings prior to commencing work

- Liberty Industrial Project Specific Induction;
- Hanson Yuncken Project Specific Induction
- Hansen Yuncken Online Induction

All visitors will undergo a Visitors Induction prior to entering the site and will remain with a fully inducted person at all times.

7.2 TOOLBOX TALKS

Toolbox talks will be undertaken on a regular basis and will include, where required information on environmental impacts of the demolition and remediation works. Where required, specific training will be provided to the relevant personnel on hazards associated within specific activities and the controls to be implemented to minimise environmental harm. This will include measures identified in the CEMP.

Toolbox talks will be tailored to specific environmental issues including:

- Erosion and sedimentation control;
- Hours of work;
- Emergency and spill response;
- Noise
- Housekeeping and waste

- Project and clearing limits
- Dust control

Toolbox attendance is mandatory and attendees of Toolbox talks are required to sign an attendance form. Records of Toolbox attendance will be maintained.

7.3 PRESTART MEETINGS

The pre-start meeting is a tool for informing the workforce of the day's/ shift's activities, safe work practices, environmental protection practices, work area restrictions, activities that may affect the works, hazards and other information that may be relevant to the day's work.

The site supervisor, or other appropriate site staff member, will conduct a daily pre-start meeting for the site workforce before the commencement of work each day (or shift) or where changes occur during a shift. Pre-start meetings may be project-wide and/or held for specific work areas.

The environmental component of pre-starts will include any environmental issues that could potentially be impacted by, or impact on, the day's activities. All attendees will be required to sign on to the pre-start and acknowledge their understanding of the issues explained. Pre-start topics, dates delivered and a register of attendees will be recorded and the records maintained.

7.4 ADDITIONAL AND REVISED TRAINING

Additional or revised training as a result of monitoring outputs and/or EMP review will occur via Prestart Meetings and Toolboxes and if required changes to the site induction will occur. The need for additional training will be determined by the processes.

8 COMMUNICATION AND RECORDS

8.1 COMMUNICATION

The company commits to reporting through the Project Manager, communicating and reporting all environmental concerns categorized as high risk as per the risk assessment in this CEMP. Communication typically occurs during daily pre start meetings, weekly site meetings and monthly project meetings.

8.2 COMMUNITY RELATIONS

- Hansen Yuncken will manage Community Relations through Elton Consulting. Refer to Hansen Yuncken's Stakeholder Management & Communications Management Plan for further information.
- A community information telephone number has been established to provide access and information about the project.
- An email address has been established to manage correspondence and to provide access and information about the project.
- A postal address has been established to manage correspondence and to provide access and information about the project.
- Community notifications and newsletters shall be prepared and distributed as per Hansen Yuncken's Stakeholder Management & Communications Management Plan, to the

community in areas that are potentially affected by the project. The contents of the notifications shall include information on the nature of the works, location of works being carried out, possible impacts to amenity, traffic flow or services, and the contact details as listed above.

- Information boards with the above contact details shall be prepared and installed on the site boundary hoarding detailing contacts for information / complaints for the project.
- Should the public enter site they are to be directed to the site office to talk to Hansen Yuncken management.

Once works commence, communication with the community shall be maintained via the aforementioned methods.

9 INSPECTIONS, MONITORING AND AUDITING

9.1 METHODS OF EVALUATION

Progress and compliance against environmental requirements will be evaluated through:

- Audits, both internal and external;
- Review of documents and/or records;
- Employee and Client feedback;
- Project or work reviews and reporting;
- Direct observation;
- Environmental inspections.

9.2 INSPECTIONS AND MONITORING

Liberty industrial will undertake the following inspection and monitoring as outlined below. Dust and Odour Monitoring KPIs are further detailed in Table 4 of the CAQMP.

Table 8 - Environmental Monitoring and Inspection Table

Monitoring Details	Area	Responsibility	Frequency
Weather – Meteorological Data Including daily rainfall, temperature, relative humidity, wind (direction and speed)	All	Environment Advisor	Daily from BOM data
Dust – Visible Visual observation during daily site inspections, and by supervisors as works progress	All	Site Supervisors (During Works)	Daily and during works
Dust – Deposited Matter Monthly using dust deposition gauges	All	Site Supervisor/ Environmental Consultant	Monthly sample
Air particulate matter Real time recording of air particulates	All	Site Supervisor/ Environmental Consultant	Real time online database
Volatiles and Odour - Odour observations during daily site inspections, and by supervisors as works progress	Wharf Demolition and Storage Areas	Site Supervisors (During Works) Environmental Consultant (As requested)	Daily and during works
Plant Daily Plant Inspection	All	Plant Operators	Daily

Ref **Appendix B8 Dust Management Plan**

Records of Monitoring

All monitoring records as detailed in Table 10 are kept on the Liberty Industrial Database with these forms detailed in Appendix A3.
Monitoring of the works worksite and its associated environmental controls as outlined in Job Hazard Analysis (JHA FRM-058) is documented daily in the Work Permit (FRM-014). This is documented by the site supervisors signing off the works at least a daily interval to ensure they are compliant with the JHAs and the environmental KPI and the Conditions of Approval. Should they not be compliant this will be noted in the Work Permit and works are ceased until environmental controls can be re-established. It is also noted that any time throughout the day compliance or non-compliance can be recorded on the Work Permit.
On a weekly basis Liberty Industrial will carry out a Weekly Environmental Audit as detailed in Appendix A3 (FRM-007). Any non-conformance will be documented and undergo the process as outlined in Section 10.3 of this CEMP.

9.3 REPORTING

As a minimum on every project, the Project Environment Advisor or Project Manager will:

- Establish and maintain necessary records for the recording and reporting of environmental incidents at the workplace;
- Encourage worker's participation in reporting environmental incidents;
- Ensure all environmental incidents are investigated and reported in accordance with company and client procedures;
- Notify the relevant Authority of non-compliances and environmental incidents, as required

Reporting for the project will include the following

Table 9 - Reporting and Typical Content

Report	Typical Content
Environmental Incident Reports	Time; Date; Location; What happened; Influencing factors; Witness Names; Interim Actions and Comments; Photo Evidence
Weekly Environmental Audit (Liberty Industrial)	Time Date; Work Location, KPIs, Comments, Photo Evidence, Compliance details

9.4 COMPLIANCE REPORTING

A Pre-Construction Compliance Report will be prepared for the development and submitted to the Certifier before the commencement of construction. A copy of the compliance report will be provided to the Department at compliance@planning.nsw.gov.au before the commencement of construction.

The Pre-Construction Compliance Report must include:

- details of how the terms of this consent that must be addressed before the commencement of construction have been complied with; and
- the expected commencement date for construction.

Construction Compliance Reports must be submitted to the Department at compliance@planning.nsw.gov.au for information every six months from the date of the commencement of construction, for the duration of construction. The Construction Compliance Reports must provide details on the compliance performance of the development for the preceding six months and must be submitted within one month following the end of each six-month period for the duration of construction of the development, or such other timeframe as required by the Planning Secretary.

The Construction Compliance Reports will include:

- a results summary and analysis of environmental monitoring;
- the number of any complaints received, including a summary of main areas of complaint, action taken, response given and proposed strategies for reducing the recurrence of such complaints;
- details of any review of the Construction Environmental Management Plan (CEMP) and the Environmental Management Strategy and associated sub-plans as a result of construction carried out during the reporting period;
- a register of any modifications undertaken and their status;
- results of any independent environmental audits and details of any actions taken in response to the recommendations of an audit;
- a summary of all incidents notified in accordance with this consent; and
- any other matter relating to compliance with the terms of this consent or requested by the Planning Secretary.

The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.

9.5 AUDITING

Any condition of the consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non- compliance notification and independent environmental auditing.

9.6 MECHANISMS FOR FEEDBACK INTO ENVIRONMENTAL MANAGEMENT DOCUMENTATION

The CEMP is an overarching management plan for a suite of environmental management documents used for the Project. Figure 5 below is a diagram of how auditing and the compliance tracking program feed back into Liberty Industrials System of Work Method Statements (WMS) and Job Hazard Analysis (JHA) to improve these and ensure compliance with the CoA and Relevant Legislation

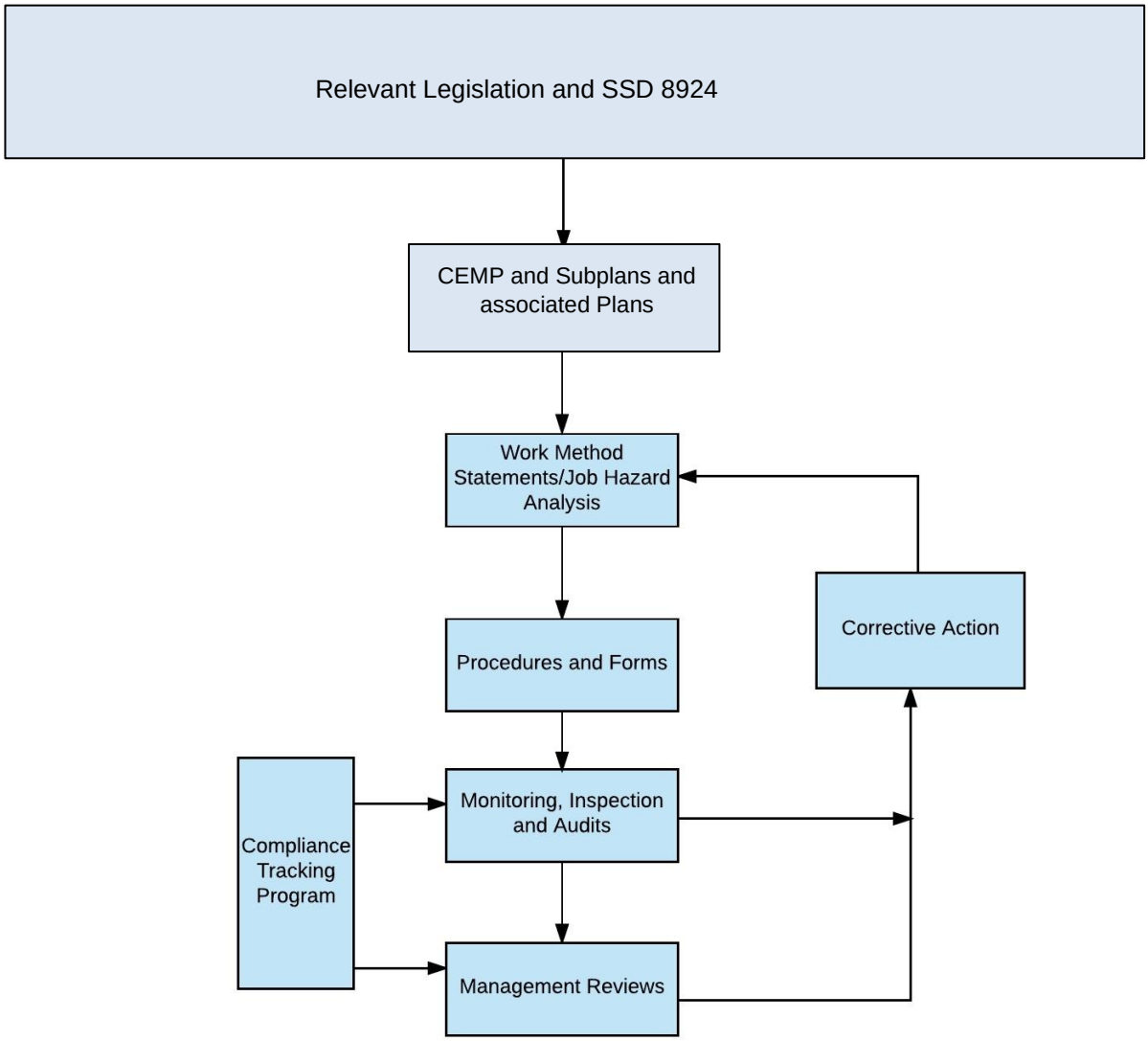

Figure 3 - Environmental Document Management Structure and Feedback flowchart

10 INCIDENTS AND EMERGENCIES

10.1 DUTY TO NOTIFY ENVIRONMENTAL INCIDENTS

Harm to the environment, includes any direct or indirect alteration of the environment that has the effect of degrading the environment.

There is a duty to notify 'relevant authorities' as specified in section 148(8) of the POEO Act (the EPA, local authority, Ministry of Health, WorkCover Authority and Fire and Rescue NSW) of pollution incidents where material harm to the environment is caused or threatened. Material harm includes actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial or that results in actual or potential loss or property damage of an amount over $10,000. Failure to do so is an offence.

However, any notification is not admissible in evidence against the person for an offence or for the imposition of a penalty. The duty to notify applies to the person carrying on the activity, an employee carrying on the activity and the occupier of premises where the incident occurs.

Liberty industrial will call 000 if the incident presents an immediate threat to human health or property. Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are the first responders, as they are responsible for controlling and containing incidents.

If the incident does not require an initial combat agency, or once the 000 call has been made, Liberty Industrial will phone the EPA environmental hotline on 131 555.

Liberty will notify the department in writing to compliance@planning.nsw.gov.au immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident."

All incidents regardless of magnitude will be reported to the Principals Representative and investigated during the works

10.2 INCIDENT AND EMERGENCY RESPONSE

In the event of an Incident or Emergency, the Person-in-Charge (Project Manager, Site Safety Manager or delegated person) will classify the situation under the category of Minor (Level 1), Serious (Level 2) or Major (Level 3).

As note Emergency Spills being managed as per *Appendix A3*– Emergency Spill Repose Procedure.

The Emergency response procedure shall address these three (3) levels of response in a site Incident & Emergency operation:

- Containment;
- Notification;
- Mobilisation;

10.2.1 Minor Incident & Emergency (Level 1)

Minor (level 1) a minor Incident / Emergency is one that can be satisfactorily handled by site worker(s) and does not affect or threaten parties beyond the scope of the project operations.

Minor (level 1) is the initial step to control the site Incident / Emergency. At this level, on-site worker(s) must be prepared to follow the concise Incident & Emergency response procedure immediately.

The minor level exists from the moment a problem is discovered until Incident & Emergency response worker(s) are notified. Generally, emergencies are contained by site worker(s) and do not go beyond this level. Specifically, the minor level consists of the following actions:

- Discovery and reporting of the problem;
- Monitoring the situation;
- Early and immediate action;

At the minor level, frontline supervisors must obtain precise information about the Incident & Emergency. They need to evaluate the situation before they can initiate Emergency response plans. This information comes from the discoverer and other individuals who report on conditions in the affected area. Supervisory worker(s) then evaluate the information and initiate an appropriate and immediate response to control the problem.

10.2.2 Serious Incident & Emergency (Level 2)

A serious Incident & Emergency (level 2) is one that has implications beyond the control of local site worker(s). It would generally involve parties outside the direct scope of the site operations.

In an Incident or Emergency, the Project Manager or Site Safety / HSEQ Manager may decide that they need outside assistance to handle a situation or that additional communication is necessary. Action is taken immediately to minimise hazards to all persons and to get assistance as quickly and easily as possible.

If an Incident & Emergency occurs, all worker(s) are to be notified of the hazards and, if required, mobilise them to safety. Notify other key worker(s) in order to mobilise the Incident & Emergency response team if requires.

All supervisors and persons as named in a level 2 process must be trained in the appropriate response protocols.

10.2.3 Major Incident & Emergency (Level 3)

A major Incident or Emergency is an incident having major safety, environmental or public welfare implications.

The major Incident or Emergency level 3 takes affect when Incident or Emergency operations have been established and the Project Manager or the site Safety / HSEQ Manager has taken over directing Incident / Emergency operations until external Emergency services providers are available on location.

All Incident & Emergency response worker(s) shall report to the Project Manager in the first instance.

10.3 NON-CONFORMITY, CORRECTIVE AND PREVENTATIVE ACTIONS

A non-conformance is the failure or refusal to comply with the requirements of this CEMP and supporting documentation. Any member of the Project team may raise a non-conformance or improvement opportunity through the use of Liberty Industrials quality system database and all non-conformances shall be reported to the Project Manager. Where a non-conformance is identified, the following procedure will be followed. For each non-conformance, identified a corrective/preventative action (or actions) must be implemented. In addition, any environmental management improvement opportunities can be initiated as a result of incidents or emergencies, monitoring and measurement,

audit findings or other reviews. Improvement opportunities may also result in the implementation of corrective/preventative actions.

Corrective/preventative actions and improvement opportunities will be entered into the Liberty Industrial quality system database and include detail of the issue, action required, timing and responsibilities. The record will be updated with date of close out and any necessary notes. The database will be reviewed regularly to ensure actions are closed out as required. Non-conforming activities may be stopped, if necessary, by the Site supervisor, Project / Site Engineer and Project Manager. The works will not commence until a corrective / preventative action has been closed out.

Procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management are also documented in the Compliance Tracking Program.

10.4 EMERGENCY CONTACTS

Table 10 - Emergency Contacts

Organisation	Phone Number	Address
Fire	000	
Ambulance	000	
Police	000	
EPA Environment Line	131 555	
Glebe Police Station	02 9552 8099	1 Talfourd St, Glebe NSW 2037
State Emergency Service – City of Sydney	1300 362 170	125 Railway Parade, Erskineville NSW 2043
Liberty Industrial (John Harris)		

10.5 RISK ASSESSMENT

Risk Assessment involves the identification of hazards (potential to cause harm), the assessment of the risks posed by those hazards, the development of controls to eliminate and minimise risks and the ongoing management of the risk controls.

Risk Assessment and Risk Management strategies will be used consistently throughout the project. Job Hazards Analysis (JHA) will be conducted prior to the commencement of each activity as detailed in Appendix A7- Forms. The JHA is used to identify both Work Health and Safety and Environmental hazards and if a task changes significantly or a change occurs in the environment, or other hazards are identified, the JHA will be reviewed.

A copy of the JHA will be available at the workface and the original filed in the Project Office.

The Project HSEQ Manager is responsible for ensuring risk controls are implemented and monitored for effectiveness. The Project Manager is responsible for providing sufficient resources to ensure risk controls are implemented.

A project risk assessment has been included in Appendix A3.

10.5.1 Hazard Identification and Reporting

Any worker(s) identifying a hazard shall:

- Report the hazard immediately to the supervisor;
- Stand guard until the supervisor arrives to assess the hazard;
- The responsible supervisor shall ensure identified hazards are promptly reported and recorded on the hazard register;

All hazards shall be actioned and signed off as completed in a timely manner.

Hazards will be reported to the supervisor as soon as possible. If the hazard can be corrected or controlled by the worker(s) that identify it they must do so immediately. If the hazard cannot be corrected or controlled the hazard must be isolated and other worker(s) protected from the hazard.

10.5.2 Take 5

Worker(s) are encouraged to be accountable for their own and others actions, and to immediately address issues that are unsafe or have unacceptable risk.

To facilitate this behaviour, the company will use the Take 5 System where all employees carry a formatted note book to help identify a hazard or potential hazard, which requires the individual to take action and document the action taken. All employees and subcontractors will be operating under this system and will be instructed in its use during the site induction.

All tasks will have a Take 5 carried out immediately before that task is under taken.

Take 5 is a simple hazard identification and risk assessment, undertaken immediately prior to starting the task. It is designed to ensure that personnel assess each task for risk by completing the checklist as follows:

- Think through the task – break into steps;
- Spot the hazard – “What if”;
- Assess the risk;
- Make the changes;
- Do the job safely.

10.5.3 Hazard Investigation

All environmental hazards and issues are to be reported as soon as practicable to the relevant supervisor and then passed onto the Project Manager.

The supervisor will investigate hazards reported immediately; the investigation findings will be detailed and reported back to the workgroup at the next opportunity (normally pre shift meeting).

The intent of Take 5 Hazard Identification is to be pro-active in identifying, evaluating and controlling hazards that may result in incidents involving injury, environmental issues or equipment damage.

Should the matter remain unresolved, it will then be addressed between the employee, their supervisor, and the Project Manager.

The company will ensure that all worker(s) on the project will have the necessary knowledge, awareness and skills to fulfil their environmental responsibilities. This will be done through the company inductions, and any required specific awareness training, either prior to commencement of the project, or during daily team pre start consultation meeting.

11 APPENDIX A1 ENVIRONMENTAL POLICY

Environmental Policy

The company's aim is to achieve a high standard of care and minimise our impact on the natural environment in all undertakings.

The company will:

- Conduct operations in compliance with all relevant environmental regulations, licences and legislation as a minimum condition;
- Identify, monitor and manage environmental risks and pollution arising from the undertakings;
- Seek continuous improvement in environmental performance, operational processes, waste management and use of resources by:
    - Monitoring and improving demolition, site remediation and civil construction methods to minimise environmental impact;
    - Analysing and continuously improving recycling rates;
- Provide training and awareness for all workers on environmental matters;
- Communicate and consult regularly with the workers about our policy and individual responsibilities;
- Communicate with customers, suppliers, contractors and sub-contractors, community and external agencies about our environmental performance;
- Establish and review environmental objectives and targets;
- Develop, implement and maintain a Management System based on the elements of ISO 14001: Environmental Management System.

Regards

Clinton Dick
Director
30 October 2015

12 APPENDIX A2 ENVIRONMENTAL RISK ASSESSMENT ASPECTS AND IMPACTS

12.1.1 Risk Assessment Matrix

The following risk assessment matrix has been used to determine the risk of each individual environmental aspect relevant to the New Sydney Fish Markets (Stage 1) Project. The level of risk determined from the matrix identifies the level of control measures required for that environmental aspect.

Table 11 - Risk Matrix

Likelihood	Consequence				
	1 - Low	2 - Minor	3 - Moderate	4 - Major	5 - Critical
A - Almost certain	High (11)	High (16)	Extreme (20)	Extreme (23)	Extreme (25)
B - Likely	Moderate (7)	High (12)	High (17)	Extreme (21)	Extreme (24)
C - Possible	Low (4)	Moderate (8)	High (13)	Extreme (18)	Extreme (22)
D - Unlikely	Low (2)	Low (5)	Moderate (9)	High (14)	Extreme (19)
E - Rare	Low (1)	Low (3)	Moderate (6)	High (10)	High (15)

Tolerable	ALARP	ALARP	INTOLERABLE

12.1.2 Risk Matrix Explanation

Table 12 - Risk Matrix Explanation

Probability			**Consequences**		
A	Almost Certain	Expected to occur, quite common.	25	Critical	• Major environmental harm. E.g. critical pollution incident causing significant damage or potential to health or the environment. • Fines and prosecution likely.
B	Likely	Will probably occur, has happened.	21	Major	• Long term or serious environmental damage. • Numerous complaints received. • Potential for prosecution. • Loss of reputation
C	Possible	Might occur at some time.	13	Moderate	• Moderate environmental impact. • Will cause complaints. • Possible fine.
D	Unlikely	Could occur at some time although unlikely.	5	Minor	• Minimal environmental harm. • Potential for complaints. • Fine unlikely.
E	Rare	Might occur at some time in exceptional circumstances.	1	Low	• Little or no environmental harm. • Little potential for fines or complaints.

An environmental Project risk has been conducted for the project and is detailed in Table 12.

12.1.3 Project Risk Analysis

An environmental project risk Analysis was conducted by the project team, where applicable risks identified in the CoA have been considered and noted in the following table. This shall be reviews at regular intervals.

Table 13 - Project Risk Analysis

#	Sequence of Work Activities How will the work be done?	Potential Hazards What harm can occur?	Initial Risk	Safeguards/controls How can the risk be minimised?	Frequency	Timing	Residual Risk	Responsibility Who will ensure that controls are in place?
Prior to Works Commencing								
1	Planning of works	Works commencing without approval	17	In order to undertake works an SSD approval will need to occur	Once	Prior to commencement of works	5	Site Supervisor Project Manager
2	Provide training to all personnel and subcontractors	Non-compliance with agreed work methods and procedures	13	All personnel to be inducted on to site; induction to include site-specific environmental requirements. All personnel to be tool boxed on the requirements of this CEMP including erosion and sediment control plans, locations of heritage items and protection requirements, noise mitigation measures.	As required	Prior to commencement (Induction)Throughout the Duration of Project (Toolboxes and Prestart)	5	Site Supervisor
3	Early Works Footprint	Disturbance of land outside of Early Works Footprint.	17	No personnel permitted to access the areas outside of the Early Works Footprint including but not limited to pedestrian access, parking vehicles, stockpiling of materials. To be included in site specific induction. Personnel to be made familiar with Early Works Footprint zone. To be included in site specific induction.	Ongoing	Throughout the Duration of the Project	5	Site Supervisor
Mobilisation to site								
4	Driving to site, around site and offsite	Disturbance to heavy machine movement footprint	17	Ensure site speed limits are maintained i.e. 10kmh Park on hard stand areas where possible.	Ongoing	Prior to works commencing and throughout the Duration of the Project	9	Site Supervisor
5		Generation of dust leading to complaint	12	Ensure site speed limits are maintained i.e. 10kmh. Use of water where necessary to suppress dust on exposed and trafficable areas. Truck loads to be covered.	Ongoing	Throughout the Duration of the Project	8	Site Supervisor Project Manager
6	Mobilise plant/equipment/labour to site	Excessive noise and congestion leading to noise complaint	12	Mobilise plant only within normal working hours. Parking areas to be nominated for plant, equipment and vehicles. No Out of Hours (OOH) works, including deliveries and plant mobilisation unless OOH works have been approved by the client. No parking, queuing or idling of engines on public roads. All site staff vehicles must enter the construction site and park within designated parking areas. Obtain Road Occupancy Licenses as necessary.	Ongoing	Throughout the Duration of the Project	7	Site Supervisor Project Manager Project Engineer
7		Inability of emergency services to access site	18	Ensure access tracks are designed to allow emergency services to access site if required; do not block site accesses. Water supply available at all times.	Ongoing	Throughout the Duration of the Project	8	Site Supervisor Project Manager

#	Sequence of Work Activities How will the work be done?	Potential Hazards What harm can occur?	Initial Risk	Safeguards/controls How can the risk be minimised?	Frequency	Timing	Residual Risk	Responsibility Who will ensure that controls are in place?
Heritage Management								
8	Heritage salvage		12	The salvage of heritage items and structures is to be managed in accordance with the Heritage Salvage Strategy.	Once	Prior to site establishment	7	Heritage Specialist Site Supervisor
Demolition								
9	Involved in the removal of structures and pavements	Noise	12	All machinery is to be appropriately silenced with mufflers. Ensure plant is regularly maintained. Conform to working hours	Ongoing, during plant prestart and during services	Throughout the Duration of Works	7	Site Supervisor
10		Transport of Demolition Waste transferring waste Offsite	17	Ensure all vehicles use covers when transporting waste Ensure waste facility is licenced transfer station or landfill	Ongoing	Throughout the Duration of Works	9	Site Supervisor Project Engineer
11		Waste Generation	12	No waste to be disposed of onsite. Use waste management hierarchy principals and recycle and reuse whenever possible	Ongoing	Throughout the Duration of Works	8	Project Manager Site Supervisor Project Engineer
12		Surface Water Discharge	17	Ensure erosion controls are in place and maintained during the works	Ongoing	Throughout the Duration of Works	5	Site Supervisor Project Engineer
13		Microbat	12	Ensure inspection to be carried out prior to the demolition phase	Once	Prior to demolition work	5	Site Supervisor Project Engineer
General								
14	Waste management including litter, tracking of waste quantities and locations of disposal, soft strip of buildings	Incorrect disposal leading to contaminated waste streams / illegal dumping.	13	No waste to be disposed of onsite. Sewage waste to be disposed of by a licensed waste contractor offsite. Waste arising from soft strip of buildings is to be segregated wherever possible, e.g. timber, metal, light tubes, cabling etc. and sent to a waste facility able to recycle the material and provide recycling reporting. Specific recycling areas have been nominated	Ongoing, Daily and during weekly environmental audit	Throughout the Duration of Works	8	Site Supervisor Site Engineer
15	General use of plant and equipment and storage of hazardous materials	Pollution of ground / waterways due to failed hydraulic / fuel hoses on machinery/refuelling, spillages of hazardous materials.	12	Any refuelling to be undertaken either offsite or in areas located at least 20 metres from drainage lines or waterways with spill kits readily available. Refuelling not to be left unattended at any time. Plant and equipment to be well maintained and to be checked daily as part of morning pre-start including hydraulic hoses and connections. Chemicals to be placed in a drip tray when being used on site and removed to a bunded chemical storage container at the end of each day. Spill kits to be readily available at each work zone.	Ongoing	Throughout the Duration of Works	5	Site Supervisor
16		Noise causing annoyance to local residents.	16	Works are only to occur 7:00am to 5:30pm Monday to Friday, and 7:30am to 3:30pm Saturdays, unless otherwise approved. All noise complaints to be reported to the site supervisor/project engineer immediately, recorded and the issue resolved. Equipment that is not in use to be switched off.	Ongoing	Throughout the Duration of Works	7	Site Supervisor Project Manager

#	Sequence of Work Activities How will the work be done?	Potential Hazards What harm can occur?	Initial Risk	Safeguards/controls How can the risk be minimised?	Frequency	Timing	Residual Risk	Responsibility Who will ensure that controls are in place?
17	Removal of hazardous materials from buildings	Asbestos sampling and removal	17	Refer to Asbestos Removal Control Plan. No asbestos works to be undertaken unless Asbestos Removal Control Plan has been approved and signed on to. Asbestos waste must be stored in a closed skip/bin with limited access.	Ongoing	Throughout the Duration of Asbestos Removal Works	8	Site Supervisor
18		Other hazardous materials	12	The removal and management of Acid Sulphate Soils to be undertaken in accordance with the and Hazardous Material Plans	Ongoing	Throughout the Duration of Asbestos Removal Works	5	Site Supervisor

13 APPENDIX A3 FORMS

JOB HAZARD ANALYSIS

JOB HAZARD ANALYSIS (JHA)					
Project		Company			
JHA Name		JHA Number		Date	

Supervisor Review and Approval (to be completed daily prior to commencement of work and when amendments are made):

JHA Rev No.	Supervisor Name	Signed	Date	JHA Rev No.	Supervisor Name	Signed	Date
0				7			
1				8			
2				9			

Sub-Permits			
Working at Height ☐	Hot Work ☐	Hazardous Work ☐	☐
Crane Work Box ☐	Excavation ☐	Confined Space ☐	☐

Plant			
Compressor ☐	☐	☐	☐
Excavator ☐	☐	☐	☐
Forklift ☐	☐	☐	☐
Hand tools ☐	☐	☐	☐
Oxy Cutting Equipment ☐	☐	☐	☐
EWP ☐	☐	☐	☐
Welder ☐	☐	☐	☐
Crane Work Box ☐	☐	☐	☐

Materials					
Product Name	SDS Available	Product Name	SDS Available	Product Name	SDS Available
	☐		☐		☐
	☐		☐		☐
	☐		☐		☐
	☐		☐		☐

Relevant legislation, Codes of Practice, and Standards relating to the work			
Work Health & Safety Act	☐	Cranes Code of Practice (Model Draft)	☐
Work Health & Safety Regulation	☐	Scaffold and Scaffolding Work Code of Practice (Model Draft)	☐
Demolition Work Code of Practice	☐	Hazardous Manual Tasks Code of Practice (Model Code)	☐
AS 2601 – The Demolition of Structures	☐	How to Safely Remove Asbestos Code of Practice	☐
Managing the Risk of Falls at Workplaces Code of Practice (Model Code)	☐		☐
AS 4361.2 Guide To Lead Paint Management	☐		☐

Qualifications / Competencies / Courses required to perform the work							
SB – Scaffolding Basic	☐	RI – Rigging Intermediate	☐	CV – Vehicle Loading Crane	☐	Bonded Asbestos Removal	☐
SI – Intermediate Scaffolding	☐	RA – Rigging Advanced	☐	WP – Boom type elevated platform	☐		☐
SA – Advanced Scaffolding	☐	LF - Forklift	☐	VOC - Excavator	☐		☐
DG – Dogging	☐	CT – Tower Crane	☐	Slewing Crane	☐		☐
RB – Basic Rigging	☐	CN – Non-Slewing Mobile Crane	☐	Friable Asbestos Removal	☐		☐

PPE Requirements							
Hard Hat	☑	Tyvek Suits	☐		☐		☐
Safety Glasses	☑	Respirator	☐		☐		☐
High Visibility Clothing	☑	Cutting Jacket	☐		☐		☐
Long Sleeve Shirts	☑	Face Shield	☐		☐		☐
Long Pants	☑	Full Face Respirator	☐		☐		☐
Safety Boots (lace up)	☑	Cutting Gloves	☐		☐		☐
Gloves	☑		☐		☐		☐

Risk Assessment Matrix

CONSEQUENCE TABLE				
Consequence	Health & Safety	Environment	Community / Media / Government	Loss / Damage
LOW	First aid treatment	Limited damage to area or low significance	Public concern restricted to local complaints	$0-$5K
MINOR	Medical Treatment	Minor short-term damage to environment / heritage	Minor, adverse local public or media attention and complaints	$15K-$150K
MODERATE	Classified Injury (LTI or restricted work case)	Moderate effects on environment / heritage	Attention from media and / or heightened concern from community	$150K-$1.5M
MAJOR	Fatality or severe permanent disability	Significant environmental / heritage damage	Significant adverse national media/public attention	$1.5M-$15M
CRITICAL	Multiple fatalities / health effects to	Severe damage to environment / heritage with long-term effects	Serious public or media outcry	$15M-$150M

LIKELIHOOD TABLE		
Likelihood	Description	Frequency at Location
ALMOST CERTAIN	Expected to happen	Occurs once a week
LIKELY	May easily happen	Occurs once a month
POSSIBLE	May happen	Occurs once every year
UNLIKELY	May happen sometime	Occurrence once every 10 years
RARE	May happen in extreme circumstances	Occurs once every 100 years

	> 50 persons			

Likelihood	Consequence				
	1 - Low	2 - Minor	3 - Moderate	4 - Major	5 - Critical
A - Almost certain	High (11)	High (16)	Extreme (20)	Extreme (23)	Extreme (25)
B - Likely	Moderate (7)	High (12)	High (17)	Extreme (21)	Extreme (24)
C - Possible	Low (4)	Moderate (8)	High (13)	Extreme (18)	Extreme (22)
D - Unlikely	Low (2)	Low (5)	Moderate (9)	High (14)	Extreme (19)
E - Rare	Low (1)	Low (3)	Moderate (6)	High (10)	High (15)

Tolerable	ALARP	ALARP	INTOLERABLE	

JOB HAZARD ANALYSIS

L = Likelihood **C** = Consequence **RR** = Risk Rank

Job Step No.	Description of Job Step	Hazards	Pre Control Risk Rank			Controls	Post Control Risk Rank		
			L	C	RR		L	C	RR
•									
•									

Personnel Sign On and Acknowledgement			
By signing below you acknowledge that you have been consulted and inducted into this JHA and given instruction and training on how to undertake the work.			
Name	Signature	Date	Company

WORK PERMIT

Work Permit Name		Date	
Project			
Permit Valid From		To	

Work Pack Contents		
Work Method Statement (WMS) – Only 1 x WMS per Work Permit		
No.	Name	Rev No
Job Hazard Analysis (JHA) – Only 1 x JHA per Work Permit		
Name		Rev No
Safety Data Sheets (SDS) – list all materials being used		
A copy of the SDS for Hazardous Substances and Dangerous Goods MUST be in Work Pack. Others to be available.		
OTHER (e.g. Engineering drawings, Toolbox meetings, etc.)		

Permits: Tick box and attach Permits to the Work Pack as they are issued					
Excavation		Confined Space		Hazardous Work	
Excavation required	☐ Yes ☐ No	Confined space Entry required	☐ Yes ☐ No	Hazardous Work Required	☐ Yes ☐ No
Crane Work Box		Working at Heights		Hot Work	
Crane Work Box required	☐ Yes ☐ No	WAH required	☐ Yes ☐ No	Hot Work required	☐ Yes ☐ No

Issue of Work Permit (Supervisor)					
Permit Issuer:	I confirm that the Work Pack contains the above documentation				
Name:		Signature:		Date:	

Acceptance of Work Permit (Work Group Representative)					
Group Rep:	I confirm that the Work Pack contains the above documentation				
Name:		Signature:		Date:	
Company:		Contact No			

Work Permit Transfer: As the new Group Rep, I confirm the Work Pack contains the stated documentation					
Name:		Signature:		Date:	
Company:		Contact No			
Name:		Signature:		Date:	
Company:		Contact No			

Supervisor Daily Check: Should the work being undertaken not meet the requirements of this permit, then ALL work must stop until the issues are resolved.

This Work Permit must be signed off daily, If there is no work on a given day, it must be recorded as "no work".

No	Supervisor Name	Date	Time	Is the work being undertaken pursuant to this permit		Company Undertaking the Work
1.				☐ Yes	☐ No	
2.				☐ Yes	☐ No	
3.				☐ Yes	☐ No	
4.				☐ Yes	☐ No	
5.				☐ Yes	☐ No	
6.				☐ Yes	☐ No	
7.				☐ Yes	☐ No	
8.				☐ Yes	☐ No	
9.				☐ Yes	☐ No	
10.				☐ Yes	☐ No	

11.				☐ Yes	☐ No	
12.				☐ Yes	☐ No	
13.				☐ Yes	☐ No	
14.				☐ Yes	☐ No	
15.				☐ Yes	☐ No	
16.				☐ Yes	☐ No	
17.				☐ Yes	☐ No	
18.				☐ Yes	☐ No	
19.				☐ Yes	☐ No	
20.				☐ Yes	☐ No	
21.				☐ Yes	☐ No	
22.				☐ Yes	☐ No	
23.				☐ Yes	☐ No	
24.				☐ Yes	☐ No	
25.				☐ Yes	☐ No	
26.				☐ Yes	☐ No	
27.				☐ Yes	☐ No	
28.				☐ Yes	☐ No	
29.				☐ Yes	☐ No	
30.				☐ Yes	☐ No	
31.				☐ Yes	☐ No	

FORM 007 - WEEKLY ENVIRONMENTAL INSPECTION

Project: _____

Inspection Carried Out by: _____ Signed: _____

Date: _____ Area/Location: _____

Weather Conditions (Tick appropriate boxes)**:**

Fine ☐ Light rain ☐ Heavy rain ☐ Light wind ☐ Strong wind ☐

ITEM	Y / N	COMMENTS
1. General Site		
Is the site in a generally tidy condition?		
Is all equipment, materials, etc contained within work area boundary?		
Are there any obvious signs of demolition/ remediation related disturbance outside of the demolition/ remediation area?		
Is the EMP readily accessible?		
Is an environmental incident response plan displayed in a prominent position?		
Is there an accessible complaints register?		
Is there documentation of any training undertaken since the last inspection?		
Is there minimal dirt on adjacent public roads?		
Have all required traffic control measures been implemented in accordance with the EMP (eg: warning signs, temporary road closures etc)?		
Is all demolition/ remediation plant parked on site?		
Are any private vehicles of demolition/ remediation personnel obstructing the passage of local traffic?		
Have local residence been notified 5 days prior to the commencement of works, for works outside of the normal working hours?		

ITEM	Y / N	COMMENTS
Have local residents been notified 5 days prior to demolition/ remediation of activities that are likely to cause dust, offensive noise or access?		
Are complaints being reported to the Principals Representative?		
Is the Complaints Register complete and have actions detailed been implemented?		
Is the access to any private properties being obstructed?		
Are pedestrian routes adjacent to site being obstructed (are appropriate alternative routes in place)?		
Has Environmental training been conducted over the last 3 months?		
2. Air Emissions		
Is dust suppression equipment readily accessible?		
Are there any obvious signs of dust deposition outside of demolition/ remediation area(s)?		
Is spoil being prevented from being tracked onto public roads?		
Are the haul roads being kept damp (if required)?		
Is the air quality monitoring equipment (if installed) operating correctly?		
Is there adequate procedures implemented for dust control?		
Is there stabilisation of stockpiles or erection of dust screens?		
Do any vehicles or machinery have visible exhaust for more than 10 seconds?		

ITEM	Y / N	COMMENTS
3. Water Management		
Have required erosion control measure been correctly installed and are they functional? Check that there are/is; ○ no gaps in silt fences/barriers ○ no material lying across filter material or build up of silt no obvious signs of significant seepage through fences.		-
Are there any obvious signs of overflow from sediment detention basins?		
Are there obvious signs of uncontrolled drainage leaving the site?		
Are any materials, temporary structures/works in drainage lines?		
Where required, are drainage outlets provided with energy dissipaters to minimise erosion?		
Does water quality in down slope areas appear to be unaffected by demolition/ remediation works?		
Are diversion banks and drains located appropriately?		
Are there any apparent illegal discharges to sewers (cleaning of paint brushes, plaster, concrete)?		
Is the washdown of demolition/ remediation plant/vehicles restricted to a designated area (eg: truck wash out area)?		
Does the sediment basin require discharge? (5 days from last rain event?		
4. Waste Management		
Is there appropriate documentation of any waste material disposed of offsite?		
Are waste receptacles accessible and clearly marked with regard to waste type?		

ITEM	Y / N	COMMENTS
Is all recyclable material separated as per the waste management plan (are records available)?		
Are records of the type, amounts, date, transport, and disposal site of waste kept in a Waste Register?		
Do trucks removing material from the site have their loads covered?		
5. Hazardous Materials and Storage		
Are all hazardous materials (eg: fuels, chemicals etc) stored in an impervious bund which can contain 110% of the volume of the largest container stored in that bund?		
Are all hazardous materials stored in a covered area more than 20m away from waterways and drainage inlets?		
Is the spill kit readily accessible?		
Is the on-site refuelling of demolition/ remediation plant restricted to a designated area more than 20m away from waterways and stormwater inlets?		
Are there any obvious signs of fuel spills, oil leakage, etc from demolition/ remediation plant) check both plant and ground?		
Are the relevant Safety Data sheets (SDS) available on site?		
Are containers labelled and stored correctly when not in use (i.e. in chemical storage areas or portable bunds)?		
6. Noise Control		
Is there documentary evidence that all required noise suppression measures have been installed		

ITEM	Y / N	COMMENTS
and operating in accordance with manufacturer's instruction and/or relevant environmental protection licence conditions?		
Is all noise monitoring equipment (if installed) operating correctly?		
Are all Plant/machinery switched off when not in use?		
Have the residents that are likely to be affected by offensive noise and/or vibration been notified?		
Have residents been notified of works to be undertaken outside of normal working hours?		
Have the siting of work areas, vehicle and plant parking areas, material stockpiles and equipment storage been arranged to minimise noise?		
Are there appropriate noise and vibration controls for activities adjacent to residents and other sensitive receivers?		
Are there any controls imposed on the Project by regulatory authorities?		
7. Resource Consumption		
Does the Project monitor water consumption?		
Does the Project monitor energy consumption?		
Are there any objectives and targets directed at resource consumption?		
Are there any recycling/reuse/redesign initiatives for products, materials and processes?		
8. Processing Areas		
Do stockpiles appear adequately maintained and managed (measures in place to prevent dust and soil run off)?		

ITEM	Y / N	COMMENTS
Are there separate stockpiles for different material eg: ferrous/ non ferrous/ hand cut etc?		
Are any stockpiles located within the tree drip line (3m from tree base)?		
Are there dust control measures in place for the stockpile?		
9. Demolition/ Remediation Areas		
Are areas where demolition/ remediation activities have ceased being stabilised and rehabilitated?		
Are any demolition/ remediation materials stored inside vegetation protection zones?		
Are there any obvious signs of demolition/ remediation activity within protected vegetation areas?		
Is contaminated land fenced off?		
Are disturbed areas stabilised and revegetated?		
Are all required protection measures in place and functional?		
10. Heritage Management		
Are demolition/ remediation materials stored inside heritage protection zones?		
Are there any obvious signs of demolition/ remediation activity within protected areas?		

ACTION ITEM NO.	**1.** CORRECTIVE ACTION DETAILS	ACTION REQ'D BY	ACTION CLOSE-OUT DATE
1.			
2.			

3.			

LIBERTY INDUSTRIAL

MOBILE PLANT PRE START CHECK SHEET

NO.

HIRED ☐ **Week Ending: / /**

ASSET NUMBER: _____ ASSET TYPE: _____ ASSET LOCATION: _____

WEEK ENDING HOURS READING: _____ WEEK ENDING KM'S: _____

ATTACHMENT: _____ ATTACHMENT ASSET NO. LI _____

CHECKLIST (INCLUDING LITRES ADDED)	Mon		Tues		Wed		Thurs		Fri		Sat		Sun	
	☑	LTRS ADDED	☑	LTRS ADDED	☑	LTRS ADDED	☑	LTRS ADDED	☑	LTRS ADDED	☑	LTRS ADDED	☑	LTRS ADDED
ENGINE OIL														
TRANSMISSION OIL														
HYDRAULIC OIL														
COOLANT														
BRAKE FLUID														
AIR CLEANERS / PRE CLEANER														
GREASED														
WALK AROUND INSPECTION														
MILEAGE / HOURS														

SAFETY CHECKLIST	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
	☑ or ☒	☑ or ☒	☑ or ☒	☑ or ☒	☑ or ☒	☑ or ☒	☑ or ☒
SERVICE BRAKES / PARK BRAKES WORKING CORRECTLY							
SEAT / SEATBELT - CONDITION / ADJUSTMENT							
LIGHTS / FLASHING LIGHT							
HORN / FIRE EXTINGUISHER (IF APPLICABLE)							
STEERING - FUNCTIONING CORRECTLY							
TYRES - DAMAGE / WEAR							
VISIBILITY - WINDOWS / WIPERS MIRRORS CLEAN							
MACHINERY CLEAN - IN & AROUND MOVING PARTS, IN CABIN, ETC							

MECHANICAL CHECKLIST	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
	☑ or ☒	☑ or ☒	☑ or ☒	☑ or ☒	☑ or ☒	☑ or ☒	☑ or ☒
TRACKS / IDLERS, WEAR, CRACKS / SPROCKETS							
GROUSERS, WEAR / ADJUSTMENT							
TRANSMISSION FUNCTIONING CORRECTLY							
ELECTRICAL / GAUGES							
LOOSE OR MISSING BOLTS / PINS / GUARDS							
HYDRAULICS / RAMS / HOSES - LEAKS / WEAR							
OIL LEAKS - ENGINE / TRANSMISSION / DIFF / FINAL DRIVE							
RADIATOR - VISIBLE LEAKS / WATER LOSS / IS CORE CLEAN							
OPERATOR'S INITIAL:							

PLANT FAULT / DEFECT REPORT

(PLEASE REPORT ANY FAULT DURING SAFETY CHECK OR MECHANICAL OPERATION DIRECTLY TO MECHANICS / SUPERVISOR)

.....

.....

.....

OPERATOR'S NAME: ..... OPERATOR'S SIGNATURE: .....

SUPERVISOR'S NAME: ..... SUPERVISOR'S SIGNATURE: .....

SAFE TO OPERATE ☐

MECHANIC'S REPORT

.....

.....

MECHANIC'S NAME: ..... MECHANIC'S SIGNATURE: .....

IF A MAJOR FAULT IS DISCOVERED DURING THE DAILY INSPECTION OR AT ANY OTHER TIME WHICH EFFECTS THE SAFE OPERATION OR THE POTENTIAL FOR SERIOUS MECHANICAL BREAKDOWN THEN THE FOLLOWING SHOULD BE DONE:

1. THE MACHINE MUST BE PARKED IN A SAFE LOCATION AWAY FROM OTHER OPERATING PLANT
2. MAJOR FAULTS MUST BE REPORTED IMMEDIATELY TO YOUR SUPERVISOR AND PLANT NOT USED UNTIL AUTHORISED
3. ALL THE ABOVE INFORMATION MUST BE FILLED OUT

No employee is expected to put themselves, the machine or others at risk by the operation of machinery that is not in a safe mechanical condition. Responsible reporting of faults will not put your employment at risk. Non reporting of faults or not completing plant check sheets may cause disciplinary action.

FORM 400 (REV 06 16-03-16) **LEGEND: (WHITE - 'ADMINISTRATION COPY', YELLOW - 'REMAINS IN BOOK')**

14 APPENDIX B1 CONSTRUCTION TRAFFIC AND ACCESS MANAGEMENT SUB PLAN

HANSENYUNCKEN

Traffic Management Plan

Project: new Sydney Fish Market Early Works

Job No: SC132

Rev B | Aug 2020

Uncontrolled Document in Hard Copy

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1 Introduction

1.1 Review & Approval

Refer to Project Management Plan Responsibility Matrix for traffic management responsibility, input and approval

Position	Name	Sign	Date
Review			
Project Manager	Daniel Yarrow		
Site Supervisor	Peter Dworacek		
HSE Manager	Tim Redmond		
Engineer / Project Administrator	Daniel Cessario		
Approval			
Construction Manager	Dean Marcon		

1.2 Revision history

Rev.	Date	Description of amendments	Author	Checked
0	Mar 2020	TENDER	PS	DY
A	Aug 2020	Issue for Consultation Review – Authorities	DY	DY
B	Aug 2020	IFC – Authorities Comments addressed	DY	DY

1.3 Definitions & Abbreviations

The following definitions and abbreviations have been used in this Traffic Management Plan. Further definitions and abbreviations are provided in referenced procedures and plans:

CORP	Hansen Yuncken Corporate
HSE	Health, Safety & Environment
HY	Hansen Yuncken Pty Ltd
PLN	HY Plan
PPE	Personal Protective Equipment
PR	Procedure
S/C	Subcontract(s) or Subcontractor(s) as the context requires

1.4 Legislation, Standards & Codes of Practice

Traffic shall be controlled in accordance with either of the following, depending on the contract or site conditions and requirements.

- **AS 1742.3** Manual for uniform traffic control devices, Part 3 – Traffic control devices for works on roads
- **SAA HB81.1 to HB81.6** Field guides for traffic control at works on roads. Part 1 to Part 6 cover various examples of work on different roads and under different conditions

2 Traffic Management Requirements

2.1 Traffic Management

The traffic management will be carried out and maintained by Liberty Industrial.

See Liberty Industrial's Construction Pedestrian and Traffic Management Plan – Appendix 3.1

2.2 Signs

The purpose of road signing or work site protection is:

- to provide a safe work area to work within; and
- to safely move traffic through, around and past a work site with minimum inconvenience.

2.3 Traffic Controllers

Only competent persons who possess the relevant state certification shall be appointed as traffic controllers and when a traffic management plan is to be implemented, they must possess the relevant competency to implement, and or audit and design the traffic management plans dependent on the competencies obtained.

2.4 Signage Placement or Modification

HY Site Manager is responsible to ensure that the placement of temporary signs and their location is placed as per Traffic Control Plan by a qualified Traffic Controller.

Any worker setting up temporary traffic control or modifying permanent traffic controls or directing traffic must have signed a SWMS which has been reviewed by Hansen Yuncken.

The traffic controllers must be wearing the required PPE for the activity which is required to be nominated in the SWMS.

Any existing signs that do not apply shall be covered as per the approved traffic management plan.

2.5 Pedestrian Paths

Paths shall be safe and at least 1.2 metres wide.

2.6 Maintenance of Existing Traffic Flow

Existing traffic flows shall be maintained and only modified for short periods when other alternatives have been exhausted.

2.7 Site Access

The main entrance to the site shall be from **Bridge Rd, Pyrmont.** Warning signs will be placed along approximately 150m from the main entrance in both directions to warn traffic that vehicles will be crossing.

The access points into the site are indicated on the attached Traffic Control Plan along with Traffic Control Devices which will be put in place for the duration of the project and Temporary Traffic Control which will take place from time to time to bring in long or wide loads for items such as Structural Steel and Roof Sheet.

2.7.1 Exiting Site

All traffic exiting the site will exit via the designated exit points onto Bridge Rd, Pyrmont.

2.7.2 Entering Site

Traffic that is to enter site will enter via the designated entry points off Bridge Rd, Pyrmont

2.7.3 On Site Traffic Management

All on site traffic management will be managed through the Daily Pre-Start Meetings.

2.8 Traffic Management Report

During the operation of a Traffic Guidance Scheme, a daily Traffic Management Report shall be completed using the *Traffic Management Report Checklist* in BIM360 or equivalent report by the Traffic Management Subcontractor. The Subcontractors Traffic Management Report must be supplied to the Site Manager for future reference.

During the operation of a Traffic Guidance Scheme, daily routine tasks shall be undertaken in accordance with Appendix A of 1742.3;

- Before Work Starts.
- During Work Hours.
- Closing Down at the end of the day.
- After hours.

2.9 Special Deliveries

Any trucks that are long or wide loads will have specific traffic management in place to control traffic on Bridge Rd, Pyrmont. These loads, depending on RTA requirements, may require support vehicles or police escorts.

3 APPENDICES

3.1 Liberty Industrial Construction Pedestrian and Traffic Management Plan

New Sydney Fish Market Stage 1

Construction Pedestrian and Traffic Management Plan

Prepared by

Liberty Industrial Pty Ltd

For

Hansen Yuncken Pty Ltd

1A, B, and C Bridge Road, Glebe NSW 2037

Revision No.	Revision Date	Authority	Changes
0	31.07.2020	DD	Draft For Consultation
1	21.08.2020	MD	Information regarding bus routes on Bridge Rd. Information on pop-up cycleway.

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1 INTRODUCTION

1.1 PURPOSE

The intended purpose of the Construction Pedestrian and Traffic Management Plan (CPTMP) is to describe how Liberty Industrial will implement the work in accordance with the requirements of the Project Approvals for the approved development SSD8924 for 1A,1B and 1C Bridge Road, Glebe (lots 3,4,5 DP 1064339).

1.2 SCOPE

This scope of work is for the demolition of existing buildings, structures wharves and jetties on the site including:

- Erection of perimeter fencing, hoarding and scaffolding (as required), site accommodation and environmental controls;
- Establishment of temporary access and pedestrian arrangements (where required);
- Services verification, relocations and installation of selected temporary services including capping and removal of in-ground services, diversions and terminations;
- Demolition of structures
- Localised remediation works;
- Selected early civil works (temporary works, drainage and other in ground services);
- Make good works to the existing sea wall and provision of revetment structures as required.

1.3 OBJECTIVES

The overall principles of pedestrian and traffic management during the New Sydney Fish Market Stage 1 works program include but are not limited to:

- Provide a convenient, safe and appropriate environment for pedestrians.
- Minimise effects on pedestrian movements and amenity.
- Manage and control vehicular movements to and from the site.
- Maintain current on street parking in the vicinity of the site where practical.
- Maintain access to other properties adjacent to the site.
- Restrict vehicle activity to designated truck routes in the vicinity of the site.
- Maintain safety for all workers, visitors and sub-contractors.
- Maintain appropriate access to the site for excavation and construction traffic.

2 LEGAL AND OTHER REQUIREMENTS

2.1 LEGISLATION

Legislation relevant to construction pedestrian and traffic management Includes:

- Roadworks Manual VO4
- *Roads Act 1993*
- *Transport Administration Act 1988*
- Work Health and Safety Act 2011;
- Work Health and Safety Regulation 2011;
- Occupational Health and Safety Act 2000;
- Occupational Health and Safety Regulation 2001;
- Australian Standard 2601-2001 Demolition of Structures

2.2 REQUIREMENT MATRIX

2.2.1 *Table 1-Minister Conditions of Approval*

Table 1 - Minister CoA

CoA No	Condition Requirement	Document Reference
Part B – Prior to Commencement of Stage 1 Demolition Works		
B14	Where construction/building works require the use of a public place including a road or footpath, approval under section 138 of the *Roads Act 1993* for a Barricade Permit. Road Occupancy Licence is to be obtained prior to the commencement of work. Details of the barricade construction, area of enclosure and period of work are required to be submitted to the satisfaction of the relevant road authority.	Where required, permits will be obtained and this plan updated.
B15	A separate application under section 138 of the Roads Act 1993 is to be made to the relevant road authority to erect a hoarding and/or scaffolding in a public road (if required) and such application is to include: • Architectural, construction and structural details of the design as well as proposed artwork; • Structural certification prepared and signed by an appropriately qualified practising	Where required, permits will be obtained and this plan updated where required for the erection of hoardings within the work area.

	structural engineer. Evidence of the issue of a Structural Works Inspection Certificate and structural certification will be required prior to the commencement of works on site.	
B16 i)	Prior to the commencement of works, the Applicant shall prepare and implement an updated Construction Environmental Management Plan (CEMP) for the development and be submitted to the Certifier. The CEMP must: d) detail how the environmental performance of the site preparation and construction works will be monitored, and what actions will be taken to address identified potential environmental impacts, including but not limited to noise, traffic and air impacts	This document forms part of the CEMP for the Stage 1 works
B17	Prior to the commencement of works, a Construction Pedestrian and Traffic Management Plan (CPTMP) shall be prepared in consultation with the Sydney Coordination Office within TfNSW. The CPTMP shall address (but not be limited to) the following: (a) A description of the development; (b) Location of any proposed work zone(s); (c) Location of any crane(s); (d) Haulage routes; (e) A detailed plan identifying all construction vehicle access arrangements; (f) Estimated number of construction vehicle movements, including measures to reduce the number of movements during the AM and PM peak periods; (g) Measures to avoid construction worker vehicle movements; (h) Construction program; (i) Proposed construction hours; (j) Consultation strategy for liaison with surrounding stakeholders, including	This document: Section 1, 3 Figure 1 NA Section 3.4.1 Appendix A TCP's Section 4.9 Section 4 Section 4 Section 3.2 Section 4.11

	other developments; (k) Any potential impacts to generate traffic, cyclists, pedestrian and bus and light rail services within the vicinity of the site from the construction of the development; (l) Cumulative construction impacts of the development: Bays Market District, Sydney Metro City and Southwest, Western Harbour Tunnel and Westconnex. Existing CPTMPs for developments within or around the development site should be referenced in the CPTMP to ensure that coordination of work activities are managed to minimise impacts on the road network; and (m) Proposed mitigation measures. Should any impacts be identified, the duration of the impacts and measures proposed to mitigate any associated general traffic, public transport, pedestrian and cyclist impacts should be clearly identified and included in the CPTMP. Prior to the commencement of works, details demonstrating compliance with the above requirements (Condition B18 (a)-(m)) must be submitted to the Certifier. A copy of the CPTMP must be submitted to the Certifier, TfNSW (RMS) and the Planning Secretary.	Section 4.9 Section 4.11 Section 5 The CPTMP was submitted and approved by the certifier on XXX
B19 d) and e)	Prior to the commencement any construction (including demolition), a Waste Management Plan (WMP) must be prepared and submitted to the Certifier. The WMP must: d) require that the body of any vehicle or trailer used to transport waste or excavation spoil from the Subject Site, is covered before leaving the Subject Site to prevent any spill, or escape of any dust, waste, or spoil from the vehicle or trailer; e) require that mud, splatter, dust and other material likely to fall from or be cast off the wheels, underside or body of any vehicle, trailer or motorised plant leaving the Subject Site, is removed before the vehicle, trailer or motorised plant leaves the Subject Site.	WMP is part of CEMP. These matters are addressed in Section 5 of this document also.

B32	Prior to the commencement of works, the Applicant is to engage a suitably qualified professional(s) to prepare a Pre-Construction Dilapidation Report detailing the current structural condition of all retained and existing and adjoining building, infrastructure and roads with the zone of influence. The report must be submitted to the Certifier prior to the commencement of works. A copy of the report must be forwarded to the affected landowners. The Pre-Construction Dilapidation Report must also include a photographic recording of the public domain site frontages. The recording must include clear images of the foreshore, footpath, nature strip, kerb and gutter, driveway crossings and laybacks, kerb ramps, road carriageway, street trees and plantings, parking restriction and traffic signs, and all other existing infrastructure along the street. The form of the recording is to be as follows: a) a PDF format report containing all the images that clearly demonstrates the existing site conditions; b) each image is to be labelled to identify the elements depicted, the direction that the image is viewed towards, and include the name of the relevant street frontage; c) each image is to be numbered and cross referenced to a site location; d) a summary report, prepared by a suitable professional, must be submitted in conjunction with the images detailing the project description, identifying any apparent existing defects, detailing the date and authorship of the photographic record, the method of documentation and limitations of the photographic record.	
Part C – During Demolition Works		
C2	Construction, including the delivery of materials to and from the site, may only be carried out between the following hours: (a) between 7.00 am and 5.30 pm, Mondays to Fridays inclusive; and (b) between 7.30 am and 3.30 pm, Saturdays.	Section 3.2

C4	Activities may be undertaken outside of these hours if required: (a) by the Police or a public authority for the delivery of vehicles, plant or materials; (b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm.	Section 3.2
C5	Notification of such activities must be given to affected residents before undertaking the activities or as soon as is practical afterwards.	Section 3.2, 4.11
C34	All vehicles involved in the excavation and / or demolition process and departing from the property with materials, spoil or loose matter must have their loads fully covered before entering the public roadway.	Section 5
C35	Prior to the commencement of work, suitable measures are to be implemented to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site. It is an offence to allow, permit or cause materials to pollute or be placed in a position from which they may pollute waters.	SWMP, CPTMP Section 5
C41	Unless otherwise authorised, the public way on Council owned land must not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances. Non-compliance with this requirement will result in the issue of a notice by the Planning Secretary to stop all work on site.	Section 3.3
C42	Any damage to the public way, including trees, footpaths, kerbs, gutters, road carriageway and the like, must immediately be made safe and functional by the Applicant.	Section 5.1
Part D – Post Completion of Demolition/Construction Works		
D3	All public footways, paving, sub-surface infrastructure, kerbs, gutters and road pavement damaged during the works are to be immediately repaired following the damage, to a satisfactory state that provides for safe use by pedestrians and vehicles.	

D4	Post completion of the works: a) the Applicant must engage a suitably qualified person to prepare a post-construction dilapidation report. This report must ascertain whether the construction works created any structural damage to adjoining buildings, infrastructure and roads. b) the report is to be submitted to the Certifier. In ascertaining whether adverse structural damage has occurred to adjoining buildings, infrastructure and roads, the Certifier must: c) compare the post-construction dilapidation report with the pre-construction dilapidation report required by these conditions; d) have written confirmation from the relevant authority that there is no adverse structural damage to their infrastructure and roads; and e) a copy of this report is to be forwarded to the Certifier, Council, the Planning Secretary and each of the affected property owners.	Post Construction delap
Advisory Notes		
AN2	The Applicant shall apply to the relevant authority for all necessary permits including crane permits, road opening permits, hoarding or scaffolding permits, footpath occupation permits and/or any other approvals under section 68 (Approvals) of the Local Government Act 1993 or section 138 of the Roads Act 1993.	Appendix D contains all permits relating to these requirements.
AN3	A Road Occupancy Licence (ROL) should be obtained from Transport Management Centre for any works that may impact on traffic flows on the surrounding state road network during construction activities. A ROL can be obtained through https://myrta.com/oplinc2pages/security/oplincl ogin.jsf.	Appendix D

3 PROJECT OVERVIEW

3.1 SITE INTRODUCTION

The New Sydney Fish Market development once completed will involve an improved public domain including the creation of a waterfront promenade with improved access to Blackwattle Bay and linking to surrounding areas and to public transport. The development will include wholesale facilities and auction rooms, offices and commercial space, culinary education (the Sydney Seafood School), retail premises including food and beverage premises (potentially with liquor licenses), back-of-house facilities and car and delivery vehicle parking. The new facility is to include a new bayside promenade

and wharves. The new fish market will be purpose built and will be supported by state of the art back-of-house plant and recycling/waste management facilities.

Works are also proposed to Bridge Road to provide improvements to its design and operation including improvements to the intersection of Bridge Road with Wattle Street and Wentworth Park Road.

The development will be undertaken in stages, with the first stage of the development the demolition of land and water-based structures on the site including removal of marine piles. This is the subject of this management plan.

The site is currently occupied by the following buildings and improvements:

- A finger jetty that protrudes from the main wharf;
- Within the northern area of the central portion of the site a wharf deck consisting of asphalt applied to reinforced concrete supported by timber beams and turpentine piles;
- Within the southern area of the central portion of the site a post tensioned slab supported by wharf beams and steel piles; and
- A single storey office building.
- The eastern portion of the site comprises the former Jones Brothers Coal loader and bins and weighbridge building.
- The site includes the existing SFM wharf and outdoor dining area which is located along the foreshore on the western side of the main fish market building.

The scope of works for Stage 1 involves:

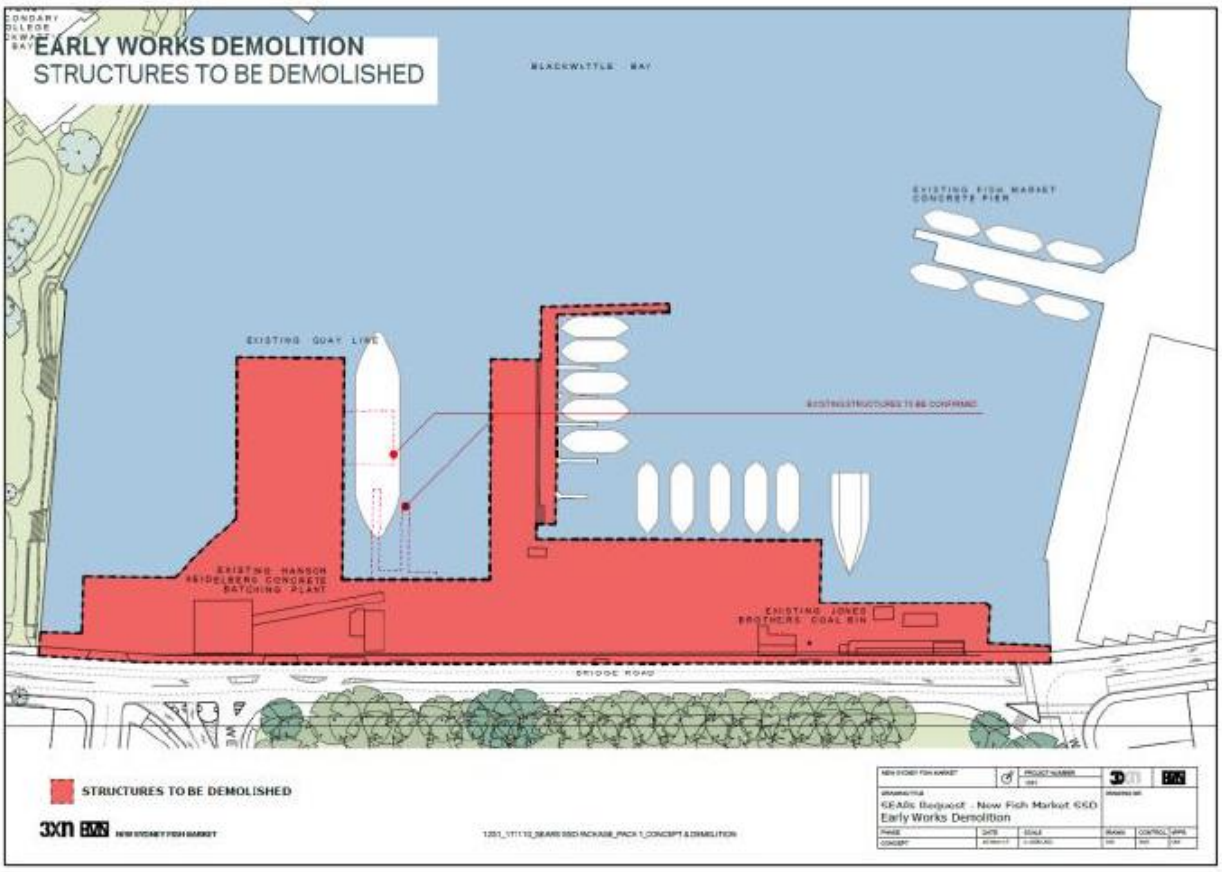
- erection of perimeter fencing, hoarding and scaffolding (as required), site accommodation and environmental controls;
- establishment of temporary access and pedestrian arrangements (if required);
- Services verification, relocations and installation of selected temporary services including capping and removal of in-ground services, diversions and terminations;
- Localised remediation works;
- Selected early civil works (temporary works, drainage and other in ground services);
- Make good works to the existing sea wall and provision of revetment structures as required.

Demolition equipment required for the project will include:

- Excavators to demolish buildings and above ground structures fitted with hydraulic shears and hammer attachments
- Concrete saws and coring drills used to break the wharf structure into smaller sections for removal
- Excavators to load trucks
- Rigid body trucks to remove materials from the site including skip bins
- Electric and hydraulic hand tools (drills, hammers, welding equipment, oxy acetylene cutting equipment) to separate wastes and other building materials
- Barges and cranes to remove timber supports and piles
- Hoses and pumps to control water

- Street sweepers to maintain a clean work area and access points

3.1.1 *Site Layout*



Source: CEMP (Thelem Consulting 2019)

Figure 1 – New Sydney Fish Markets Stage 1 Works - Site Layout

3.2 WORK HOURS

Demolition shall be undertaken during the following standard construction hours, as defined in SSD 8924 conditions C2-C6;

- 7.00 am to 5.30pm Mondays to Fridays
- 7.30 am to 3.30pm Saturdays
- At no time on Sundays or Public Holidays

Activities which may be undertaken outside of these hours if required

(a) by the Police or a public authority for the delivery of vehicles, plant or materials;

(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm.

Notification of such activities must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

(a) 9.00 am to 12.00 pm, Monday to Friday;

(b) 2.00 pm to 5.00 pm Monday to Friday; and

(c) 9.00 am to 12.00 pm, Saturday.

Further approvals would be required for work outside of these hours and the process for gaining approval is specified in the CNVMP.

3.3 SITE ACCESS AND WORKZONES

Access to the construction site will be via the existing driveways and gates to the site located off Bridge Road as highlighted on Figure 2.

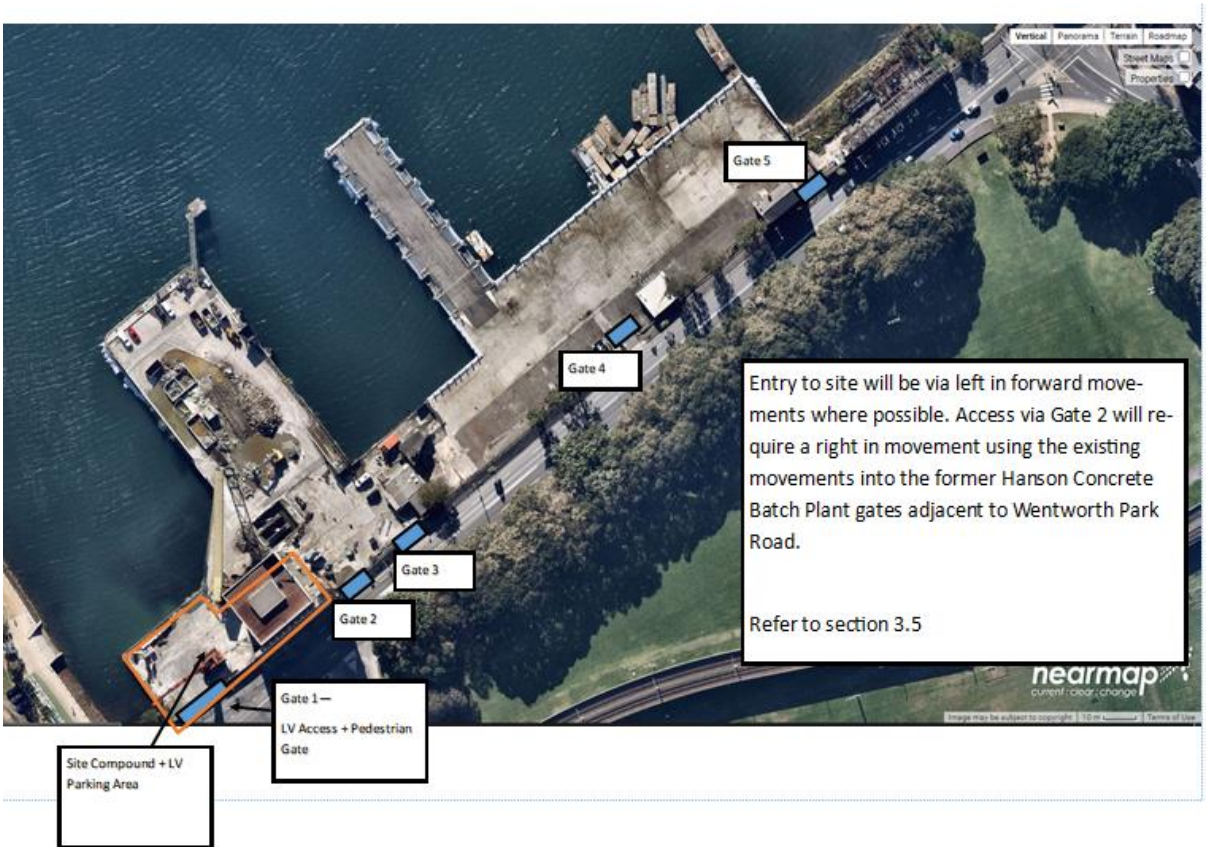


Figure 2 – New Sydney Fish Markets Stage 1 Works - Location of access points to the site

On-street work zones are not envisaged to be required on Bridge Road to facilitate the demolition works. The public way, on Council owned land, must not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances. A hardstand area north of the existing Bridge Road footpath (see Figure 3) will be utilised to store construction vehicles where required. A site hoarding will also be established when required, to separate this hardstand work zone when established from the adjacent Bridge Road footpath so not to impact the safety of pedestrians in the area as outlined in Figure 3. Traffic controllers will be present at the vehicle crossover points to manage interactions with pedestrians.

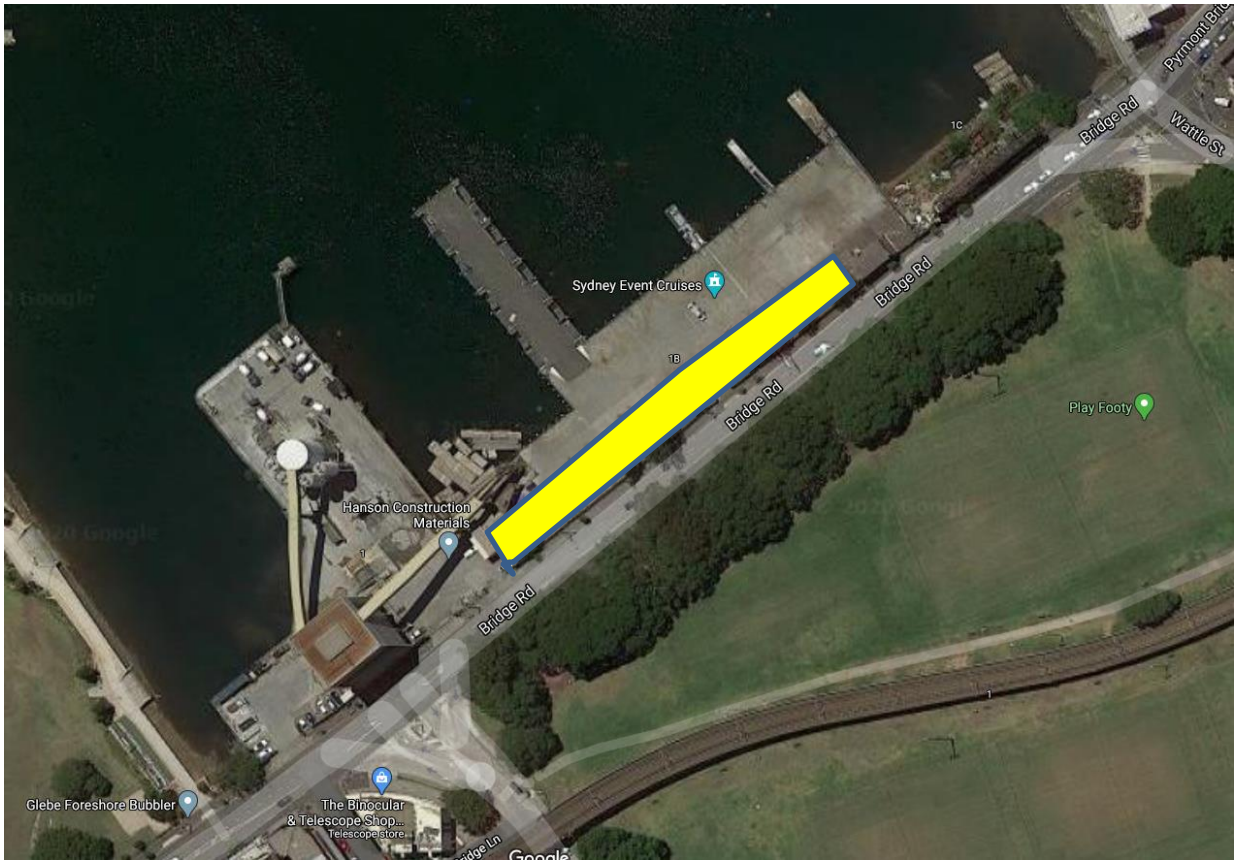


Figure 3 – New Sydney Fish Markets Stage 1 Works - Indicative location of hardstand area for construction use

Detailed traffic control plans (TCPs) will be prepared prior to the commencement of work on site and are contained in Appendix A.

3.4 TRAFFIC MANAGEMENT PLAN AND MONITORING PROCESS

Daily inspections on all traffic management set outs will be carried out by the site supervisor in line with CPTMP. Regular Safety Audits will be carried out throughout the project and reported accordingly through the project reporting requirements.

The site Supervisor will schedule vehicle movement to stagger movements through a "call up" system to prevent Heavy vehicle queuing on Bridge Road and local residential streets outside the Project boundaries.

3.4.1 *Construction Traffic routes*

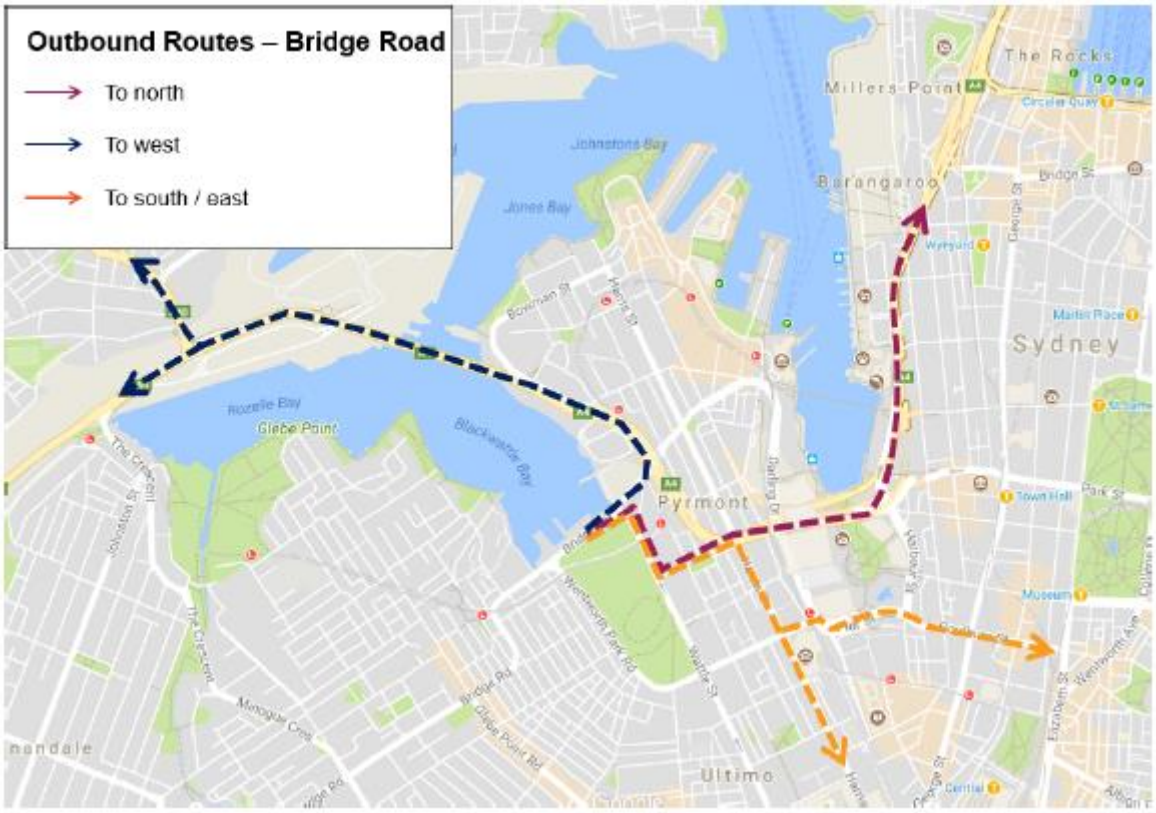
The main construction access will be via the state road network including the Western Distributor. Vehicles will likely originate from this network. It is expected that the majority of trips will likely be generated from the west and will access the site via either Victoria Road or the City West Link.

Trips from the east and south may access the site via the Cross-City Tunnel and Western Distributor, while those arriving from the north will use the Sydney Harbour Bridge and Western Distributor. Wattle Street and Harris Street will provide an alternative route for vehicles arriving from and departing to the south.

The primary access point to the site will be via the intersection of Wentworth Park Road and Bridge Road.

For part of the construction period, trucks may arrive and depart from Glebe Island, with materials barged across to the construction site. Primary access to this construction compound will be via James Craig Road, with similar arrival/departure routes to the construction access via Bridge Road used.

Source : EIS Appendix 11 TIA (SLR 2019)



Source : EIS Appendix 11 TIA (SLR 2019)

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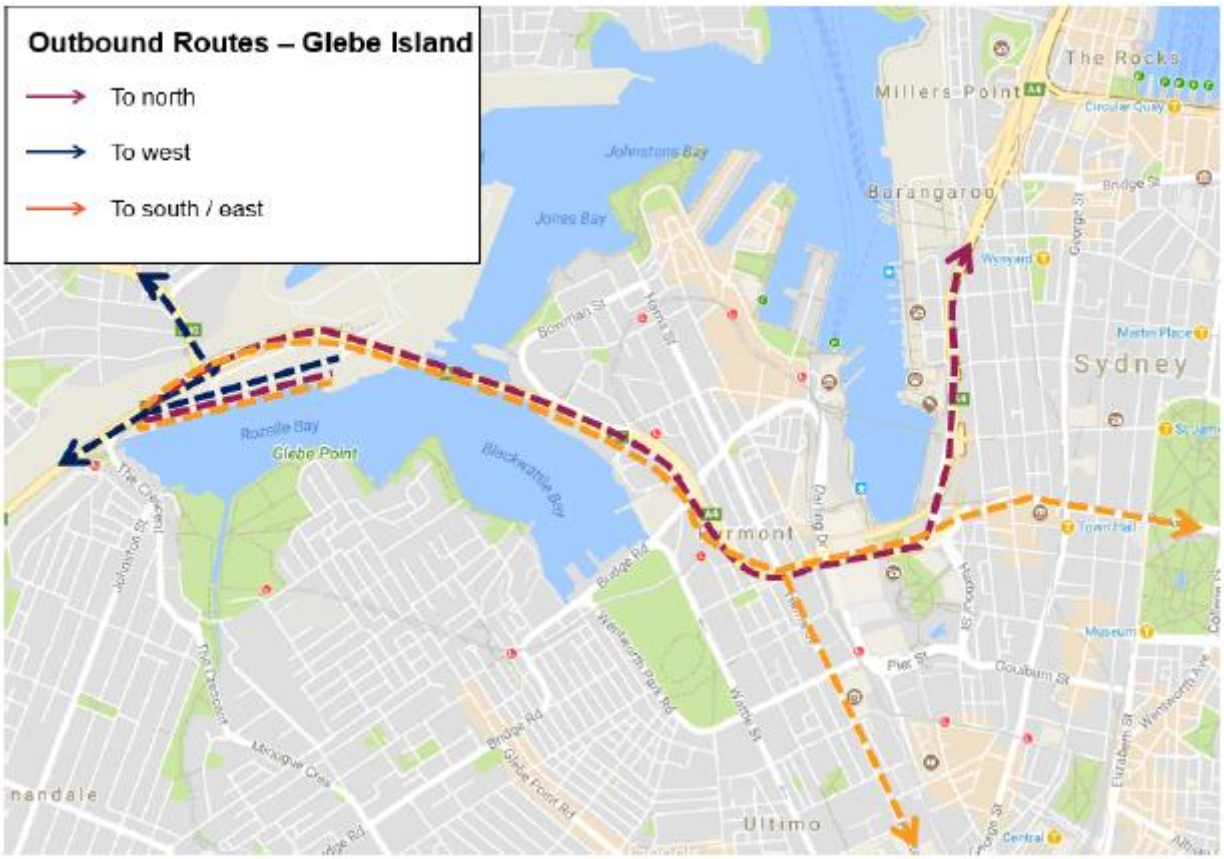


Source : EIS Appendix 11 TIA (SLR 2019)

Vehicles that will access the site during construction will likely mainly comprise of heavy vehicles including Articulated Vehicles (AV) such as precast delivery trucks and Heavy Rigid (HR) such as truck and dog. These different types of vehicles may access the site at the same time.

Other heavy machinery plants such as cranes will have to be delivered to site in the preliminary stage. All heavy goods such as girders or machinery plants are likely to be delivered outside of peak traffic hours.

3.5 INTERNAL COMMUNICATION PROCESS

Signage shall be provided to inform drivers of the access restrictions and locations in line with this CPTMP. In addition, all heavy vehicle transport companies will receive a copy of the site-specific traffic requirements, including access points along Bridge Road, site specific PPE requirements and a copy of the Traffic Control Plan (TCP)Appendix A.

All truck drivers will be directed to turn left out of site at Bridge Road gates using a forward movement. Entry to site will be via left in forward movements where possible. Access via Gate 2 will require a right in movement using the existing movements into the former Hanson Concrete Batch Plant gates adjacent to Wentworth Park Road. Additional signage will be placed at entry and exist points. No parking is permitted on Bridge Road or neighbouring side roads.

This information is included in the project induction and will be reiterated in pre-start meetings and tool box talks.

3.6 WORKSITE ACCESS

All access including entry and exit to the work site will be from existing gates on Bridge Road. All trucks will enter and exit the site in a forward motion only, no reversing will be permitted onto the site. Resident access will not be affected during works.

City of Sydney Council and TfNSW have planned the installation of a pop-up cycleway along Bridge Rd to assist commuters to safely travel during Covid-19 restrictions. The route will travel along the frontage of the site. The cycleway along the development frontage will not include any klem-flex devices and therefore will not impact or egress from the site. However, measures will be taken to ensure safety of cyclists using the cycleway.

Traffic controllers will be present at vehicle crossover points to assist in the management of vehicles entering/exiting the site, pedestrians and cyclists.

Establishment and enforcement of appropriate on-site vehicle speed limits (<20km/h), would be enforced and sign posted.

3.7 LOADING AND UNLOADING AREA

Loading and unloading of material and equipment (large or small) will be done within the boundaries of the site. There will be no loading and unloading of materials outside the site boundaries. There will be a dedicated hardstand area for unloading, loading and storing of materials on site. Authorised traffic controllers will be required for movements into and out of the site to ensure motorists, cyclists and pedestrian safety, details are provided on TCP's in Appendix A.

3.8 SITE OFFICE LUNCHROOM AND TOILETS

Site office, lunch room and toilets will be located within the property boundaries.

4 IMPACT OF WORK

4.1 PUBLIC CAR PARKING

Control measures will be put in place to prevent impacts on public parking during the works. To ensure minimal impact on local parking the following shall apply:

- Parking will be made available within the site for all early works personnel and vehicles;
- Trucks and delivery vehicles will load/unload on site;
- Certified traffic controllers will be made available for all major truck movements and deliveries, closing off the footpath and opening when deemed safe to do so; and
- Labourers where possible will car pool or use public transport to and from the site each day.

4.2 WORKERS/TRADESPERSONS PARKING

All construction workers will park within the Project site boundary. However, it is encouraged for all workers to car share or use public transport when possible to minimize the impact on surrounding streets.

Should vehicle parking be required on-site, it would be undertaken within the site boundaries. The site supervisor will be responsible for vehicle movements on site at all times.

4.3 OUT OF HOURS DELIVERIES

Out of hours deliveries will only be permitted as stated below in line with development consent (SSD8924) condition C4:

- by the Police or a public authority for the delivery of vehicles, plant or materials;
- in an emergency to avoid the loss of life, damage to property or to prevent environmental harm.

Where works are required to be undertaken outside of normal hours, which may involve traffic changes, affected stakeholders would be provided with 48 hours' notice (or as soon as practical after becoming aware of the need for the works) in line with the Community Consultation Strategy. A procedure for approval of OOHW is contained in the NVMP.

4.4 PEDESTRIANS/CYCLISTS

Some pedestrians and cyclists within the area may be impacted from walking past the site during construction, particularly along Bridge Road. Traffic controllers with appropriate accreditation will hold construction vehicles at cross-over points and allow pedestrians to cross these work areas. Signage will be erected as required in TCP's including the examples in Figure 4.

Temporary A/B Class hoardings, site fencing and gates will be installed on all Bridge Road access points to the boundaries of the extent of the project site area. Site accommodation areas will be established on site and temporary hoarding and signage will be adopted in all working areas at all times. Temporary closure of the adjoining footpath may be required during erection of class B hoarding in this area.

Ref Appendix A – TCP-

Figure 4- Pedestrian Signage

4.5 PUBLIC TRANSPORT SERVICES

Whilst there are light rail stations at Wentworth Park, Glebe and Fish Market within 300 to 400m from the site, there also two school routes (692s & 740s) that operate along this section of roadway. As does the rail replacement service 1L1. These routes will not be impacted by the proposed works. Also, bus routes along Harris Street are available as well as through Glebe. Trips to the Project site using existing public transport will require between 500m to 1.5km walk to the site.

4.6 EDUCATION FACILITIES

There are three facilities in close proximity (<1km) to the site as shown on Figure 5. Drivers will be made aware that the probabilities of pedestrian activity including that of children may occur.

Figure 5- Educational Facilities in proximity to the site

4.7 EMERGENCY SERVICES

Emergency Services will be advised of the works as required. Access will be made available for Emergency Services at all times within the vicinity of the work site. All emergency services will have priority throughout the worksite. Upcoming works will be regularly discussed and distributed to all relevant stakeholders.

4.8 LOCAL RESIDENTS AND ROAD CHANGES

Any resident(s) affected by the construction works and or road changes will be notified in accordance with the community consultation protocols for the project.

No road changes are proposed as part of the stage 1 works.

4.9 TRAFFIC IMPACT ON LOCAL ROADS

Traffic impacts will be minimised with truck movements will also be scheduled and sequenced in general to avoid peak times where intersection performance is already at a poor LOS. In the case of oversize over mass truck movements, they will occur as directed by police and the TMC. These will mostly occur outside of normal construction hours and may require short stoppages of traffic in both directions along Bridge Road.

Construction Traffic volumes have been estimated in the EIS Appendix 11 and are expected to be a worst case. Stage 1 works have been reviewed and identified not to exceed these volumes.

4.9.1 *Light Vehicles*

Typically, the stage 1 works are likely to have a workforce of between 50 and 100 personnel. Given the public transport availability to the site and limited on-site parking opportunities, the majority of construction workers will be required to take public transport to work. Typically, construction workers have a high vehicle occupancy of between 2-3 people per vehicle, particularly for sites with constrained parking environments. Therefore, the likely number of light vehicles generated by the project would be in the order of 50 to 100 per day.

Additionally, construction workers generally start earlier and finish earlier than the commuter peak periods, and would likely not coincide with the site's peak periods.

4.9.2 *Heavy Vehicles*

The number of daily construction vehicles accessing the site is forecast to vary from between 16 to 60 daily vehicles. The forecast daily volume of construction vehicles for each stage of the works is outlined in Table 2.

Table 2 - Forecast daily construction traffic volumes

Stage	Duration (months)	Heavy Vehicle Number Estimates
Site Mobilisation and establishment	1	16
Demolition	7	36
Marine Construction	9	30

Source Transport Impact Assessment - ARUP 2019

On average over the life of the construction project, 45 construction vehicles per day are forecast to access the site. A maximum of 50 trucks per day are likely to access the construction site. This volume of traffic is commensurate with the existing level of traffic (both light and heavy vehicle) that currently access the concrete plants on the site of the future Sydney Fish Market.

From the above the hourly breakdown of vehicle movement contained in the approved project EIS (Appendix 11 Table 18) has been reviewed and is generally in accordance with the proposed construction traffic for the Stage 1 works.

Table 3 - Hourly construction vehicle movements

Construction Stage	0600-0700	0700-0800	0800-0900	0900-1000	1000-1100	1100-1200	1200-1300	1300-1400	1400-1500	1500-1600	1600-1700	1700-1800	1800-1900
Site mobilisation and establishment	0	3	1	1	2	2	2	2	1	1	1	0	0
Demolition	1	7	3	3	4	4	4	3	3	3	2	1	0
Marine Construction	0	5	2	3	3	3	3	3	2	2	2	1	0
Construction	1	9	4	4	5	5	5	5	4	4	3	1	1
Fit-out	1	7	3	3	4	4	4	4	3	3	2	1	1
Commissioning	0	2	1	1	1	1	1	1	1	1	1	0	0

4.10 NOISE

Truck operators will be made aware of their responsibilities in creating excess noise. Measures to be adopted include:

- Restricted arrival and departure times to ensure operations are contained within the approved hours of work;
- Turning off equipment when not required to be operational;
- No loud radios or shouting, radio contact to be used
- No use of horns to signify loading completed

If there are any noise complaints from neighbouring businesses, steps shall be taken by the Site Manager to reduce noise output or change the methodology of work creating the noise.

Further information is contained within the Construction Noise and Vibration Management Plan.

4.11 COMMUNITY ENGAGEMENT

5 MANAGEMENT MEASURES

5.1 MONITORING

Traffic monitoring during the early works will be undertaken, generally in accordance with daily heavy vehicle movements. Monitoring will include

- Daily pre-start visual inspections of vehicles to ensure vehicles are maintained in good working order and in accordance with manufacturer specifications.
- Daily inspection of Bridge Road will be maintained by the Area Supervisor, including:
    - Road condition daily;
    - Traffic interactions daily

- Complaints and incident register.

- Any damage to the public way, including trees, footpaths, kerbs, gutters, road carriageway and the like, will be made safe and functional as soon as practical following being identified

- Noise controls such as silencers and low-noise mufflers will be installed and maintained.

- Where reasonably practicable trucks with broadband alarms as opposed to beepers will be used as they provide an effective warning while being more directional as well as less bothersome to the surrounding community.

- All trucks would be fitted with tarps prior to leaving the site to control dust and debris.

- Where dust and materials are tracked onto Bridge Road, A street sweeper or equivalent method will be used to remove loose materials as soon practical after the site becomes aware of the issue.

- Access points will be maintained in a clean state to control loose materials leaving the site. Detailed controls would be identified in the PESCP as part of the Soil and Water Management Plan for the project.

5.2 COMMUNITY CONSULTATION STRATEGY

In accordance with Hansen Yuncken's Stakeholder Management & Communications Management Plan, an approved community letter will be distributed to local residents and businesses within the area. The community letter will include information of works taking place including dates, times and project contact details for any information, comments or concerns.

5.3 MONITORING, REVIEW AND AMENDMENT OF THIS PLAN

Weekly management meetings will take place with all key parties ensuring safety issues and program schedules are reviewed and minuted. Any revision to plans or documentation will be noted in the revision table on the header page and this plan up revved.

6 CONSULTATION

This CPTMP has been developed in consultation with the relevant Council, emergency services, road user groups. A summary of consultation undertaken during the preparation of this CPTMP is provided in Table 4. Appendix B contains records of stakeholder consultation undertaken on the project.

Table 4 – Consultation for preparation of the CPTMP

Organisation	Date	Outcome
INSW		
DPIE		

Organisation	Date	Outcome
TfNSW		

7 STAKEHOLDERS

Liberty Industrial recognises there is a broad range of stakeholders with an interest in the development and the need to maintain an ongoing relationship with the community, throughout the delivery of the Stage 1 Works.

Hansen Yuncken's Stakeholder Management & Communications Management Plan will be followed when engaging with stakeholders and the public

8 INCIDENT MANAGEMENT

Detailed processes for responses to any traffic, construction or other incident is outlined within the Incident and Complaints Management Procedure. Please refer to the WHS Mgt Pan.

9 REPORTING

A weekly report will be produced to summarise all monitoring results. This report will be reviewed by the Project Manager.

10 AUDITING/ REVIEW

Audits and reviews (both internal and external) will be undertaken to assess the effectiveness of environmental controls and compliance with this plan, EPBC and SSD approvals and other relevant guidelines. The following elements may be included in the audit:

- Compliance with statutory obligations.
- Compliance with the Construction Environment Management Plan (CEMP) and CPTMP.
- Adequacy of monitoring and operational reports.
- Completion of environmental actions.
- Adequacy of environmental training records.
- Adequacy of environmental records, checklists and document management systems.
- Preparation of environmental reports.
- Recording and completion of corrective actions following environmental incidents and complaints.
- Achievement of environmental performance objectives.
- Implementation of actions from previous audits.

Audit/review of this plan will be part of an overall construction environmental management systems audit process defined in the CEMP.

Checklists used for regular monitoring of this plan are contained in Appendix C.

APPENDIX A - TRAFFIC CONTROL PLANS- TCP'S –

APPENDIX B – STAKEHOLDER CONSULTATION

New Sydney Fish Market - SSD 8924

XXX review comments

CoA	Comment	Proponent Response

APPENDIX C – CPTMP CHECKLISTS AND MONITOIRNG FORMS

APPENDIX D – PERMITS, LICENSES AND APPROVALS

PROJECT:
Sydney Fish Market

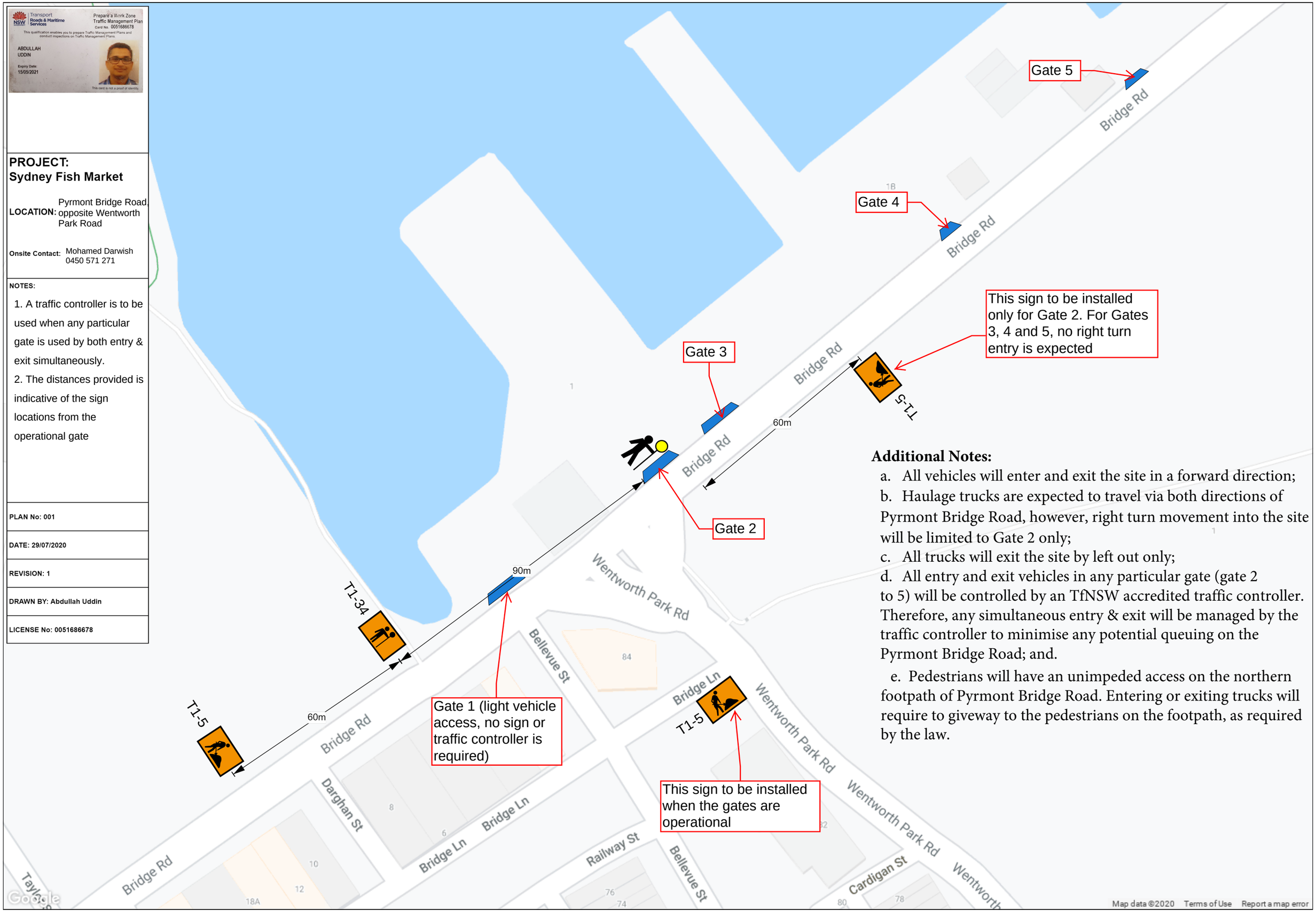
LOCATION: Pyrmont Bridge Road opposite Wentworth Park Road

Onsite Contact: Mohamed Darwish
0450 571 271

NOTES:

1. A traffic controller is to be used when any particular gate is used by both entry & exit simultaneously.
2. The distances provided is indicative of the sign locations from the operational gate

PLAN No: 001
DATE: 29/07/2020
REVISION: 1
DRAWN BY: Abdullah Uddin
LICENSE No: 0051686678



Additional Notes:

a. All vehicles will enter and exit the site in a forward direction;
b. Haulage trucks are expected to travel via both directions of Pyrmont Bridge Road, however, right turn movement into the site will be limited to Gate 2 only;
c. All trucks will exit the site by left out only;
d. All entry and exit vehicles in any particular gate (gate 2 to 5) will be controlled by an TfNSW accredited traffic controller. Therefore, any simultaneous entry & exit will be managed by the traffic controller to minimise any potential queuing on the Pyrmont Bridge Road; and.
e. Pedestrians will have an unimpeded access on the northern footpath of Pyrmont Bridge Road. Entering or exiting trucks will require to giveway to the pedestrians on the footpath, as required by the law.

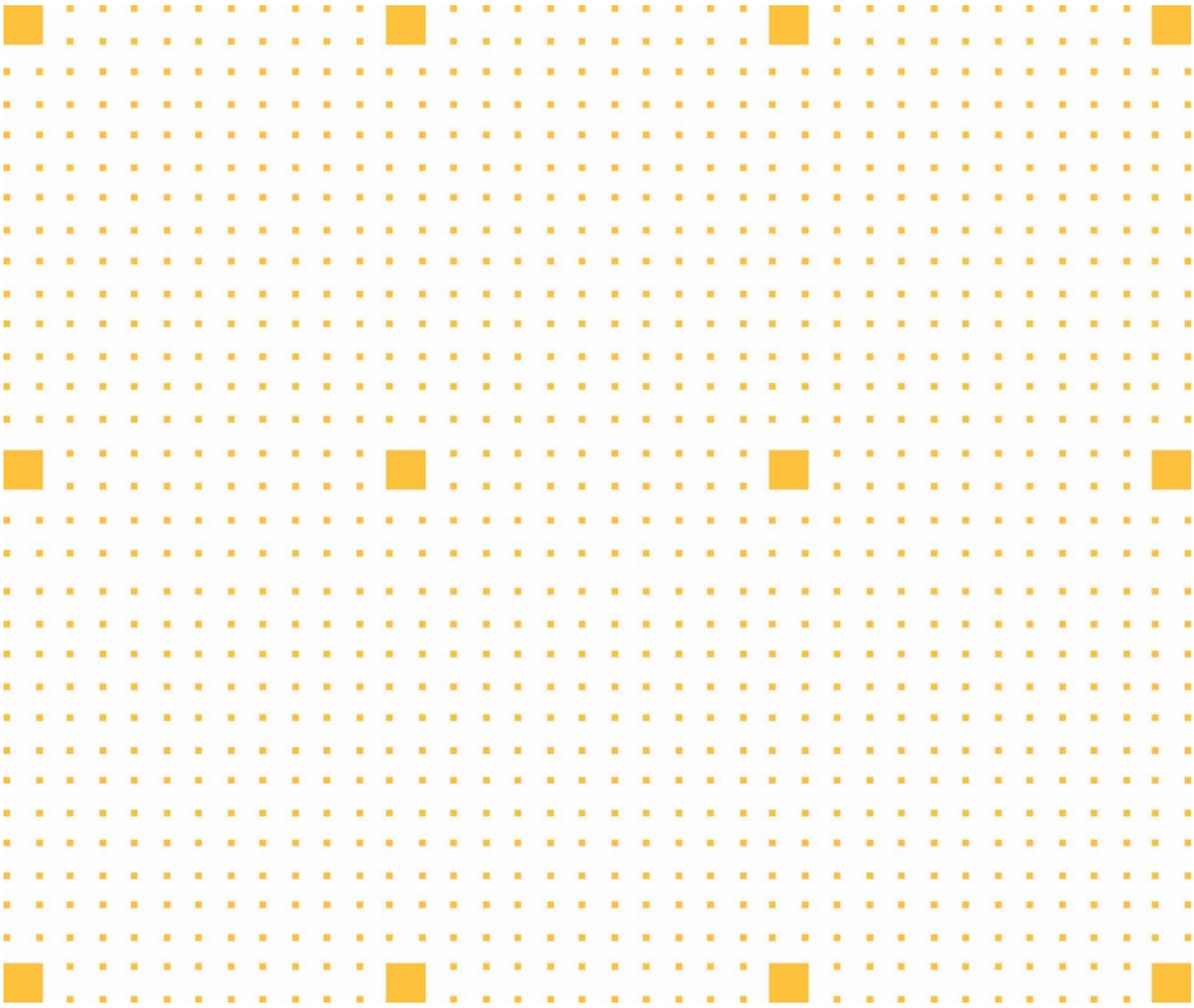
15 APPENDIX B2 CONSTRUCTION NOISE AND VIBRATION MANAGEMENT SUB PLAN

HANSENYUNCKEN

Noise & Vibration Management Plan

Project: new Sydney Fish Market Early Works

Job No: SC132



Rev: A | Aug 2020

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1 Authorisation

1.1 Review & Approval

Refer to PMP Responsibility Matrix for Noise & Vibration Management Plan responsibility, input and approval.

I have read this Management Plan, understood and agree to implement the procedures as defined:

Position	Name	Sign	Date
Review			
Project Manager	Daniel Yarrow		
Site Manager / Safety Coordinator	Peter Dworacek		
Engineer / Project Administrator	Daniel Cessario		
Cadet			
Approval			
HSE Manager	Tim Redmond		
Construction Manager	Dean Marcon		

1.2 Document Control

Revision	Description	Issued by	Issue date
Review			
0	Issue for Consultation	DY	Aug 2020
A	Issue for Construction	DY	Aug 2020

2 Definitions & Abbreviations

2.1 Definitions & Abbreviations

The following definitions and abbreviations have been used in this Noise & Vibration Management Plan. Further definitions and abbreviations are provided in referenced procedures and plans:

CORP	Hansen Yuncken Corporate
HSE	Health, Safety & Environment
HY	Hansen Yuncken Pty Ltd
PLN	HY Plan
PPE	Personal Protective Equipment
PR	Procedure
S/C	Subcontract(s) or Subcontractor(s) as the context requires

3 Scope of Works

This scope of work is to undertake demolition and early works on the New Sydney Fish Market, in order to provide unencumbered access for the subsequent works package/s. It includes the following:

- Establishment of construction site facilities and management of site security;
- Utility services and stormwater identification, termination and removal
- Demolition of existing infrastructure and buildings;

A brief description of the activities to be conducted and anticipated time frame for completion during each phase is outlined below.

New Sydney Fish Market Early Works – Demolition works

- Site establishment and mobilisation – 1 month
- Hazardous materials removal – 1 month
- Service isolation – 1 month
- Demolition – 7 months

The Minister for Planning has authorised construction, including the delivery of materials to and from the site, to be undertaken during the following hours:

Demolition shall be undertaken during the following standard construction hours, as defined in SSD 8924 conditions C2-C6;

- 7.00 am to 5.30pm Mondays to Fridays
- 7.30 am to 3.30pm Saturdays
- At no time on Sundays or Public Holidays

Activities which may be undertaken outside of these hours if required

(a) by the Police or a public authority for the delivery of vehicles, plant or materials;

(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm.

Notification of such activities must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

(a) 9.00 am to 12.00 pm, Monday to Friday;

(b) 2.00 pm to 5.00 pm Monday to Friday; and

(c) 9.00 am to 12.00 pm, Saturday.

Further approvals would be required for work outside of these hours.

4 Purpose & Scope

The purpose of this plan is to:

- Prevent hearing damage to employees due to exposure to loud noise.
- Minimise disturbance to adjacent property owners and the public due to noise and vibration from construction activities.
- Prevent damage to adjacent properties due to vibration from construction activities.
- Ensure compliance with the following:
  - AS/NZS 1269 – 2005 Occupational Noise Management.
  - Model Code of Practice - Managing Noise & Preventing Hearing Loss at Work.
  - NSW WHS Regulation 2011: Chapter 4: Part 4.1 – Noise.
  - The Interim Construction Noise Guideline (ICNG) (DECC,2009)

This plan identifies:

- All potential significant noise and vibration generating activities associated with the activity;
- Feasible and reasonable mitigation measures to be implemented; and
- A monitoring program to assess performance against relevant noise and vibration criteria

Arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures contingency measures will be implemented in the event of non-compliance with noise and vibration criteria.

All sensitive receivers (eg schools, residents) likely to be affected will be notified at least five days before starting any work with an associated activity that may have an adverse noise or vibration impact. The notification will provide details of:

- The proposal;
- The construction period and construction hours;
- Contact information for project management staff;
- Details of complaint and incident reporting; and
- How to obtain further information.

Receivers where noise management levels may be exceeded will receive letter notification. Highly noise affected receivers will receive direct notification through a door knock.

5 Noise & Vibration Management

The Noise & Vibration Management will be carried out and maintained by Liberty Industrial.

See Liberty Industrials Noise & Vibration Management Plans - Appendix 8.1

6 Communications

6.1 Communication

Elton Consulting have been engaged to manage communication between the works and the residents and business. Communications will be as per the Communications Management Plan (Typical details below).

All potentially affected receivers will be notified at least five days before starting the nominated activities.

In order for any construction noise management programme to work effectively, continuous communication is required between all parties, which may be potentially impacted upon including the construction contractor and neighbours. This establishes a dynamic response process which allows for the adjustment of control methods and criteria for the benefit of all parties.

The objective in undertaking a consultation process is to:

- Inform and educate the groups about the project and the noise controls being implemented;
- Increase understanding of all acoustic issues related to the project and options available;
- Identify group concerns generated by the project, so that they can be addressed; and
- Ensure that concerned individuals or groups are aware of and have access to the Hansen Yuncken Complaints Register which will be used to address any construction noise related problems should they arise.

To ensure that this process is effective, regular information regarding the proposed works and period when they will be required to be conducted should be provided to surrounding receivers.

The community notification is to be conducted within the areas detailed below, including direct communication using phone calls or door knocking and letter drops or mail outs.

The notifications above have been based on the following:

1. All receivers (residential, retail and commercial) where noise levels may exceed criteria – within the purple shaded area – will be notified with a letter drop. Note: these areas outside the purple will not have likely exceedances within the construction noise criteria.

All businesses, residential properties and other key stakeholders (e.g. schools, local councils) affected by the activity will be notified at least five days prior to commencement of the activity.

Local council and the local community are to be kept informed about details of the works, construction progress, wharf closure, changes to public transport and other impacts throughout the construction period.

Contact details for the info line and website will be clearly displayed at the site leading up to the carrying out of any works at the site and maintained for the duration of works.

An enquiry and complaint tracking system will be established. Any enquiries or complaints will be acknowledged within 24 hours of being received.

6.2 Complaints Handling Process

Refer to Communications Management Plan for details, but typical procedure below:

Should any complaints about noise or vibration occur measures shall be undertaken to investigate the complaint, determine whether criteria have been exceeded and identify the required changes to work practices. In the case of exceedances of the vibration limits all work potentially producing vibration shall cease until the exceedance is investigated.

The effectiveness of any changes to work practices shall be verified before continuing. Documentation and training of site staff shall occur to ensure the practices that produced the exceedances are not repeated.

If a noise complaint is received the complaint should be recorded on a Noise Complaint Form. The complaint form should list:

- The name and location of the complainant (if provided);
- The time and date the complaint was received;
- The nature of the complaint and the time and date the noise was heard;

- The name of the employee who received the complaint;
- Actions taken to investigate the complaint, and a summary of the results of the investigation;
- Required remedial action, if required;
- Validation of the remedial action by a consultant or as detailed in this report; and
- Summary of feedback to the complainant.
- A permanent register of complaints should be held.

All complaints received should be fully investigated and reported to management. The complainant should also be notified of the results and actions arising from the investigation.

Where non-compliances or noise complaints are raised the following methodology will be implemented:

2. Determine the offending plant/equipment/process.
3. Locate the plant/equipment/process further away from the affected receiver(s) if possible.
4. Implement additional acoustic treatment in the form of localised barriers, silencers, vibration separation etc where practical.
5. Selecting alternative equipment/processes where possible.

7 Noise Controls

7.1 Hours of Works

Construction would normally be limited to between the following standard work times:

Demolition shall be undertaken during the following standard construction hours, as defined in SSD 8924 conditions C2-C6;

- 7.00 am to 5.30pm Mondays to Fridays
- 7.30 am to 3.30pm Saturdays
- At no time on Sundays or Public Holidays

Activities which may be undertaken outside of these hours if required

(a) by the Police or a public authority for the delivery of vehicles, plant or materials;

(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm.

Notification of such activities must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

(a) 9.00 am to 12.00 pm, Monday to Friday;

(b) 2.00 pm to 5.00 pm Monday to Friday; and

(c) 9.00 am to 12.00 pm, Saturday.

7.2 Monitoring

Noise

Verification measures will be carried out to confirm background noise level already captured as part of the Noise and Vibration Impact Assessment report, and actual construction noise levels monitored using hand-held devices during periods associated with high noise impacts.

The results of monitoring will be used to devise further control methods where required.

Vibration

Due to the distances and locations of the proposed activities to be undertaken there is no expected vibrations from works which will negatively impact surrounding receivers. Verification measures will be carried out to confirm construction vibration levels during periods associated with high vibration impacts do not generate levels of vibration which will exceed criteria detailed in this report.

As a result of the predicted vibrational exceedances, the following additional safeguards have been outlined to reduce the potential impact of vibration causing activities:

- No work with the potential to cause cosmetic damage to property (due to vibration or otherwise) will be undertaken
- A structural condition survey of receivers within 40 metres of the proposal footprint would be completed both before and after the construction work

- An appropriate respite period during scenario S06 piling (hammering) would be agreed upon through consultation with receivers located within 50 metres of the site.

7.3 Worker Noise Exposure

A worker shall not be exposed to greater than 85dB(A) for an eight (8) hour period. The value of 85 dB(A) over 8 hours is equivalent to:

- 88dB(A) over 4 hours
- 91dB(A) over 2 hours
- 94dB(A) over 1 hour
- 97dB(A) over 30 minutes
- 100dB(A) over 15 minutes

Also, a worker shall not be exposed to a C-weighted peak sound pressure of more than 140 dB(C).

Work Permits will be required for entry into areas with excessive Noise Levels. This will be determined onsite using hand held monitors in accordance with the Model Code of Practice - Managing Noise & Preventing Hearing Loss at Work.

7.4 Barricading & Signage

If onsite tasks generate noise that exceeds 85dB over an 8 hour period, barricading and signage will be erected to advise personnel that hearing protection must be worn beyond the barricade.

7.5 Hearing Protection

Hearing protection shall comply with AS/NZS 1270 Acoustics - Hearing Protectors.

7.6 Radios, iPods & MP3 Players

The use of radios, iPods or MP3 players or similar are prohibited on site and in all work areas at all times. They may be used in the site lunchrooms during breaks on condition that they not disturb others using the facilities.

7.7 Additional Controls

- Construction personnel will be informed of the location of sensitive receivers, and the need to minimise noise and vibration from the works, through the site induction and regular toolbox talks.
- The use of portable radios, public address systems or other methods of site communication that may unnecessarily impact on residents will be avoided
- Re-sequencing/organising the works to minimise concurrent noise generation from multiple activities in an area.
- Plant and equipment will be regularly inspected to ensure they are in good working order and not emitting excessive noise levels. Non-tonal alarms will be used at night.
- Plant & equipment shall be fitted with an effective and operational noise suppression device.
- All plant and equipment shall be regularly maintained and serviced to the manufacturer's specifications to ensure noise generation is minimised.
- Implementation of controls in accordance with AS 2436 Guide to Noise Control on Construction, Maintenance & Demolition Sites.
- In the event that OOHW is required, lighting would be directionally controlled to limit impacts from light spill to surrounding receivers, including residential properties. Lighting direction would also include consideration of any reflective impacts from the river.
- Controls to implemented shall be defined in the relevant Safe Work Method Statements.

8 Appendix

8.1 Liberty Industrial Noise & Vibration Management Plan

Construction Noise and Vibration Management Plan

New Sydney Fish Market Stage 1

Prepared by

Liberty Industrial Pty Ltd / EMM Consulting

for

Revision No.	Revision Date	Authority	Changes
0	31.07.2020	DD	Draft For Consultation

KEY TERMS AND ACRONYMS

Acronym/Term	Meaning
ACM	Asbestos Containing Material
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
DPIE	NSW Department of Planning Industry and Environment
EA	Environmental Assessment
EIS	Environmental Impact Statement titled Environmental Impact Statement New Sydney Fish Market At Blackwattle Bay Concept Development Application, prepared by BBC Consulting Planners, dated October 2019
Environmental Aspect	means the interaction, relationship or impact of an operation or activity with the
Environmental Law	relating to the storage, handling or transportation of waste, dangerous goods or hazardous material relating to Workplace health and safety; or which has as one of its purposes or
Environmental Notice	means any direction, order, demand, license or other requirement from a Government Agency to take action or refrain from taking any action in respect of the Site or the Works in
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Planning and Assessment
EWMS	Environmental Work Method Statements
NCA	Noise Catchment Area
NSFM	New Sydney Fish Market
OEH	Office of Environment and Heritage
NSWHC	NSW Heritage Council
Non-compliance	An occurrence, set of circumstances, or development that results in a non-compliance or is non-compliant with Conditions of Approval but is not an incident
Non-conformance	Observations or actions that are not in strict accordance with the CEMP and the aspect specific subplan
Site	Means the project site or work area where the Contractor is undertaking activities on behalf of Hansen Yuncken
SoHI	Statement of Heritage Impact
SSD 8924	Means State Significant Development number 8924 – New Sydney Fish Market – Concept and Stage 1
Standards	Standards are published documents setting out specifications and procedure
The Contractor	The company, companies or other legal entity appointed by Hansen Yuncken to undertake works under the Project Approval

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EXECUTIVE SUMMARY

EMM Consulting Pty Ltd were engaged to prepare a Construction Noise and Vibration Management Plan for Stage 1 of the New Sydney Fish Market (NSFM) project, which includes the demolition of existing structures and wharf infrastructure of the (NSFM site at Blackwattle Bay..

Works will include, establishment of the site, mobilization of equipment and plant, hazardous materials removal, strip out of existing buildings and wharf infrastructure and isolation of services.

The major noise sources associated with the project are mobile plant and machinery to be used during the demolition, and the transport of materials to and from the site.

The highest predicted noise level is 78 dBA during demolition works at the nearest sensitive receptor area, which is an exceedance of 8 dBA of the noise management level of 70 dBA for this receptor.

Attended noise and vibration compliance monitoring will be conducted weekly at five representative locations around Glebe and Pyrmont, to confirm the level of noise and vibration received at the location from the Stage 1 works. Monitoring will also be carried out in response to complaints or if work is scheduled out of standard construction hours.

Given the distances to the nearest sensitive receptors, exceedance of the vibration criteria is unlikely. Further vibration monitoring will be carried out in response to complaints reported during the works.

This Construction Noise and Vibration Management Plan has been prepared in accordance with the Australian Standard AS2436 – 2010 *"Guide to noise and vibration control on construction, demolition and maintenance sites"*. Construction noise management levels have been derived from the Environment Protection Authority's *Interim Construction Noise Guideline* and are used for a quantitative assessment at the nearest affected residential receiver locations.

All feasible and reasonable methods to limit the noise emissions and minimise the noise impact on neighbouring properties have been provided in Section 6 of this report. These include; selecting quiet equipment, incorporating periods of respite, maintaining community consultation relations, managing noise complaints and conducting noise and vibration monitoring.

1 SITE & DEVELOPMENT DESCRIPTION

The New Sydney Fish Market site is located at the head of Blackwattle Bay between the Pyrmont Peninsula and the foreshore of Glebe, situated less than 2 kilometres (km) west of Sydney's CBD and partially within the City of Sydney Local Government Area.

Currently the site's uses include a concrete batching plant at the Western end and concrete hardstand and wharf area at the Eastern end, which is currently vacant. The site includes wharves and land-based structures and part of the site is the water of Blackwattle Bay. Works will be undertaken on Bridge Road and its intersections with Wattle Street and Wentworth Park Road.

1.1 Scope of Work

This scope of work is to undertake demolition and early works on the New Sydney Fish Market Stage 1 site, in order to provide unencumbered access for the subsequent works package/s. It includes the following:

- Establishment of construction site facilities and management of site security;
- Utility services and stormwater identification, termination and removal
- Demolition of existing infrastructure and buildings;

A brief description of the activities to be conducted and anticipated time frame for completion during each phase is outlined below.

New Sydney Fish Market Phase 1 – Demolition works

- Site establishment and mobilisation – 1 month
- Hazardous materials removal – 1 month
- Service isolation – 1 month
- Demolition – 7 months

The Minister for Planning has authorised construction, including the delivery of materials to and from the site, to be undertaken during the following hours:

Demolition shall be undertaken during the following standard construction hours, as defined in SSD 8924 conditions C2-C6;

- 7.00 am to 5.30pm Mondays to Fridays
- 7.30 am to 3.30pm Saturdays
- At no time on Sundays or Public Holidays

Activities which may be undertaken outside of these hours if required

(a) by the Police or a public authority for the delivery of vehicles, plant or materials;
(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm.

Notification of such activities must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

(a) 9.00 am to 12.00 pm, Monday to Friday;
(b) 2.00 pm to 5.00 pm Monday to Friday; and
(c) 9.00 am to 12.00 pm, Saturday.

Further approvals would be required for work outside of these hours.

The sensitive receivers identified in the vicinity of the Project are shown in Figure 1. A number of Noise Catchment Areas (NCAs) that reflect the changing land use around the project site have been defined and are also shown in the figure. Each NCA location is considered representative of all receptors in each direction from the site.

Receptor locations within each suburb have been taken from Figure 1, of the SLR, Noise Impact Assessment report dated April 2019.

Table 1: Noise Sensitive Receptors

Receiver ID	Address	Noise Catchment Area	Receiver Type
R01	Commercial receivers east of development	NCA1	Commercial
R02	1 Wattle Crescent, Pyrmont	NCA2	Residential
R03	6-10 Wattle Street, Pyrmont		Residential
R04	Trojan Recruitment Group, 22 Bridge Road, Glebe	NCA3	Commercial
R05	Reece Plumbing, 20 Bridge Road, Glebe		Commercial
R06	Quro Health Studio, 18 Bridge Road, Glebe		Commercial
R07	BWS Glebe, 14 Bridge Road, Glebe		Commercial
R08	Unknown Tenancy, 10-12 Bridge Road, Glebe		Commercial
R09	Hello Happy Holdings, 8 Bridge Road, Glebe		Commercial
R10	Flat, 4-6 Bridge Road, Glebe		Commercial
R11	Kauri Foreshore Hotel, 2 Bridge Road, Glebe		Commercial
R12	The Binocular & Telescope Shop and residential shop-top dwelling, 84 Wentworth Park Road		Commercial ground floor, residential first floor
R13	82 Wentworth Park Road, Glebe		Residential
R14	Polyglot Group, 25 Burton Street, Glebe	NCA4	Commercial
R15	23 Burton Street, Glebe		Residential
R16	21 Burton Street, Glebe		Residential
R17	19 Burton Street, Glebe		Residential
R18	17 Burton Street, Glebe		Residential

R19	15 Burton Street, Glebe		Residential
R20	13 Burton Street, Glebe		Residential
R21	11 Burton Street, Glebe		Residential
R22	9 Burton Street, Glebe		Residential
R23	7 Burton Street, Glebe		Residential
R24	5 Burton Street, Glebe		Residential
R25	3 Burton Street, Glebe		Residential
R26	1 Burton Street, Glebe		Residential
R27	1A Burton Street, Glebe		Residential
R28	11 Bridge Road, Glebe		Residential
R29	Sydney Secondary College, Taylor Street, Glebe		Educational
R30	Sydney University Boat House, 123 Ferry Road, Glebe		Commercial
R31	Glebe Rowing Club, End of Ferry Road, Glebe		Commercial
R32	40 Ferry Road, Glebe		Residential
R33	92-119 Ferry Road, Glebe		Residential
R34	14-16 Leichhardt Street, Glebe	NCA5	Residential
R35	26 Cook Street, Glebe		Residential
R36	29-31 Cook Street, Glebe		Residential
R37	13 Griffin Place, Glebe		Residential
R38	45 Griffin Place, Glebe		Commercial
R39	Commercial Property 53 Griffin Place, Glebe		Residential

The New Sydney Fish Market Stage 1 Early Works footprint and site layout is shown in Figure 2.

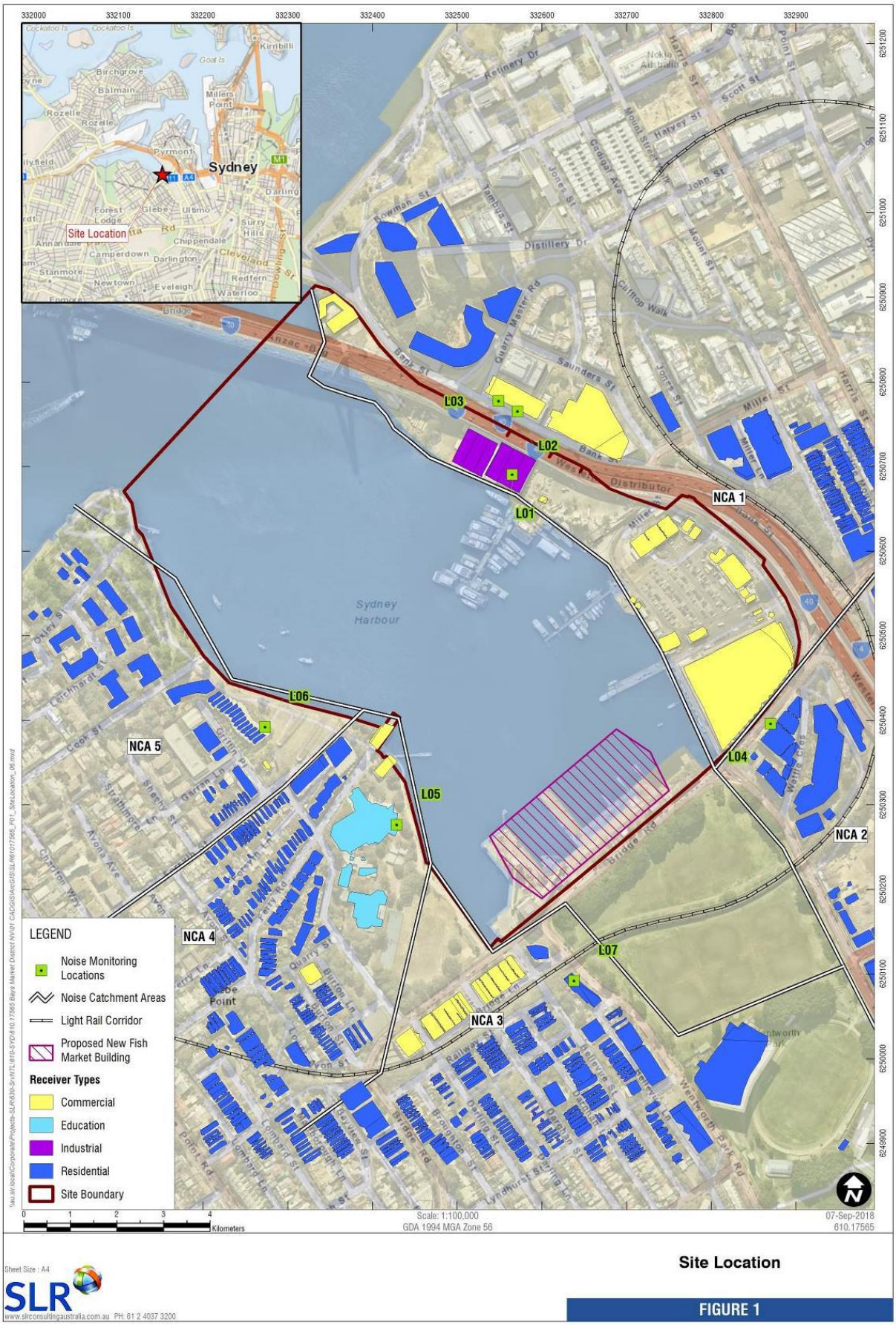


Figure 1 Residential Location Plan

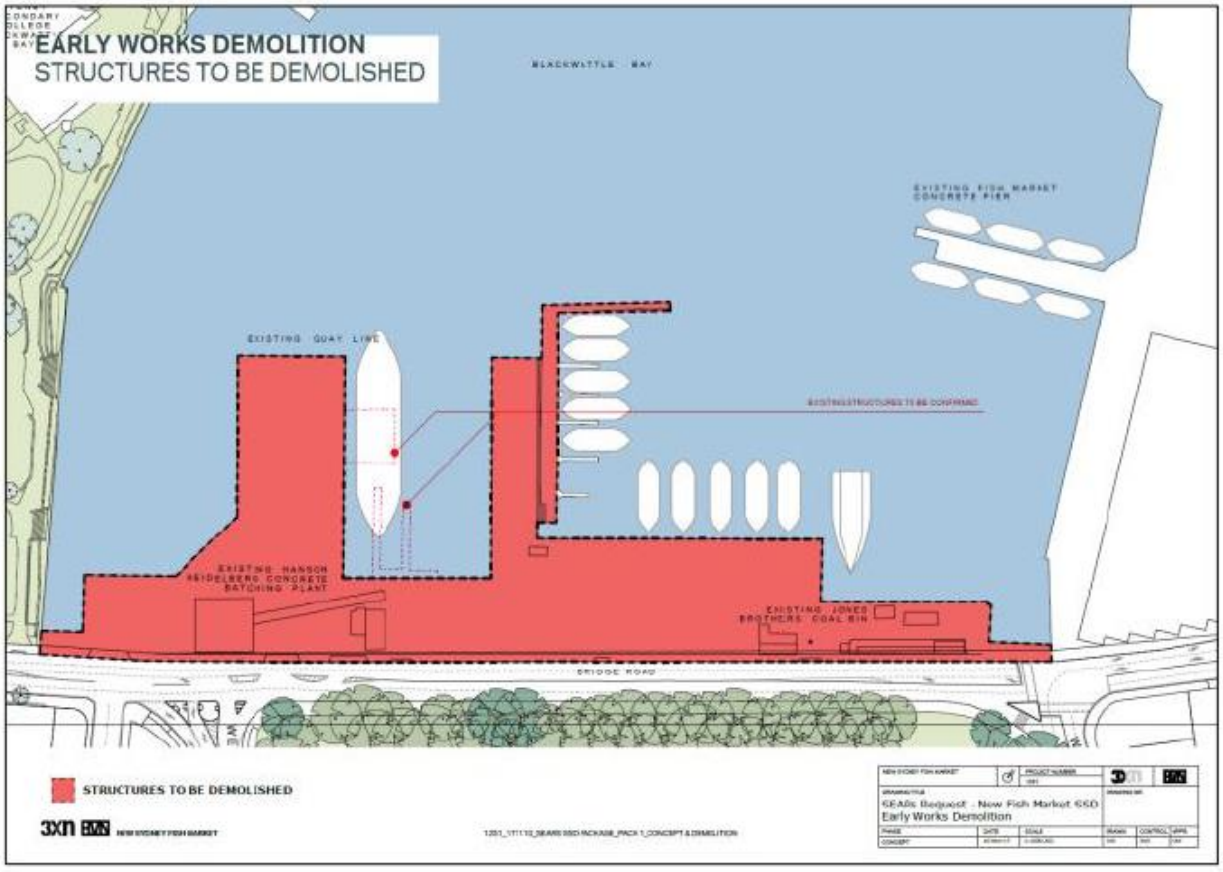


Figure 2 Site Layout

2 CONDITIONS OF CONSENT & NOISE CRITERIA

The NSW Minister for Planning granted approval for Application No SSD 8924 which consists of the Demolition & Early Works (NSMF Stage 1) on the New Sydney Fish Market site, as defined in the Consent. The Consent contains several conditions relating to noise and vibration impact as detailed below.

2.1 Planning Assessment Commission of NSW

The following table lists the Conditions of Approval required to be satisfied, as issued by DPIE.

Table 2 Conditions of Consent

Condition No.	Consent Condition	Sub- Plan Ref.
B18	Prior to the commencement of works, a Construction Noise and Vibration Management Plan (CNVMP) prepared by a suitably qualified person shall be submitted to the Certifier. The CNVMP must be prepared in consultation with, and address the relevant requirements of, Council and the EPA. The CNVMP shall address (but not be limited to): a) Identification of each work area, site compound and access route (both private and public); b) Identification of the specific activities that will be carried out and associated noise sources at the premises and access routes; c) Identification of all potentially affected sensitive receivers using the construction noise objectives identified in accordance with the EPA's Interim Construction Noise Guideline, vibration objectives as identified in accordance with the document Assessing Vibration: A Technical Guideline (DEC 2006), and the road traffic noise objectives as identified in accordance with the NSW Road Noise Po/icy (DECCW 2011); d) Identification of non-project related constriction activities in the area that may be; e) identify the noise management levels for the project; f) identify the construction methodology and equipment to be used and the key sources of noise and vibration; g) details of all reasonable and feasible management and mitigation measures to be implemented to minimise construction noise and vibration; h) be consistent with and incorporate all relevant recommendations and noise and vibration mitigation measures outlined in the Noise and Vibration Assessment, prepared by SLR, dated April 2019; i) ensure all potentially impacted sensitive receivers are informed by letterbox drops prior to the commencement of construction of the nature of works to be carried out, the expected noise levels and duration, as well as contact details for a construction community liaison officer; and j) include a suitable proactive construction noise and vibration monitoring program which aims to ensure the construction noise and vibration criteria in this consent are not exceeded. Prior to the commencement of works, details demonstrating compliance with the above requirements (B19 (a)-(j)) must be submitted to the Certifier. A copy of the CNVMP must be submitted to the Certifier, Council and the Planning Secretary.	This Plan

Condition No.	Consent Condition	Sub- Plan Ref.
C7	The development must be constructed with the aim of achieving the construction noise management levels detailed in the Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009). All feasible and reasonable noise and vibration mitigation measures shall be implemented and any activities that could exceed the construction noise or vibration management levels shall be identified and managed in accordance with the CEMP and CNVMP.	Section 3.7, 4.1, 5
C8	If the noise from a construction activity is substantially tonal or impulsive in nature (as described in Chapter 4 of the NSW Industrial Noise Policy), 5 dB(A) must be added to the measured construction noise level when comparing the measured noise with the construction noise management levels	Section 5
C9	The Applicant must schedule intra-day 'respite periods' for construction activities predicted to result in noise levels in excess of the "highly noise affected" levels, including the addition of 5 dB to the predicted levels for those activities identified in the Interim Construction Noise Guideline as being particularly annoying to noise sensitive **receivers.**	Section 5.6
C10	Wherever practical, and where sensitive receivers may be affected, piling activities are completed using bored piles. If driven piles are required, they must only be installed where outlined in the CEMP.	Section 5
C11	Vibration caused by construction at any residence or structure outside the subject site must be limited to: (a) for structural damage vibration to buildings (excluding heritage buildings), British Standard BS 7385 Part 2- 1993 Evaluation and Measurement for Vibration in Buildings; (b) for structural damage vibration to heritage buildings, German Standard DIN 4150 Part 3 Structural Vibration in Buildings Effects on Structure; (c) for human exposure to vibration, the evaluation criteria presented in British Standard BS 6472- Guide to Evaluate Human Exposure to Vibration in Buildings (1Hz to 80 Hz) for low probability of adverse comment; and (d) these limits apply unless otherwise outlined in the CEMP.	Section 3.4, 3.7, 4.2

2.2 EPA Interim Construction Noise Guideline

The NSW Environment Protection Authority published the *Interim Construction Noise Guideline* in July 2009. While some noise from construction sites is inevitable, the aim of the Guideline is to protect the majority of residences and other sensitive land uses from noise pollution most of the time.

The Guideline presents two ways of assessing construction noise impacts; the quantitative method and the qualitative method.

The quantitative method is generally suited to longer term construction projects and involves predicting noise levels from the construction phase and comparing them with noise management levels given in the guideline.

The qualitative method for assessing construction noise is a simplified way to identify the cause of potential noise impacts and may be used for short-term works, such as repair and maintenance projects of short duration.

In this instance, the quantitative method is the most appropriate and has been used in this assessment. Details of the quantitative method are given in Section 4 of the Guideline.

Table 2 in Section 4 of the Guideline sets out noise management levels at affected residences and how they are to be applied during normal construction hours. The noise management level is derived from the rating background level (RBL) plus 10 dB in accordance with the Guideline. This level is considered to be the 'noise affected level' which represents the point above which there may be some community reaction to noise.

The 'highly noise affected' level of 75 dBA represents the point above which there may be strong community reaction to noise. This level is provided in the Guideline and is not based on the RBL. Restrictions to the hours of construction may apply to activities that generate noise at residences above the 'highly noise affected' noise management level.

2.3 German Standard DIN 4150-3 – Effects of Vibration on Structures

2.3.1 Buried Pipework

Service pipelines exist on the southern boundary of the NSFM site, running parallel with Bridge Road. German Standard DIN 4150-3:1999 provides guideline vibration values for vibration velocity on buried pipework, which is summarised as follows in Table 3.

Table 3 Guideline Value for Vibration on Buried Pipework

Line	Pipe Material	Guideline Values for Peak Particle Velocity Measured On the Pipe – mm/s
1	Steel (including welded pipes)	100
2	Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with or without flange)	80
3	Masonry, Plastic	50

2.3.2 Structural Damage

The German Standard DIN 4150-Part 3 provides guideline values for vibration relating to structural damage, summarised in Table 4 below.

Table 4 Vibration Guide Values for Structural Damage

Guideline Values for Velocity – mm/s				
Type of Building	**Vibration at the Foundations**			**Horizontal plane on highest floor – All**
	<10 Hz	**0-50 Hz**	**50-100 Hz**	
Commercial	20	20 - 40	40 - 50	40
Residential	5	5 - 15	15 - 20	15
Structures particularly	3	3 - 8	8 - 10	8

2.4 EPA Vibration Guideline – Human Exposure

The NSW EPA published the *Assessing Vibration: a technical guideline in February 2006*. This guideline is based on the British Standard BS 6472:1992 *"Evaluation of human exposure to vibration in buildings (1 Hz to 80 Hz)."*

The guideline presents preferred and maximum vibration values for use in assessing human responses to vibration and provides recommendations for measurement and evaluation techniques. The guideline considers vibration from construction activities as Intermittent Vibration. Table 2.4 of the guideline sets out qualitative limits for Vibration Dose Values to assess intermittent vibration and is replicated in Table 5 below for residential receptor locations.

The EPA published the Interim Construction Noise Guidelines in July 2009. This recent document is designed to simplify the assessment of the impact of construction noise on neighbouring properties.

Table 5 Vibration Dose Values (VDV) from Construction Activities

Receptor Locations	**Daytime Preferred value (m/s1.75)**	**Maximum value (m/s1.75)**
All Residences	0.20	0.40

2.5 Commercial and Industrial Premises

Given the broad range of operations within commercial and industrial land use types, the Interim Construction Noise Guideline recommends the following noise levels, as shown in Table 6 below. The external noise levels should be assessed at the most affected occupied point on the premises. A conservative estimate of 10 dB is generally applied as the difference between the external and internal level for noise sensitive businesses that require internal noise measurement.

Table 6 Commercial and Industrial Premises

Land Use	Noise Management Level, LAeq, (15 minute) Applies when properties are being used
Industrial Premises	75dBA – External Noise Level
Offices and retail outlets	70dBA – External Noise Level
Noise sensitive businesses	Refer to AS2107 for specific internal noise levels appropriate to individual business type

2.6 Sleep Disturbance Criteria

Section 4.3 of the Interim Construction Noise Guideline discusses the consideration of sleep disturbance at residences. The section refers to the EPA's NSW Environmental Criteria for Road Traffic Noise for guidance on the assessment of sleep disturbance.

Appendix B5 of the NSW EPA's Environmental Criteria for Road Traffic Noise (ECRTN) reviews the current level of knowledge and concludes that maximum internal noise levels below 50– 55 dBA are unlikely to cause awakening reactions, and that one or two noise events per night with maximum internal noise levels of 65–70 dBA are not likely to affect health and wellbeing significantly.

For the purposes of assessment at external locations, 10 dB is added to the internal noise level. Therefore, the sleep disturbance criteria is 60-65 dBA outside a residential window.

In addition, in an application note to the Industrial Noise Policy, the EPA states: -

"Peak noise level events, such as reversing beepers, noise from heavy items being dropped or other high noise level events, have the potential to cause sleep disturbance. The potential for high noise level events at night and effects on sleep should be addressed in noise assessments for both the construction and operational phases of a development. The INP does not specifically address sleep disturbance from high noise level events."

2.7 Project Specific Criteria

The Environmental Impact Statement, prepared by BBC Consulting Planners dated October 2019, provides a list of RBL's for various residential locations around Glebe and Pyrmont. These values have been adopted for this assessment.

Table 7 Receiver NMLs for Construction

NCA	Nearest Receiver Location	Standard Construction[1] (RBL+10db)	Highly Noise Affected	Out of Hours (RBL+5dB)				Sleep Disturbance Screening (RBL+15dB)	
		Daytime	Daytime	Daytime	Evening	Night-time	Morning	Night-time	Morning
NCA1	31-35 Bank Street, Pyrmont (Commercial	70	n/a	70[2]	70[2]	70[2]	70[2]	n/a[3]	n/a[3]
NCA2	217/1 Wattle Crescent, Glebe	72	75	67	62	55	57	65	67
NCA3	Corner of Wentworth Park and Bridge Road, Glebe	72	75	67	62	55	57	65	67
NCA4	1A Burton Street, Glebe	64	75	59	55	47	49	57	59
	Sydney Secondary College, Glebe	65[4]	n/a	65[2,4]	65[2,4]	65[2,4]	65[2,4]	n/a[3]	n/a[3]
NCA5	13 Griffin Place, Glebe	60	75	55	55[7]	51	53	61	63

Note 1: ICNG recommended standard hours are 7.00 am to 6.00 pm Mon-Fri; 8.00 am to 1.00 pm Sat.
Note 2: Criteria is only applicable when receiver is in use.
Note 3: Sleep disturbance criteria does not apply to this receiver type.
Note 4: An external criterion of 65 dBA has been set for Sydney Secondary College. The ICNG sets an internal level of 45 dBA and 20 dB external to internal transmission loss is assumed.
Note 5: These values have been lowered to be no greater than the applicable OOH daytime NML, based on the approach for determining RBLs in the NPfI.

The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.

* Section 6, 'work practices' of The Interim Construction Noise Guideline, states: *"there are no prescribed noise controls for construction works. Instead, all feasible and reasonable work practices should be implemented to minimise noise impacts. This approach gives construction site managers and construction workers the greatest flexibility to manage noise".*

Definitions of the terms feasible and reasonable are given in Section 1.4 of the Guideline.

Further to the Construction Noise Management levels outlined above in Table 7, the Interim Construction Noise Guideline recommends noise levels for other sensitive land uses. These levels are to be assessed at either the most affected point within 50 metres of the area boundary. Where internal noise levels cannot be measured, external noise levels may be used. A conservative estimate of 10 dB is generally applied as the difference between the external and internal level for buildings other than residences. The recommended levels are shown below in Table 8.

Table 8 Other Sensitive Land Uses

Land Use	Management Level, LAeq,(15 minute) Applies when properties are being used.
Classrooms, other educational institutions, hospital wards, place of worship	45 dBA – Internal Noise Level
Active recreation areas, (areas which generate their own noise during use)	65 dBA – External Noise Level
Passive Recreation Areas, (areas that generate no or little noise during use)	60 dBA – External Noise Level
Community Centres	Refer to AS2107 for maximum internal noise levels for areas with specific uses.

In addition to Table 7 and Table 8, the noise management levels for this proposal are summarised as follows:-

- 60 to 65 dBA LAmax external noise management level, outside of standard construction hours as measured at the nearest residential façade, for sleep disturbance;
- Internal noise management level of 45 dBA ($L_{eq,\ 15\ minute}$) for classrooms and educational facilities, hospital wards and places of worship;
- External noise management level of 65 dBA ($L_{eq,\ 15\ minute}$) for active recreation areas;
- External noise management level of 60 dBA ($L_{eq,\ 15\ minute}$) for passive recreation areas;
- External noise management level of 70 dBA ($L_{eq,\ 15\ minute}$) for offices and retail outlets;
- External noise management level of 75 dBA ($L_{eq,\ 15\ minute}$) for industrial premises.

The vibration management levels for this proposal are summarised as follows: -

- Vibration dose values (VDV), for human exposure of 0.2 ($m/s^{1.75}$), and;
- Peak Particle Velocity values for residential premises, as measured at the foundations of the structure for structural damage of: 5mm/s below 10Hz, 5 – 15mm/s between 10 – 50 Hz, 40 – 50mm/s between 50 – 100Hz. For multi-storey residential structures, 15mm/s measured on the horizontal plane of the highest floor.
- Peak Particle Velocity values for buried pipework, as measured on or within close proximity to the buried pipework for structural damage of: 50 mm/s for masonry or plastic pipes, 80 mm/s for concrete, clay or metal pipes and 100 mm/s for steel pipes.
- Peak Particle Velocity values for rail infrastructure or other civil engineering structures, as measured on or within close proximity to the structure for structural damage of:
  40 mm/s below 10Hz, 40 – 80 mm/s between 10 – 50 Hz, 80 – 100 mm/s between 50 – 100Hz.

3 NOISE AND VIBRATION IMPACTS

The main sources of noise on the site will be from heavy machinery such as piling rigs, concrete saws, excavators, dump trucks and handheld pneumatic and electric power tools, etc. Activities that may cause particular annoyance, due to tonality, spectral content or impulsiveness include generator motors, hand tools such as grinders, jackhammering and other activities involving impacts. These activities will require particular attention with regard to mitigation.

3.1 Stage 1 Works

It is anticipated that the majority of the NSFM Stage 1 works will be completed within 6 months. Works will involve the use of excavators, piling rigs, hydraulic hammering and regular truck movements transporting waste materials from the site. The equipment likely to be used and their corresponding sound power levels are presented in Table 9 below.

Table 9 Typical Demolition Equipment Phase 1 - Sound Power Levels

Description	Sound Power Level, dBA^
Concrete Sawing	115
Angle Grinders	114
Bobcat	105
Excavator / Bulldozer	114
Screw Piling	100
Hydraulic Hammering	120
Trucks	108
Concrete Pumps	110
Drilling	94
Electric Saw	111
Impact Drill	105

^All sound power levels are based on AS2436-2010 of various plant noise measurements.

As a conservative approach, it is assumed that all items of plant will be operating simultaneously.

SLR performed calculations using SoundPlan version 7.3. Levels are based on the closest potential distance and furthest potential distance at which each item of plant may operate from each respective residential location, taking into account topography and objects. The calculated noise levels at nearby residential receptors are presented in Table 10 below.

Table 10 Summary of Construction Noise Assessment – Daytime (SLR 2019)

NCA	Receiver Type	Noise Level – LAeq (15 minute) (dBA)		
		NML – Standard Daytime	Worst-case Predicted	Exceedance
NCA1	Commercial	70	69	-
NCA2	Residential	72	68	-

NCA3	Residential	72	**78**	6
	Commercial	70	**78**	8
NCA4	Residential	64	64	-
	Educational	65	74	9
	Commercial	70	74	4
NCA5	Residential	60	54	-

Note 1: Bold text indicates exceendance of the "highly noise effected" NML

When considering the predicted noise levels and NML exceedances from the project, the above tables indicate that:

- The highest impacts are generally seen in NCAs that have receivers in close proximity to the worksites, and includes NCA3 and NCA4.
- Noise levels at the nearest receiver in NCA3 are predicted to exceed the "highly noise affected" NML.
- The highest noise levels are seen during the use of noise intensive plant items such as the hydraulic hammer and concrete saw. When these items of plant are not in use, noise levels would be significantly lower.
- The receivers in closest proximity to construction in NCA4 are likely to be highly noise affected during 'worst case scenario' construction periods

The SoundPlan noise level contour maps and a complete list of corresponding predicted levels at various receptors for the works, and are included as Appendix XX

3.2 Vibration Impacts

Past measurements of ground borne vibration show that vibration levels can vary significantly at different distances and receptor locations. Recommended safe working distances for various items of vibration generating plant are given in Section 6.3 of Transport for NSW Construction Noise Strategy 2012. This information is shown below in Table 11.

Table 11 Recommended safe working distances for vibration generating plant

Plant Item	Rating/ Description	Safe Cosmetic Damage (BS 7385)	Human Response (OH&E Assessing Vibration – A Technical Guideline)
Small Hydraulic Hammer	300 kg – 5 to 12T Excavator	2 m	7 m
Medium Hydraulic Hammer	900 kg – 12 to 18T Excavator	7 m	23 m
Large Hydraulic Hammer	1600 kg – 18 to 34T Excavator	22 m	73 m
Vibratory Pile Driver	Sheet piles	2 m to 20 m	20 m
Pile Boring	≤800 mm	2 m (nominal)	N/A
Jackhammer	Hand held	1 m (nominal)	Avoid contact with structure

4 NOISE AND VIBRATION MITIGATION

The predicted level of noise (Section 5.1) and vibration (Section 5.2) emissions from the works show that noise levels may exceed the Noise Management Levels established in Section 4.7 of this report in predicted worst-case scenarios at three representative receivers.

The following work practices will be implemented where necessary and practicable, to ensure compliance and conformance throughout the project;

- Judicious selection of mechanical plant and equipment (eg quieter machinery and power tools).
- Maximising the offset distance between noisy plant items and nearby noise sensitive receivers.
- The use of appropriate respite periods where receivers are likely to be highly noise affected.
  - For example, the RMS *Construction Noise and Vibration Guideline* states that (noise intensive) work may be carried out in continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block.
- Avoiding the coincidence of noisy plant working simultaneously close together and adjacent to sensitive receivers.
- Orienting equipment away from noise sensitive areas.
- Carrying out loading and unloading away from noise sensitive areas.
- Localised shielding of noisy equipment.
- Minimising consecutive works in the same locality.
- Considering periods of respite

4.1 Noise Measurement Equipment

All acoustic instrumentation employed throughout the attended monitoring programme will comply with the requirements of AS IEC 61672.1-2004 *Electroacoustics – Sound level Meters- Specifications*. All sound level meters must have a current calibration certificate from a NATA accredited laboratory in accordance with NATA guidelines. Instrument calibration shall be checked before and after each measurement survey, with the variation in calibrated levels not exceeding ±0.5 dB.

4.2 Attended Residential Noise Monitoring Procedure

The measurements will be conducted in accordance with the procedures outlined in Australian Standard AS1055 *Acoustics – Description and measurement of environmental noise* and in accordance with methods outlined in the NSW Industrial Noise Policy (INP). The following points should be followed when conducting noise monitoring:

- A field calibration should be conducted before and after measurements;
- The sound level meters must be set to A-weighting and Fast response;
- The sound level meters sample period should be set to 15 minutes;
- The following descriptors should be measured as a minimum: L_{A1}, L_{Aeq} and L_{A90}; and
- Measurements should be conducted a minimum of 3 metres from the nearest façade and/or solid fence/wall. If it is not possible to do this, corrections for façade reflection should be applied to the measurement results.

4.3 Noise Monitoring of Equipment

In addition to the residential noise monitoring procedures described above, the following equipment measurements will be undertaken:

- Noise emission levels of all critical items of mobile plant and equipment will be checked by the site environmental officer for compliance and conformance with noise limits appropriate to those items prior to the equipment going into regular service;
- For equipment and mobile plant used for construction works, L_{Aeq} measurements will be taken at an appropriate distance, normally 7m and converted to a Sound Power Level;
- An *Equipment Noise Certificate*, presenting relevant sound levels of the equipment tested, will be issued by the Construction Contractor's site environmental officer within the first week of the equipment commencing at the construction site.

The equipment sound power levels will be compared to the levels contained in Table 8 & Table 10. If noise checks on any equipment result in a prediction of non-compliance or non-conformance, quieter equipment will be substituted.

4.4 Attended Monitoring Schedule

Table 12 below provides a preliminary schedule for noise monitoring.

Table 12 Noise Monitoring Schedule

Monitoring Schedule	Measurement Procedure	Reporting
Weekly throughout the duration of the project	Complete one round of operator-attended 15-minute noise monitoring on separate days at each NCA location	Reporting procedure as outlined in Section 6.5
During subsequent months	Carry out equipment noise level checks on any new (untested) critical items of plant and issue Equipment Noise Certificates	
	Carry out attended noise monitoring in the event of complaints and/or recorded exceedances. Continue noise monitoring after noise mitigation measures have been employed to confirm compliance and conformance	

4.5 Reporting on Attended Noise Monitoring

The following information must be included in the weekly reports when applicable:

- Field calibration results (before and after measurements);
- Measurement times and dates;
- Qualitative description of the noise environment during measurement;
- L_{A1}, L_{Aeq} and L_{A90} levels;
- Meteorological conditions during the measurements;
- Estimation of recorded noise contribution from other major noise sources.

The Site Supervisor shall establish and maintain a system of records which provides full documentation of all noise monitoring results, complaint handling and responses to non-compliances and non-conformances.

4.6 Periods of Respite

All activities associated with the Project shall take place within the standard hours, as shown below:

- 7:00am to 5:30pm, Monday to Friday inclusive; and

- 7:30am to 3:30pm Saturdays;
- At no time on Sundays or public holidays.

Works that result in impulsive or tonal noise emissions such as rock breaking, rock hammering, sheet piling, pile driving and similar shall only be undertaken;

- 9:00am to 12:00pm Monday to Friday;
- 2:00pm to 5:00 pm Monday to Friday;
- 9:00am to 12:00pm Saturday; and,
- In continuous blocks, not exceeding 3 hours each, with a minimum respite from those activities and works of not less than one hour between each block.

Activities required to be conducted outside of the standard hours will be undertaken in accordance with the OOH protocol in Section 6.12.

4.7 Work Practices

Workers and contractors shall be trained in work practices to minimise noise emission such as the following:

- Avoid dropping materials from a height.
- Avoid shouting and talking loudly outdoors.
- Turn off equipment when not being used.
- Carry out work only within the approved hours of operation.

Activities required to be conducted outside of the standard hours will be undertaken in accordance with the OOH protocol in Section 6.12.

4.8 Heavy Vehicles and Staff Vehicles

The following points shall be implemented in conjunction with the Construction Pedestrian and Traffic Management Plan, as required under Condition B17of the COA

- Truck drivers shall be informed of designated vehicle routes, parking locations, acceptable delivery hours or other relevant practices (for example, minimising the use of engine brakes, and no extended periods of engine idling).
- Site vehicle entrances shall be located away from residences where practicable.
- The number of vehicle trips shall be configured to reduce the number of trips to and from the site – movements shall be organised to amalgamate loads rather than using a number of vehicles with smaller loads.
- Staff parking areas shall be located as far from residential receiver locations as practicable, preferably within a dedicated area within the site.
- Parking and queuing of staff vehicles and other construction vehicles shall be avoided as far as is practicable on streets outside of the site.
- There shall be no access the site via, or park within residential areas prior to 7 am on any occasion, in order to avoid sleep disturbance.
- Vehicles shall be fitted with broadband reversing alarms or alternative, non-tonal proximity warning systems.
- For the duration of Works, use of compression braking shall not be permitted on the site or nearby the site, such as on access roads within close proximity to residential premises.

4.9 Consultation for Preparation of the CNVMP

This CNVMP has been developed in consultation with NSW EPA and City of Sydney, in accordance with COA B18. A summary of consultation undertaken during the preparation of this CNVMP is provided in Table 13 below.

Table 13 Consultation Summary

Organisation	Date	Outcome

4.10 Community Relations

- Hansen Yuncken will manage Community Relations through Elton Consulting. Refer to Hansen Yuncken's Stakeholder Management & Communications Management Plan for further information.
- A community information telephone number has been established to provide access and information about the project.
- An email address has been established to manage correspondence and to provide access and information about the project.
- A postal address has been established to manage correspondence and to provide access and information about the project.
- Community notifications and newsletters shall be prepared and distributed as per Hansen Yuncken's Stakeholder Management & Communications Management Plan, to the community in areas that are potentially affected by the project. The contents of the notifications shall include information on the nature of the works, location of works being carried out, possible impacts to amenity, traffic flow or services, and the contact details as listed above.
- Information boards with the above contact details shall be prepared and installed on the site boundary hoarding detailing contacts for information / complaints for the project.
- Should the public enter site they are to be directed to the site office to talk to Hansen Yuncken management.

Once works commence, communication with the community shall be maintained via the aforementioned methods.

Consultation and cooperation between the contractor and the neighbours and the removal of uncertainty and rumour can help to reduce adverse reaction to noise.

4.11 Managing a Noise Complaint

Refer to the Hansen Yuncken Stakeholder Management & Communications Management Plan for complaint management.

Direct the complainant to register their complaint to the phone number or email address so it can be logged and responded to accordingly.

4.12 Out-of-Hours Work Protocol

Any work proposed to be conducted out of standard construction hours shall be subject to review and approval using the following process from the EIS approved CEMP document (Thelem Consulting 2019)

Details of proposed work shall be submitted for evaluation which will include; location of work to be conducted, types of plant and equipment proposed, character and likelihood of noise being generated, anticipated effect on traffic flow to and from the site. An example of an Out-of-Hours request form is included in Appendix A.

Noise management levels outside of standard construction hours are given in Sections 2 and 3. Activity during these times should be limited to those which do not involve the use of heavy vehicles, heavy machinery or other mechanical plant or activities that involve, or result in, increased traffic flow through residential areas.

In the event that it is unavoidable to conduct work outside of standard construction hours and work is likely to include noisy activities, an acoustic assessment shall be required to determine the extent of potential exceedance, recommendations for reasonable and feasible noise mitigation measures to be employed and predicted levels at the nearest sensitive receptors.

The relevant local council, residential areas and other sensitive receivers and stakeholders that are potentially affected by any work approved to be conducted outside of standard construction hours shall be notified at least 7 days prior to the commencement of work. Methods of notification may include letter drops, door-knocking, publications in local media and on the project website. The Community Liaison Officer shall promptly be informed of all work approved outside of standard construction hours to allow appropriate time to arrange community notifications.

4.13 Amendments to this Noise and Vibration Plan

Should changes to the Conditions of Approval schedule, nature of the works, equipment used during the works or locations of work change significantly during the course of the project, amendments to this plan and the calculations and recommendations contain herein, may be amended to reflect the changes.

A review should be carried out once a month by the Construction Contractor Project Manager and be revised if necessary.

This NVMP should be viewed as a live document and updated as necessary, noting that revision of the NVMP may result in the monitoring regime increasing or decreasing.

4.14 Noise Monitoring

Noise monitoring shall be conducted at the most affected residence at each NCA, within the first four weeks from the commencement of works at each Phase.

Subject to consultation, attended noise and vibration monitoring will be undertaken weekly at the nearest receivers to the site for a period of one month.

Data will be reviewed following that period and where exceedances are identified, logging instruments will be deployed at these locations. Where compliance is noted, attended monitoring may be reduced to monthly following agreement with the project team.

4.15 Non-compliance, Non-conformance and Actions

It is the responsibility of all site personnel to report non-compliances and non-conformances to the Site Supervisor and/or the Contractor's EM.

Non-compliances, non-conformances and corrective and preventative actions will be managed in accordance with Section 10.3 of the CEMP.

4.16 Vibration Monitoring

Given the distances to the nearest sensitive receptors, it is not anticipated that vibration levels will approach Criteria.

Following an initial monitoring period of one month, if new impact activities, such as rock hammering or piling are to be conducted, vibration measurements shall be carried out at the nearest receiver to determine the maximum levels of vibration generated.

In the event of an exceedance of the Peak Particle Velocity (PPV) vibration criteria, additional investigations will be carried out to modify activities to comply with structural damage criteria.

In the event that levels of ground-borne vibration exceed the recommended acceptable levels for cosmetic damage works should cease immediately and alternative methods shall be considered.

APPENDIX A SAMPLE OUT-OF-HOURS WORK REQUEST

Out of hours request No.	**Application Date**
Name of person requesting the work:	**Why Out of hours work is proposed**

Item	Description	Information /Comments
1	Description Of works	
2	Plant and equipment to be used: (list all plant and noise generating equipment to be used during the work activities) e.g. hand tool generators crane etc.	
	Details on any concurrent demolition activities being undertaken OOWH adjacent to the proposed	
3	Names of Foremen Supervising the work	
4	Subcontractors Details (if applicable)	
5	Location of work	
6	Proposed Dates/Duration:	
7	Start Time:	
8	Finish Time:	
9	NOISE: Will the work generate noise audible at the nearest residence? Attach map	
	What measures are being taken to reduce impacts Proposed noise & Vibration Monitoring	
10	Traffic Will the work require traffic control	
	Describe the location and Nature of disruption to traffic	
	Who is planning the traffic control	
	Who will be responsible for the traffic control during the work	
11	What lighting is to be provided	
12	Does the work team comprise a minimum of two persons	
13	Who in the work team holds a current first aid certification	
14	Where is the first aid to be located	
15	What means of communications is to be used to summon assistance in an emergency	

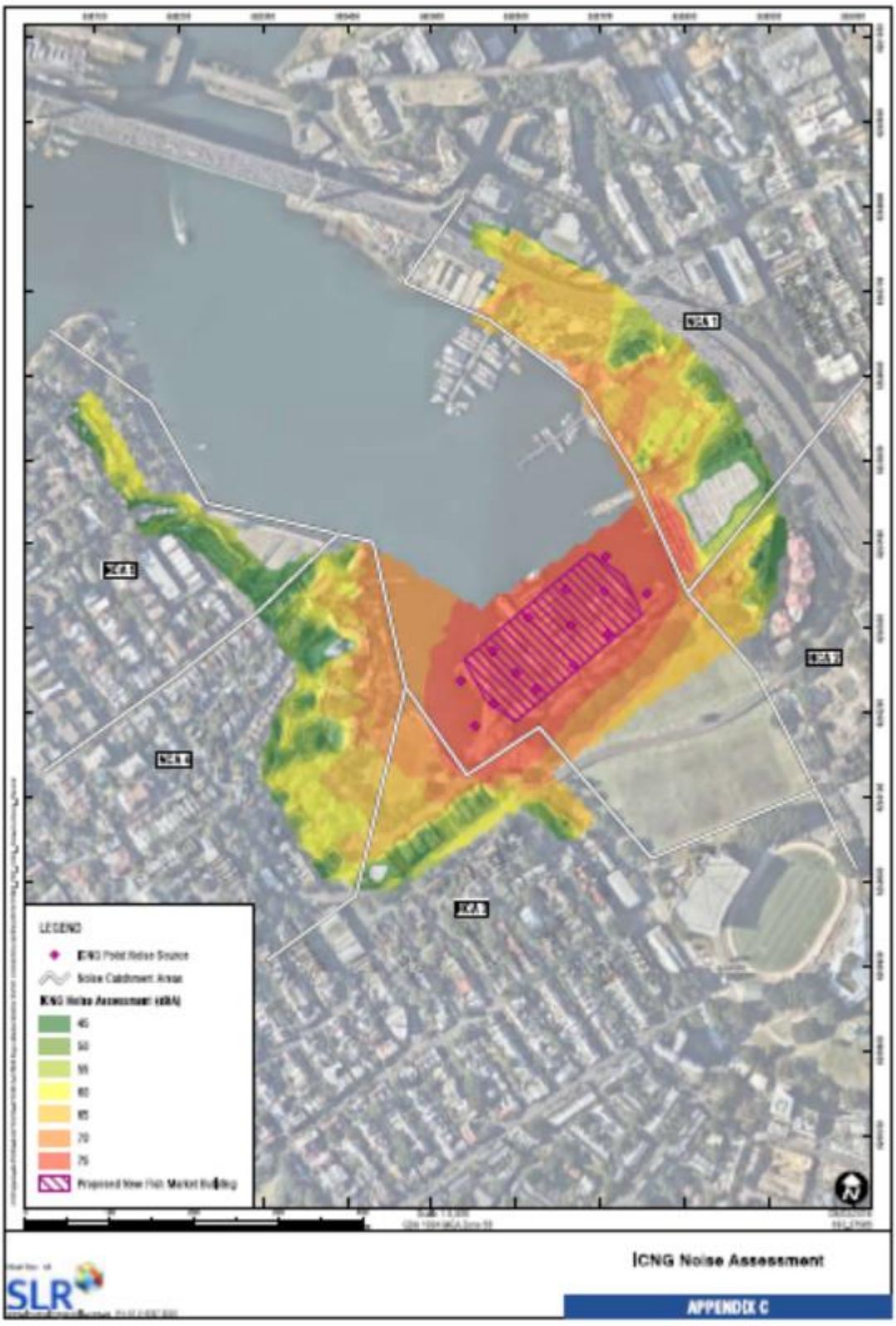
Out of hours request No. 1	**Application Date**
Name of person requesting the work:	**Why Out of hours work is proposed**

Item	**Description**	**Information /Comments**
16	Has a check of the Functionality of the proposed emergency means been made?	
17	Who from the project team will be supervising the work	

Assessment	
Acoustic Assessment prepared to determine if works are above RBL+5dB(A) at closest receiver	☐ Less than RBL +5dB(A) ☐ Above RBL +5dB(A)
Noise Report Required	☐ Yes ☐ No less than 5dB(A)

Approvals			
1	Environmental	NAME	
		SIGNATURE	Date
2	Community	NAME	
		SIGNATURE	Date
3	Traffic	NAME	
		SIGNATURE	Date
4	Safety	NAME	
		SIGNATURE	Date
5	Project Manager	NAME	
		SIGNATURE	Date

APPENDIX B SOUNDPLAN NOISE PROPAGATION CONTOURS



APPENDIX C ASSESSED RECEIVER LEVELS

CONSTRUCTION NOISE AND VIBRATION MANAGEMENT PLAN

Table 9 Receiver NMLs for Construction

NCA	Nearest Receiver Location	Representative Noise Logger Location	Standard Construction[1] (RBL+10dB)	Highly Noise Affected	Out of Hours (RBL+5dB)				Sleep Disturbance Screening (RBL+15dB)	
			Daytime	Daytime	Daytime	Evening	Night-time	Morning	Night-time	Morning
NCA1	31-33 Bank Street, Pyrmont (Commercial)	L01	70	n/a	70[2]	70[2]	70[2]	70[2]	n/a[3]	n/a[3]
NCA2	217/1 Wattle Crescent, Glebe	L04	72	75	67	62	55	57	65	67
NCA3	Corner of Wentworth Park and Bridge Road, Glebe	L04[4]	72	75	67	62	55	57	65	67
NCA4	1A Burton Street, Glebe	L07[5]	66	75	59	55	47	49	57	59
	Sydney Secondary College, Glebe	L05	65[6]	n/a	65[2,6]	65[2,6]	65[1,6]	65[1,6]	n/a[3]	n/a[3]
NCA5	13 Griffin Place, Glebe	L06	80	73	55	53[7]	51	53	61	63

Note 1: ICNG recommended standard hours are 7:00 am to 6:00 pm Mon-Fri, 8:30 am to 1:00 pm Sat.

Note 2: Criteria is only applicable when receiver is in use.

Note 3: Sleep disturbance criteria does not apply to this receiver type.

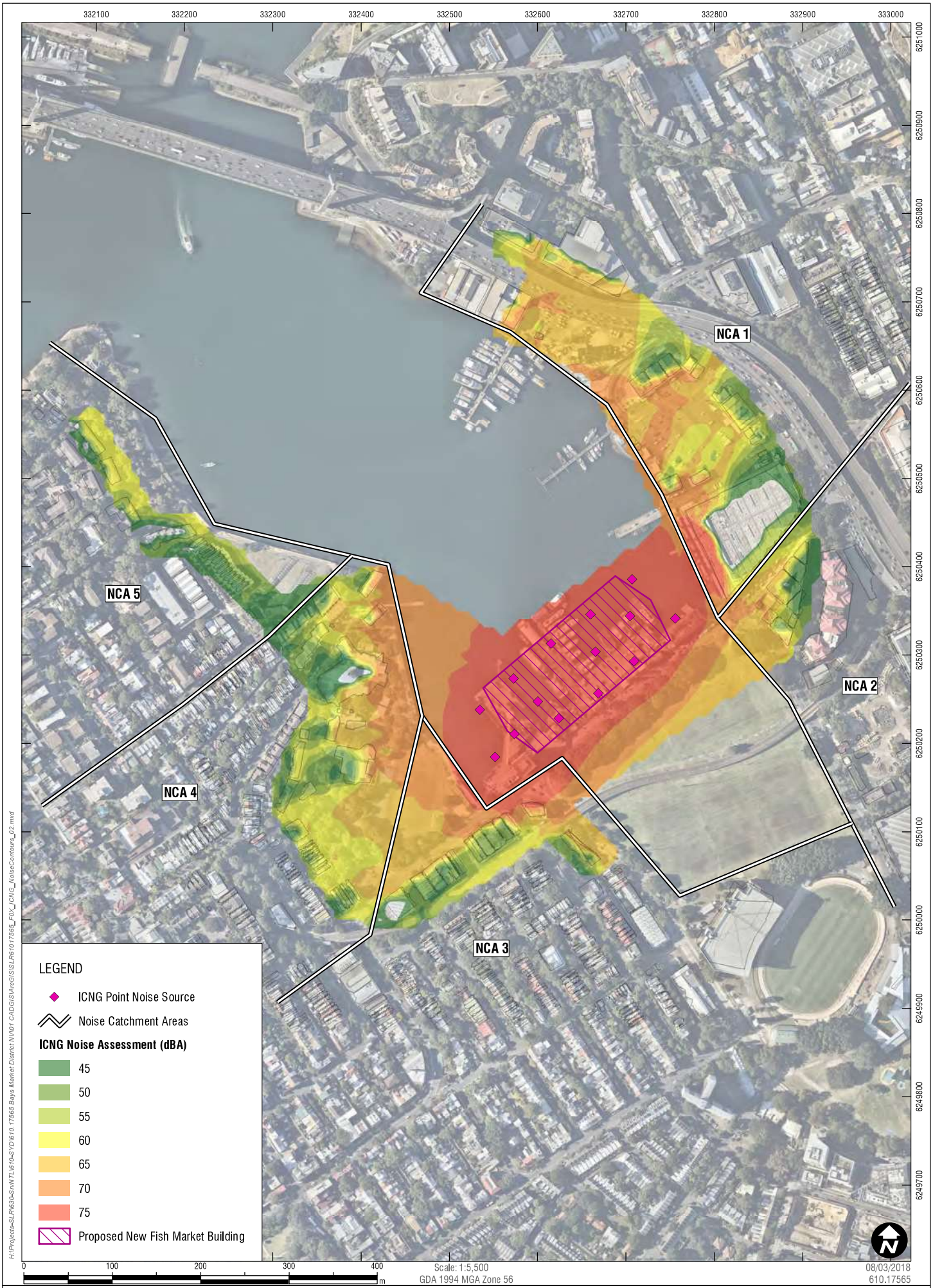
Note 4: Due to the nearest receivers' proximity to Bridge Road, L04 has been used as the representative noise logger location.

Note 5: Based on site observations of the similarities of the surrounding road network for the nearest receiver, L07 has been used as the representative noise logger location.

Note 6: An external criterion of 65 dBA has been set for Sydney Secondary College. The ICNG sets an internal level of 45 dBA and 20 dB external to internal transmission loss is assumed.

Note 7: These values have been lowered to be no greater than the applicable OOH daytime NML, based on the approach for determining RBLs in the NPI.

Source: Noise Impact Assessment (SLR 2019)



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SLR

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ICNG Noise Assessment

APPENDIX C

Table 9 Receiver NMLs for Construction

NCA	Nearest Receiver Location	Representative Noise Logger Location	Standard Construction[1] (RBL+10dB)	Highly Noise Affected	Out of Hours (RBL+5dB)				Sleep Disturbance Screening (RBL+15dB)	
			Daytime	Daytime	Daytime	Evening	Night-time	Morning	Night-time	Morning
NCA1	31-35 Bank Street, Pyrmont (Commercial)	L01	70	n/a	70[2]	70[2]	70[2]	70[2]	n/a[3]	n/a[3]
NCA2	217/1 Wattle Crescent, Glebe	L04	72	75	67	62	55	57	65	67
NCA3	Corner of Wentworth Park and Bridge Road, Glebe	L04[4]	72	75	67	62	55	57	65	67
NCA4	1A Burton Street, Glebe	L07[5]	64	75	59	55	47	49	57	59
	Sydney Secondary College, Glebe	L05	65[6]	n/a	65[2,6]	65[2,6]	65[2,6]	65[2,6]	n/a[3]	n/a[3]
NCA5	13 Griffin Place, Glebe	L06	60	75	55	55[7]	51	53	61	63

Note 1: ICNG recommended standard hours are 7.00 am to 6.00 pm Mon-Fri; 8.00 am to 1.00 pm Sat.

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Note 6: An external criterion of 65 dBA has been set for Sydney Secondary College. The ICNG sets an internal level of 45 dBA and 20 dB external to internal transmission loss is assumed.

Note 7: These values have been lowered to be no greater than the applicable OOH daytime NML, based on the approach for determining RBLs in the NPfI.

Source: Noise Impact Assessment (SLR 2019)

16 APPENDIX B3 CONSTRUCTION AIR QUALITY MANAGEMENT SUB PLAN

New Sydney Fish Market Stage 1

Construction Air Quality Management Plan

Prepared by

Liberty Industrial Pty Ltd / EMM Consulting

For

Hansen Yuncken

Revision No.	Revision Date	Authority	Changes
0	30.07.2020	DD	Draft For Consulatation

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GLOSSARY AND ABBREVIATIONS

ACM	Asbestos Containing Material
ALARP	Mitigate risk to "As Low As Reasonably Practical";
ARCP	Asbestos Removal Control Plan
AWS	Automatic Weather Station
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
Code of Practice	A practical guide to achieve the standards of health and safety required under the model Work Health and Safety (WHS) Act and model WHS Regulations
EIS	Environmental Impact Statement titled *Environmental Impact Statement New Sydney Fish Market At Blackwattle Bay Concept Development Application*, prepared by BBC Consulting Planners, dated October 2019.
Environmental Aspect	means the interaction, relationship or impact of an operation or activity with the Environment including
Environmental Law	relating to the storage, handling or transportation of waste, dangerous goods or hazardous material relating to Workplace health and safety; or which has as one of its purposes or effects the protection of the Environment
Environmental Notice	means any direction, order, demand, license or other requirement from a Government Agency to take action or refrain from taking any action in respect of the Site or the Works in connection with any Environmental Law
EPA	Environmental Protection Authority
HESQ	Health Environment Safety Quality
NSFM	New Sydney Fish Market
OEH	Office of Environment and Heritage
Project Approval	The Written Approval from the Minister for Planning
RAP	Remediation Action Plan
Site	means a project site or work area where the company is undertaking activities on behalf of a client
Standards	Standards are published documents setting out specifications and procedure
The Company	'Liberty Industrial'
The Secretary	The Secretary of the Department of Planning & Environment
VOC	Volatile Organic Compound

REQUIREMENT MATRIX

Minister's Conditions of Approval

Table 1 - Minister CoA Conditions

CoA No	Condition Requirement	Document Reference
B20	Prior to the commencement of works, a **Construction Air Quality Management Plan** (CAQMP) prepared by a suitably qualified person shall be submitted to the Certifier. The CAQMP must be prepared in consultation with, and address the relevant requirements of, Council and the EPA. The CAQMP shall address (but not be limited to):	This Plan
(a)	describe the measures that would be implemented on site to ensure: (i) the control of air quality and odour impacts of the development; (ii) that these controls remain effective over time; (iii) that all reasonable and feasible air quality management practice measures are employed (iv) the air quality impacts are minimised during adverse meteorological conditions and extraordinary events; and (v) compliance with relevant conditions of consent.	Section 4, Figure 1, Figure 5, Figure 6
(b)	include performance objectives for monitoring dust and ensuring no off-site air quality impacts to nearby residences and businesses;	Section 7, Table 8
(c)	includes an air quality monitoring program that: (i) is capable of evaluating the performance of the construction works; (ii) includes a protocol for determining any exceedances of the relevant conditions of consent and responding to complaints (iii) adequately supports the air quality performance objectives; and (iv) evaluates and reports on the effectiveness of air quality management for the construction works.	Section 7, Table 7
(d)	details on monitoring weather conditions and communicating changing conditions to the workforce;	Section 5, Table 5, Table 6, Table 10
(e)	stop work procedures if performance objectives are not being met.	Section 7, Table 8

1 INTRODUCTION

1.1 PURPOSE

This Construction Air Quality Management Plan (CAQMP) has been prepared by Liberty Industrial for Stage 1 demolition and remediation at the New Sydney Fish Market site.

It is the policy of Liberty Industrial to ensure a high standard of care to minimise the impact on the environment, immediate work sites, and the local community.

This CAQMP addresses the applicable requirements of:

- The conditions of Project Approval (SSD 8924) issued by the Minister of Planning on the 12th of June 2020 (CoA);
- The New Sydney Fish Market – Response to Submissions Report – Review of Environmental Mitigation Measures - February 2020;
- Approved CEMP (Thelem Consulting 2019)
- Air Quality Impact Assessment (SLR 2019)
- Applicable New South Wales and Australian Environmental Legislation;

This CAQMP is to be read in conjunction with the Construction and Environmental Management Plan (CEMP).

1.2 REVISION CHANGES OF THIS CAQMP

Revisions and improvements will be consistent with Section 1.2 of the CEMP.

1.3 DISTRIBUTION LIST

A controlled copy of this CAQMP is to be distributed to the following parties for comment and review

- Liberty Industrial Directors, Senior Management, Project Manager, Environmental Advisor, Project Engineer, HSEQ Manager and Site Supervisors;
- Hansen Yuncken Project Managers and Project Certifier.

Following review, it will be submitted to the certifier as required under CoA B20.

Once the CAQMP has been approved, a hardcopy will be kept onsite and updated as required by the Project Environmental Advisor, as well as a controlled PDF version being uploaded into the New Sydney Fish Market Stage 1 Aconex 'cloud'. All Contractors and Subcontractors will be provided a copy to ensure their works are consistent with this CAQMP.

1.4 CONSULTATION

Consultation as per CoA B20, was commenced in August, and involved the CAQMP being forwarded to the EPA.

2 LEGAL AND OTHER REQUIREMENTS

2.1 LEGISLATION

Legislation relevant to air quality management includes:

- Environmental Planning and Assessment Act 1979 (EP&A Act);
- Protection of the Environment Operations Act 1997 (POEO Act);
- Protection of the Environment Operations (Clean Air) Regulation 2010; and
- National Greenhouse and Energy Reporting Act 2007;
- *Protection of the Environment Operations (Waste) Regulation 2014;*
- National Environment Protection (Ambient Air Quality) Measure 2003 (NSW);
- National Environment Protection (Diesel Vehicle Emissions) Measure 2009 (NSW).

2.2 GUIDELINES AND STANDARDS

The main guidelines, specifications and policy documents relevant to this CAQMP include:

- National Environment Protection Council's (NEPC) – National Environment Protection Measure (NEPM) for Ambient Air Quality;
- AS 3580.1.1:2007 Methods for sampling and analysis of ambient air: Part 1.1: Guide to siting air monitoring equipment;
- AS 3580.10.1:2003 Methods for sampling and analysis of ambient air: Method 10.1: Determination of particulate matter – Deposited matter – Gravimetric method;
- AS/NZS 3580.12.1:2001 Methods for sampling and analysis of ambient air - Determination of light scattering - Integrating Nephelometer method;
- Action for Air (NSW EPA, 1998);
- Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Department of Environment and Conservation NSW (DEC), 2005);
- Code of Practice: How to Safely Remove Asbestos;
- NSW Coal Mining Benchmarking Study: Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining (OEH 2011).

2.3 BACKGROUND

This CAQMP addresses the Stage 1 works related to the construction of the New Sydney Fish Market (NSFM). This Stage will involve the establishment of construction site facilities; site security; utility services identification, protection, relocation and termination; heritage salvage and relocation works; demolition of existing infrastructure and buildings; and remediation of identified contamination in order to provide unencumbered access for the next works package.

2.4 PROJECT OVERVIEW

The New Sydney Fish Market development once completed will involve an improved public domain including the creation of a waterfront promenade with improved access to Blackwattle Bay and linking to surrounding areas and to public transport. The development will include wholesale facilities and auction rooms, offices and commercial space, culinary education (the Sydney Seafood School), retail premises including food and beverage premises (potentially with liquor licenses), back-of-house facilities and car and delivery vehicle parking. The new facility is to include a new bayside promenade and wharves. The new fish market will be purpose built and will be supported by state of the art back-of-house plant and recycling/waste management facilities.

Works are also proposed to Bridge Road to provide improvements to its design and operation including improvements to the intersection of Bridge Road with Wattle Street and Wentworth Park Road.
The development will be undertaken in stages, with the first stage of the development the demolition of land and water-based structures on the site including removal of marine piles. This is the subject of this management plan.

The site is currently occupied by the following buildings and improvements:

- A finger jetty that protrudes from the main wharf;
- Within the northern area of the central portion of the site a wharf deck consisting of asphalt applied to reinforced concrete supported by timber beams and turpentine piles;
- Within the southern area of the central portion of the site a post tensioned slab supported by wharf beams and steel piles; and
- A single storey office building.
- The eastern portion of the site comprises the former Jones Brothers Coal loader and bins and weighbridge building.
- The site includes the existing SFM wharf and outdoor dining area which is located along the foreshore on the western side of the main fish market building.

The scope of works for Stage 1 involves:

- erection of perimeter fencing, hoarding and scaffolding (as required), site accommodation and environmental controls;
- establishment of temporary access and pedestrian arrangements (if required);
- Services verification, relocations and installation of selected temporary services including capping and removal of in-ground services, diversions and terminations;
- Localised remediation works;
- Selected early civil works (temporary works, drainage and other in ground services);
- Make good works to the existing sea wall and provision of revetment structures as required.

Demolition equipment required for the project will include:

- Excavators to demolish buildings and above ground structures fitted with hydraulic shears and hammer attachments
- Concrete saws and coring drills used to break the wharf structure into smaller sections for removal
- Excavators to load trucks

- Rigid body trucks to remove materials from the site including skip bins
- Electric and hydraulic hand tools (drills, hammers, welding equipment, oxy acetylene cutting equipment) to separate wastes and other building materials
- Barges and cranes to remove timber supports and piles
- Hoses and pumps to control water
- Street sweepers to maintain a clean work area and access points

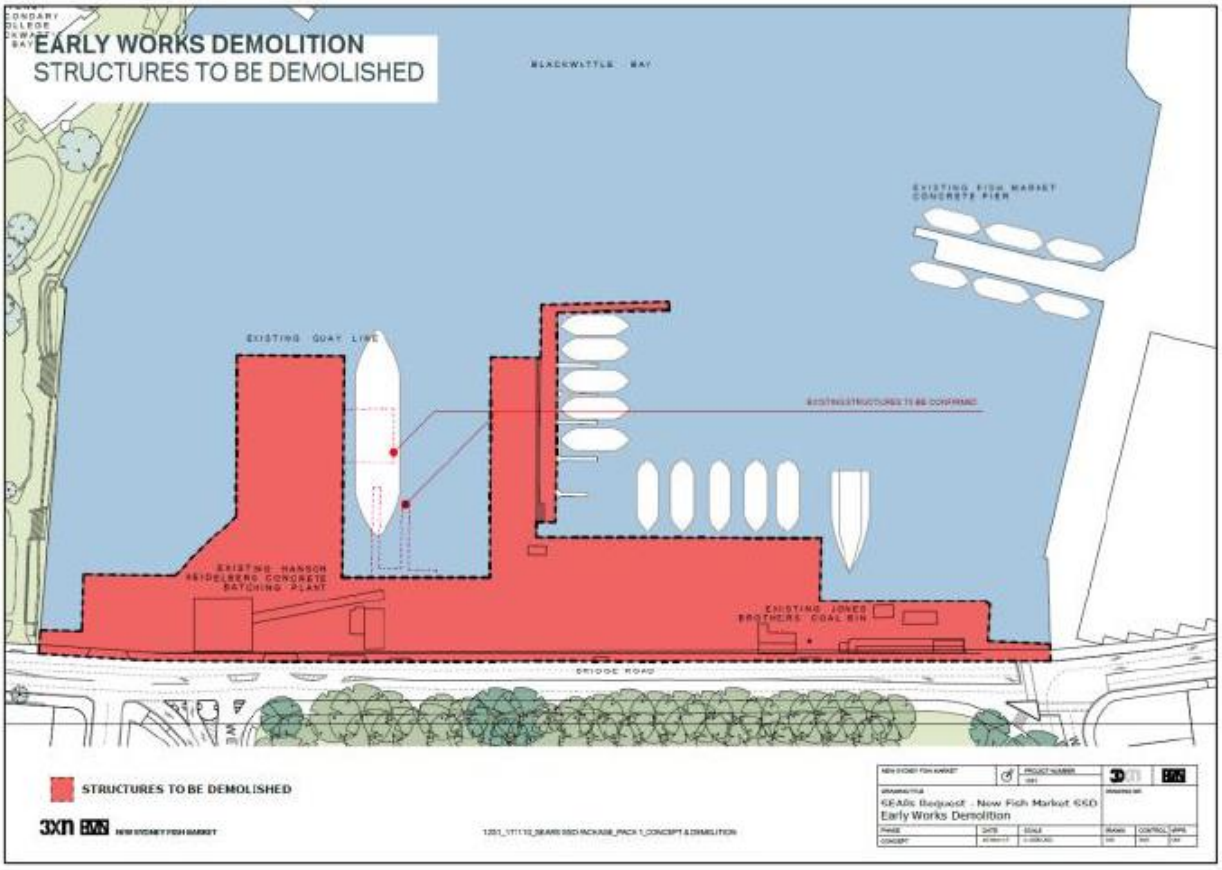


Figure 1 - Site Plan

2.5 GENERAL DESCRIPTION OF THE SITE

The New Sydney Fish Market site is located at the head of Blackwattle Bay between the Pyrmont Peninsula and the foreshore of Glebe, situated less than two kilometres (km) west of Sydney's CBD and within the City of Sydney Local Government Area.

Currently the site's uses include a concrete batching plant at the Western end and concrete hardstand and wharf area at the Eastern end, which is currently vacant. The site includes wharves and land-based structures and part of the site is the water of Blackwattle Bay.

2.6 GENERAL SCOPE OF WORK

This scope of work is for the demolition of existing land and water based structures on the site, including removal of marine piles, in order to provide unencumbered access for the next land preparation works package. It includes the following:

1 Establishment of construction site facilities and management of site security;

2 Utility services and stormwater identification, protection, relocation and/or termination;

3 Demolition of existing infrastructure and buildings;

4 Remediation of identified contaminated areas.

3 EXISTING ENVIRONMENT

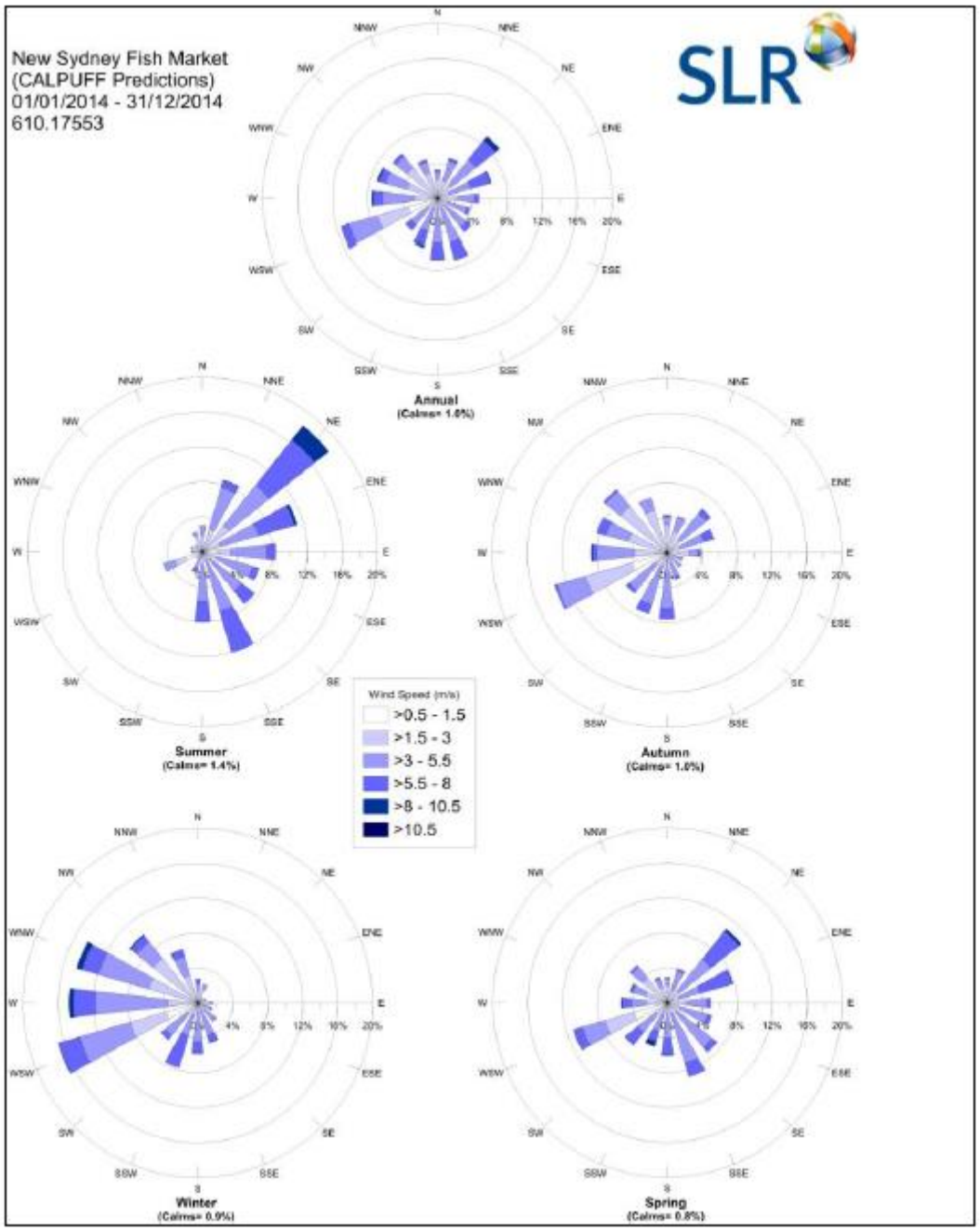
3.1 METROLOGICAL CONDITIONS

The annual wind distribution pattern was derived from data sourced from EIS studies. The following is an extract of the meteorological conditions for the area from the approved EIS Appendix 18 Air Quality Impact Assessment (SLR 2019)

The annual wind rose indicates the predominant wind directions in the area are from west-southwest and northeast. Calm wind conditions (wind speed less than 0.5 m/s) were predicted to occur approximately 1% of the time throughout the modelling period. The seasonal wind roses for the year 2014 indicate that:

- In summer, winds are mostly gentle to moderate (between 3.0 m/s and 8 m/s) predominantly from the northeast, with very few winds from the northwest and southwest quadrants. Calms were predicted to occur 1.4% of the time during the summer months.
- In autumn, winds are light to moderate (between 0.5 m/s and 8 m/s) predominantly from the west-southwest directions. Calms were predicted to occur 1.0% of the time during the autumn months.
- In winter, winds are mostly gentle to moderate (between 3.0 m/s and 8 m/s) and are from the western quadrant with very few winds from the eastern quadrant. Calms were predicted to occur 0.9% of the time during the winter months.
- In spring, winds are mostly gentle to moderate (between 3.0 m/s and 8 m/s) and predominantly blow from the northeast, west-southwest and south-southeast. Calms were predicted to occur 0.8% of the time during the summer months.

Sensitive receptors are located towards the southwest and west of the site boundaries. Winds from the north and east directions, have the potential to suspend materials from the site towards existing residences, these winds occur approximately 28% of the time.



Source: EIS Appendix 18 SLR 2019

Figure 2 - Annual Wind roses

3.1.1 Rainfall

Rainfall reduces dust generation potential and helps to remove airborne pollutants. Based on Observatory Hill long term data, the wettest months generally occur during late summer through to mid-winter. The wettest month is usually June, with an average rainfall of 133 mm. The lowest rainfall usually occurs in September with a monthly average of 68 mm.

3.1.2 Temperature

The maximum monthly average temperatures at Observatory Hill range between 16.4°C in winter to 26°C in summer. Monthly average minimum temperatures range between 8.1°C in winter and 18.9°C in summer.

3.2 EXISTING AIR QUALITY AND POLLUTANT SOURCES

The primary sources of air emissions in the area immediately surrounding the site is expected to be vehicles travelling along Bridge Road. Engine exhaust emissions will also be generated by marine traffic within Blackwattle Bay and the wider Sydney Harbour, including ferries and water taxis, fishing trawlers, cruise ships visiting Darling Harbour and recreational boating.

A number of existing industrial and non-industrial sources have the potential to influence local and regional air quality, these are shown on Figure 3.

Source: EIS Appendix 18 SLR 2019

Figure 3 - Industrial Air Emission Sources

Considering the separation distances and activity types associated with the identified emission sources, significant cumulative air quality impacts from the identified facilities with the anticipated air emissions from the site are considered unlikely.

The NSW Office of Environment and Heritage (OEH) maintains a network of air quality monitoring stations (AQMS) across NSW. The nearest such OEH station is located at Rozelle, approximately 2.6 km to the northwest of the site. Data from this site is summarized in the EIS Appendix 18 Table 7 and would be used as baseline data for the project. A review of this data shows several exceedances of criteria occur regularly in seasonal periods.

3.3 SENSITIVE RECEIVERS

Sensitive receivers are defined as locations where people are likely to work or reside, and may include dwellings, schools, hospitals, offices or public recreational areas (NSW Department of Environment and Conservation (DEC) 2005). Many such sensitive receivers accommodate groups who are most likely to be adversely affected by poor air quality; the very young, the aged and the infirm. Sensitive revivers for the project where identified in the EIS and shown below in Figure 4.

For this stage of works, works will occur well within the site boundaries. There are a number of existing residences located southwest and west of the site. The nearest existing residential receptor is located approximately 50 m from the site boundary, at the corner of Bridge Road and Wentworth Park Road.

The existing Sydney Fish Market is located adjacent to the site to the North East. Potential air quality impacts would be greatest during trading hours between 7am and 4pm.

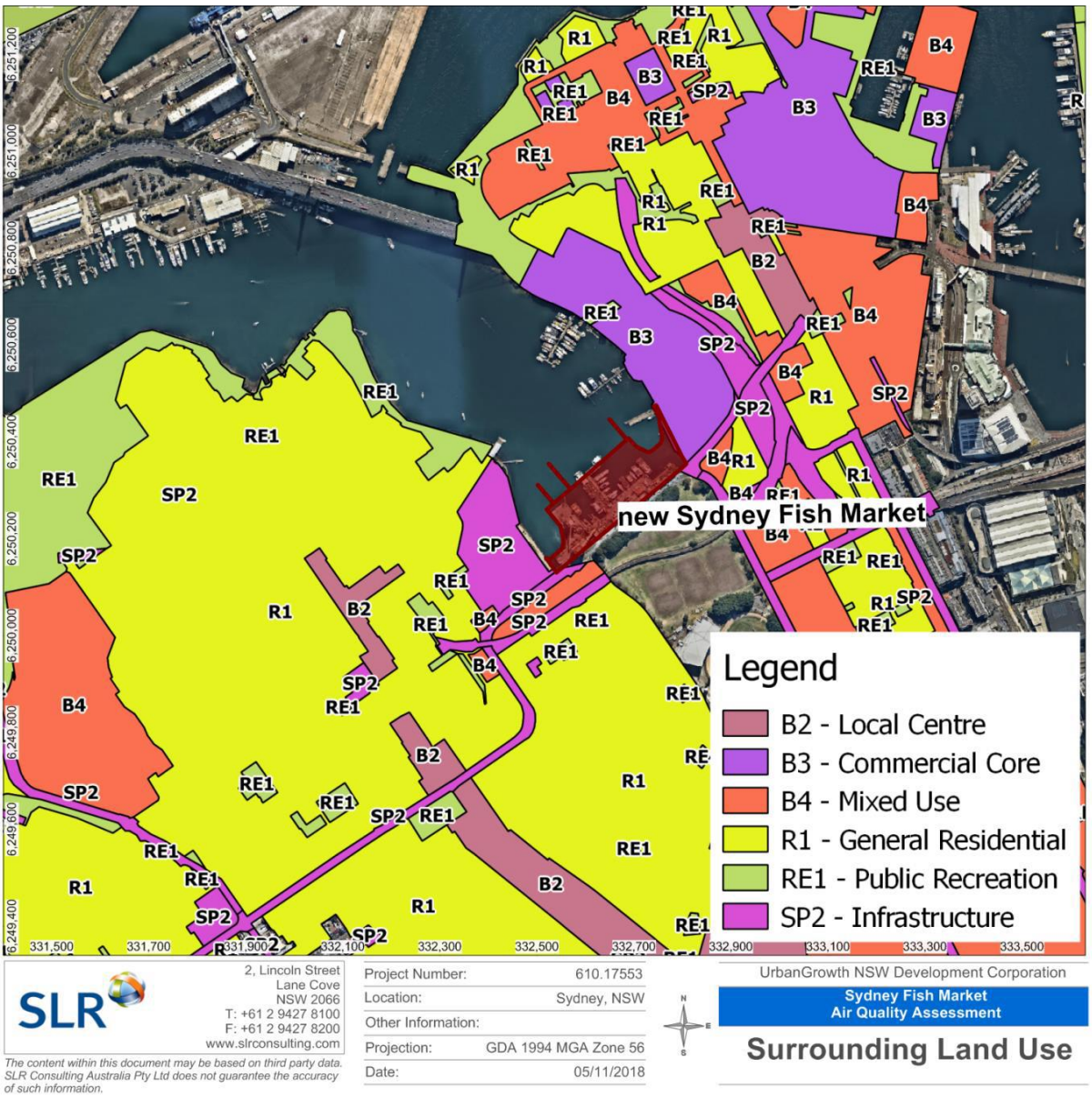


Figure 4 - Nearest Sensitive Receivers to the Site

4 ENVIRONMENTAL ASPECTS AND IMPACTS

As identified in the EIS Air Quality Impact Assessment, the main potential sources of air emissions during Stage 1 works were identified as dust impacts during the demolition works, emissions for plant and equipment and odour impacts due to the decomposition of marine growth on the underwater structures should they be stored on-site for an extended period.

4.1 POTENTIAL SOURCES OF AIR EMISSIONS

Works are to be undertaken in all areas of the NSFM Stage 1 footprint as shown in Figure 1, however, the locations which have the potential to have the greatest impact on air quality have been identified as:

- The demolition of existing structures and hardstand (Figure 5)
- Removal and storage of marine piles and wharf structure due to the potential for release of volatiles and odours (Figure 6)

- Stockpile sites (Figure 1)

The location of these work areas is shown in Figures 5.

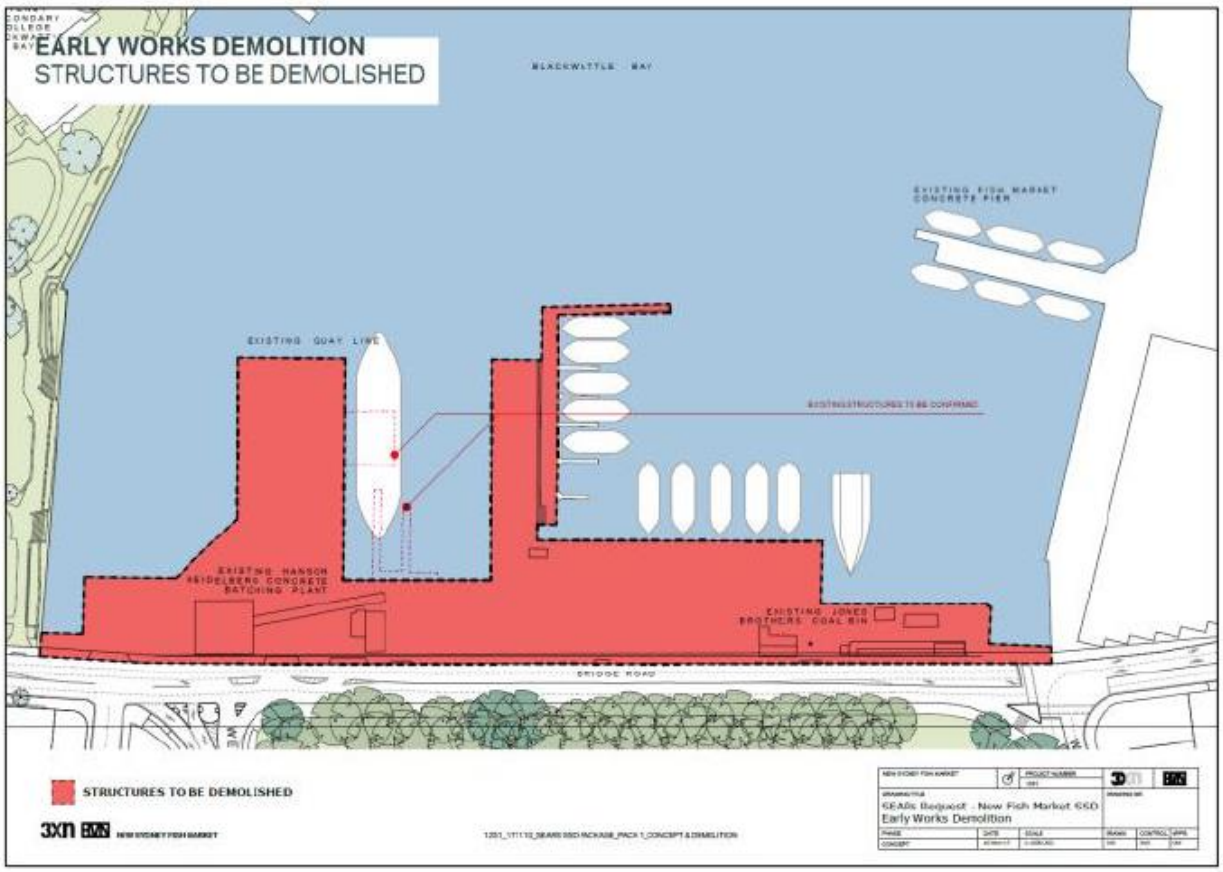


Figure 5 - Location of Demolition Work Areas

Given the nature of the Stage 1 works, it is considered that the emissions generated due to the combustion of fuel in construction plant and machinery will be short term and small compared to the emissions generated by road traffic on Bridge Road. Given the short term and low level of emissions of these pollutants from the site during the Stage 1 works, they are considered unlikely to have significant impacts on local air quality

The key potential air pollution and amenity issues associated with fugitive dust emissions from the proposed demolition activities at the Project Site are:

- Annoyance due to dust deposition (soiling of surfaces) and visible dust plumes; and
- Elevated suspended particulate concentrations (PM_{10}).

Dust deposition will be monitored monthly around the site at up to 4 locations using dust deposition gauges in accordance with AS 3580.1.1:2007 Methods for sampling and analysis of ambient air: Part 1.1: Guide to siting air monitoring equipment, and AS 3580.10.1:2003 Methods for sampling and analysis of ambient air: Method 10.1: Determination of particulate matter – Deposited matter – Gravimetric method. Results will be reported monthly.

To ensure that dust plumes and suspended air particulates are managed a network of up air sampling devices is to be setup. These devices will monitor air particulates (PM1.0 to PM10 and TSP) around the site and surrounds 24hrs a day with triggers set to identify when elevations from background levels are being generated. This will allow site to manage activities generating dust to reduce impacts to receivers.

The table below details the activities, which have the potential to cause air emissions and their potential impacts

Table 2 - Potential Sources of Air Emissions

Activity	Air Emission Cause	Potential Impact
Utility services and stormwater identification, protection, relocation and/or termination	Excavation of Utilities	Dust Generation
	Operation of Plant, Machinery and Vehicles	Vehicle Emissions
	Operation of Plant, Machinery and Vehicles	Vehicle Emissions
Demolition of existing infrastructure and buildings	Demolition using large excavators, trough induced collapse and deconstruction techniques	Dust Generation
	Sorting of demolition waste using excavators	
	Loading of Demolition Waste for transport using excavators and loading equipment	
	Removal of Concrete Building Slabs and roads with excavators and breaking equipment	
	Operation of Plant, Machinery and Vehicles	Vehicle Emissions
	Removal of Asbestos from buildings to be demolished	Potential Asbestos Fibre Release (from the removal of asbestos building materials)
Removal and storage of marine piles and wharf structure	Demolition of wharf structure with large excavators	Dust Generation (from both excavation and stockpiling of material)
	Sorting of waste using excavators	
	Loading of Demolition Waste for transport using excavators	
	Stockpiling of demolition waste	
	Operation of Plant, Machinery and Vehicles	Vehicle Emissions
	Removal and stockpiling of marine piles which may exhibit Volatiles/ Odour Emissions from decomposing marine growth..	Volatiles/Odour Emission (from both marine pile removal and stockpiling

5 ENVIRONMENTAL MITIGATION MEASURES

Methods for management of emissions would be incorporated into Project inductions, training toolboxes and pre-start talks. Mitigation measures for the project are discussed below in Table 3 and Table 4.

These mitigation measures are designed to be absolute measures, that is produce no dust or odours and therefore additional implementation measures will not be required for the project.

5.1 MITIGATION MEASURES

Table 3 - CAQMP Mitigation Measures

Reference NO	Action	Responsibility	Timing
AQ1	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.	Site Supervisor	Project Duration
AQ2	Display the head or regional office contact information.	Site Supervisor	Project Duration
AQ3	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	Site Supervisor	Project Duration
AQ4	Make the complaints log available to the local authority when asked.	Site Supervisor	Project Duration
AQ5	Record any incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation.	Site Supervisor	Project Duration
AQ6	Perform daily on-site and off-site inspections where receptors (including roads) are nearby, to monitor dust, record inspection results	Site Supervisor	Project Duration
AQ7	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	Site Supervisor	Project Duration
AQ8	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	Site Supervisor	Project Duration
AQ9	Erect solid screens or barriers around the site boundary to screen stockpiles and works on site.	Site Supervisor	Project Duration
AQ10	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	Site Supervisor	Project Duration
AQ11	Avoid site runoff of water or mud	Site Supervisor	Project Duration
AQ12	Keep site fencing, barriers and scaffolding clean using wet methods.	Site Supervisor	Project Duration
AQ13	Cover, or fence stockpiles to prevent wind erosion where they are inactive for periods greater than 2 weeks.	Site Supervisor	Project Duration
AQ14	Ensure all on-road vehicles comply with relevant vehicle emission standards, where applicable	Site Supervisor	Project Duration
AQ15	Ensure all vehicles switch off engines when stationary and safe to do so - no idling vehicles	Site Supervisor	Project Duration

AQ16	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable	Site Supervisor	Project Duration
AQ17	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	Site Supervisor	Project Duration
AQ18	Vehicles will only travel on designated roads onsite to the maximum extent possible. The speed will be limited onsite to 10km/hr.	Site Supervisor	Project Duration
AQ19	Vehicle movements would be limited to designated entries and exits, haulage routes and parking areas. The location of these will be detailed in the site induction. Project site exits would be fitted with hardstand material, rumble grids or other appropriate measures to limit the amount of material transported offsite (where required);	Site Supervisor	Project Duration
AQ20	Applying water (or alternative measures) to exposed surfaces that are causing dust generation. Apply an adequate amount of water to internal access roadways to mitigate wheel generated dust and to work areas so they do not generate dust.	Site Supervisor	Project Duration
AQ21	Use water-assisted dust sweeper(s) on the access and local roads to remove, as necessary, any material tracked out of the site	Site Supervisor	Project Duration
AQ22	Application rates would also be related to atmospheric conditions (e.g. prolonged dry periods) and the intensity of construction operations. Paved roads will be regularly swept and watered when necessary;	Site Supervisor	Project Duration
AQ23	Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	Site Supervisor	Project Duration
AQ24	Loads will be appropriately covered on trucks transporting material to and from the construction site. Tailgates will be fixed on road transport trucks before loading and immediately after unloading;	Site Supervisor	Project Duration
AQ25	Use enclosed chutes and conveyors and covered skips	Site Supervisor	Project Duration
AQ26	Minimise drop heights from loading shovels and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate	Site Supervisor	Project Duration

AQ27	Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	Site Supervisor	When Required
AQ28	No burning of wastes or other materials is permitted on site.	Site Supervisor	Project Duration
AQ29	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	Site Supervisor	Project Duration
AQ30	Marine growth on removed piles and structures should be removed prior to being brought to the surface where possible. Where this is not possible, marine growth is to be removed prior to stockpiling or taken offsite on the same day as removal.	Site Supervisor	Project Duration
AQ31	The use of polymer application will be trialed and where effective in suppression of odours from marine growth on piles and structures, will allow longer term storage of piles above ground.	Site Supervisor	Project Duration

6 COMPLIANCE MANAGEMENT

6.1 ROLES AND RESPONSIBILITIES

Liberty Industrial project Team organisation structure and overall roles and responsibilities are outlined in Section 3.2 of the CEMP. Specific responsibilities for the implementation of the environmental controls are detailed in Table 5 of this document.

6.2 TRAINING

All workers and visitors shall undergo the following inductions/trainings prior to commencing work:

- Liberty Industrial Project Specific Induction
- Air Emission Awareness training. This will outline the mitigation measures as described in Table 5 of this plan to ensure that site staff are aware of the requirements and their individual responsibilities for air quality management

All personnel, including employees, contractors and sub-contractors, are required to complete a project induction containing relevant environmental information before they are authorised to work on the project. Air quality specific information to be covered in toolbox talks and in pre-work meetings will include:

- Obligations under the project Conditions of Approval (including the CAQMP), including the identification of potential sources of air pollutants of concern and the mitigation measures to be implemented, including measures;
- Responsibilities pertaining to the management of air quality under the Protection of the Environment Operations Act 1997 and Protection of the Environment Operations (Clean Air) Regulation 2010;
- Typical activities that may impact air quality and associated environmental safeguards; and
- Incident response procedures

Records of all training activities, including inductions, will be maintained. Records will include the name and role of the attendee, the name of the course and, where applicable, reference to the document-controlled version of the material presented, and a copy of the assessment completed.

Additional or revised training shall be consistent with Section 3.5 of the CEMP

7 MONITORING

Below is a summary table for the air monitoring details. Monitoring details and discussion on records of monitoring are located in 4.2 of the CEMP. KPI's for the project in regards to air quality has been developed and are located in Table 8 Air Quality KPIs. All results from daily inspections will be kept by the Ste Supervisor onsite.

Table 4 - Air Monitoring Details Summary

Monitoring Details	Area	Responsibility	Frequency
Weather – Meteorological Data Including daily rainfall, temperature, relative humidity, wind (direction and speed)	All	Environment Advisor	Daily from BOM data
Dust – Visible Visual observation during daily site inspections, and by supervisors as works progress	All	Site Supervisors (During Works)	Daily and during works
Dust – Deposited Matter Monthly using dust deposition gauges	All	Site Supervisor/ Environmental Consultant	Monthly sample
Air particulate matter Real time recording of air particulates	All	Site Supervisor/ Environmental Consultant	Real time online database
Volatiles and Odour - Odour observations during daily site inspections, and by supervisors as works progress	Wharf Demolition and Storage Areas	Site Supervisors (During Works) Environmental Consultant (As requested)	Daily and during works
Plant Daily Plant Inspection	All	Plant Operators	Daily

Proposed monitoring locations (subject to consultation) are shown in Figure 6.

Legend – ☆ Real Time Data Loggers; ☆ Dust Deposition Gauges

Figure 6 - Location of monitoring equipment

Table 5 - Air Quality KPI

Air Quality Indicator	KPI	Recording
Dust	No Visible dust leaving the boundaries	Work Permit Weekly Environmental Audit
	No Complaints received over the duration of the project	Complaints Database
	Dust deposition below background levels plus 2g/m2/mth	Monthly report
	Air particulates below background levels of EPA monitors	Real time database
Odour/Volatiles	All non-detectable odour at boundary	Work Permit Weekly Environmental Audit
	No Complaints received over the duration of the project	Complaints Database
Asbestos	All monitoring results for the project below a fibre count of 0.01 f/ml	Asbestos Air Monitoring Register
Plant	No Excessive Smoke	Daily Plant Inspections
	All Plant Maintained as Per Manufactures Specification	Plant Maintenance Records

7.1 WEATHER

Weather can have a large impact on Air Quality. As wind speeds increase and with higher temperatures, there exists a greater potential that dust and volatiles will be generated.

Weather reporting will be based on Bureau of Meteorology (BoM) information and reported in pre-start meeting or as conditions change broadcast over site radio.

7.2 DUST

The performance indicator for dust will be no visible dust leaving the site boundaries and/or no visible dust being generated that has the potential to affect the workers onsite.

Any exceedance of this would trigger a response as outlined in Section 5.

Monitoring data will be used to assess compliance with requirements.

7.3 VOLATILES AND ODOUR

The classification of odour by levels shall be described as non-detectable, low, moderate or strong as determined by the Environmental Consultant and Environmental Advisor using olfactory methods.

Odours such as those produced in the decomposition of marine growth shall be monitored this way.

The performance indicator for odour will be, non-detectable odour at the site boundary and/or no odours greater than moderate or strong being present onsite that have the potential to affect workers. Exceedance of this indicator would trigger the response as outlined in Section 5.

7.4 PLANT

Pre-start Construction plant inspections will be conducted to ensure equipment is well maintained and serviced so that vehicular emissions remain within relevant air quality guidelines and standards. Equipment observed to be creating excessive emissions will be replaced or serviced.

7.5 COMPLAINTS MANAGEMENT

As per CEMP Section 5.1.

7.6 CORRECTIVE ACTION

Once KPI's are not adhered to corrective action measures will be implemented as detailed in the Table 6.

Plant and materials used in vapour and dust suppression techniques will be kept on standby to be used as required.

Table 6 - KPI Corrective Action Table

Air Quality Indicator	KPI	Corrective Action	Corrective Action Timeframe
Dust	No Visible dust leaving the boundaries	Apply dust suppression techniques (i.e. water; use of covers; stabilisation of stockpiles)	As soon as non-conformance is received
	No Complaints received over the duration of the project	Once Complaint is received, conduct investigation	As outlined in Section 4.2 of the CEMP
Odour/Volatiles	All non-detectable odour at boundary	Remove odour-generating material from site.	As soon as non-conformance is received
	No Complaints received over the duration of the project	Once Complaint is received, conduct investigation	As outlined in Section 4.3 of the CEMP
Asbestos	All monitoring results for the project below a fibre count of 0.01 f/ml	Cease works and review asbestos control measures	As soon as monitoring result is received
Plant	No Excessive Smoke	Cease using plant and consult mechanic. Remove from service until issue is resolved	As soon as non-conformance is received
	All Plant Maintained as Per Manufactures Specification	Remove plant from service until issue is resolved	As soon as non-conformance is received

APPENDIX A – EXTERNAL CONSULTATION

Table 7 - Summary of External Consultation

Agency	Position Contacted	Action Date	Outcome or Notes

17 APPENDIX B4 CONSTRUCTION SOIL AND WATER MANAGEMENT SUB PLAN

LIBERTY INDUSTRIAL

Construction Soil and Water Management Plan

New Sydney Fish Market Stage 1

Prepared by

Liberty Industrial Pty Ltd

for

HANSEN YUNCKEN

Revision No.	Revision Date	Authority	Changes
0	10.08.2020	MD	Draft for Review

KEY TERMS AND ACRONYMS

Acronym/Term	Meaning
ACM	Asbestos Containing Material
ARCP	Asbestos Removal Control Plan
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
Code of Practice	A practical guide to achieve the standards of health and safety required under the model Work Health and Safety (WHS) Act and model WHS Regulations
DPIE	NSW Department of Planning Industry and Environment
EA	Environmental Assessment
EIS	Environmental Impact Statement titled Environmental Impact Statement New Sydney Fish Market at Blackwattle Bay Concept Development Application, prepared by BBC Consulting Planners, dated October 2019.
Environmental Aspect	means the interaction, relationship or impact of an operation or activity with the Environment including
Environmental Law	relating to the storage, handling or transportation of waste, dangerous goods or hazardous material relating to Workplace health and safety; or which has as one of its purposes or effects the protection of the Environment
Environmental Notice	means any direction, order, demand, license or other requirement from a Government Agency to take action or refrain from taking any action in respect of the Site or the Works in connection with any Environmental Law
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Planning and Assessment
EWMS	Environmental Work Method Statements
NCA	Noise Catchment Area
NSFM	New Sydney Fish Market
OEH	Office of Environment and Heritage
NSWHC	NSW Heritage Council
Non-compliance	An occurrence, set of circumstances, or development that results in a non-compliance or is non-compliant with Conditions of Approval but is not an incident
Non-conformance	Observations or actions that are not in strict accordance with the CEMP and the aspect specific subplan
Site	Means the project site or work area where the Contractor is undertaking activities on behalf of Hansen Yuncken
SoHI	Statement of Heritage Impact
SSD 8924	Means State Significant Development number 8924 – New Sydney Fish Market – Concept and Stage 1

Acronym/Term	Meaning
Standards	Standards are published documents setting out specifications and procedure
The Contractor	The company, companies or other legal entity appointed by Hansen Yuncken to undertake works under the Project Approval

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1 SITE & DEVELOPMENT DESCRIPTION

The New Sydney Fish Market site is located at the head of Blackwattle Bay between the Pyrmont Peninsula and the foreshore of Glebe, situated less than 2 kilometres (km) west of Sydney's CBD and partially within the City of Sydney Local Government Area.

Currently the site's uses include a concrete batching plant (currently being demolished) at the Western end and concrete hardstand and wharf area at the Eastern end, which is currently vacant. The site includes wharves and land-based structures and part of the site is the water of Blackwattle Bay. Works will be undertaken on Bridge Road and its intersections with Wattle Street and Wentworth Park Road.

The site is legally identified as Lots 3-5 in DP 1064339, part Lot 107 in DP 1076596 and part Lot 1 in DP835794 as shown on Figures 1 and 2. The individual lots fall within City of Sydney (CoS) local government area. The site area is approximately 3.7 Ha, of which 0.7 Ha consists of soil-based materials present above the high-water mark.

The new Sydney Fish Market will include wholesale facilities and auction rooms, offices and commercial space, culinary education, retail premises including food and beverage premises (potentially with liquor licenses), back-of-house facilities and car and delivery vehicle parking spaces and ancillary uses. The new facility is to include a new foreshore promenade and wharves. The new Sydney Fish Market will be purpose built and will be supported by a state of the art back-of-house plant and recycling/waste management facilities under one roof.

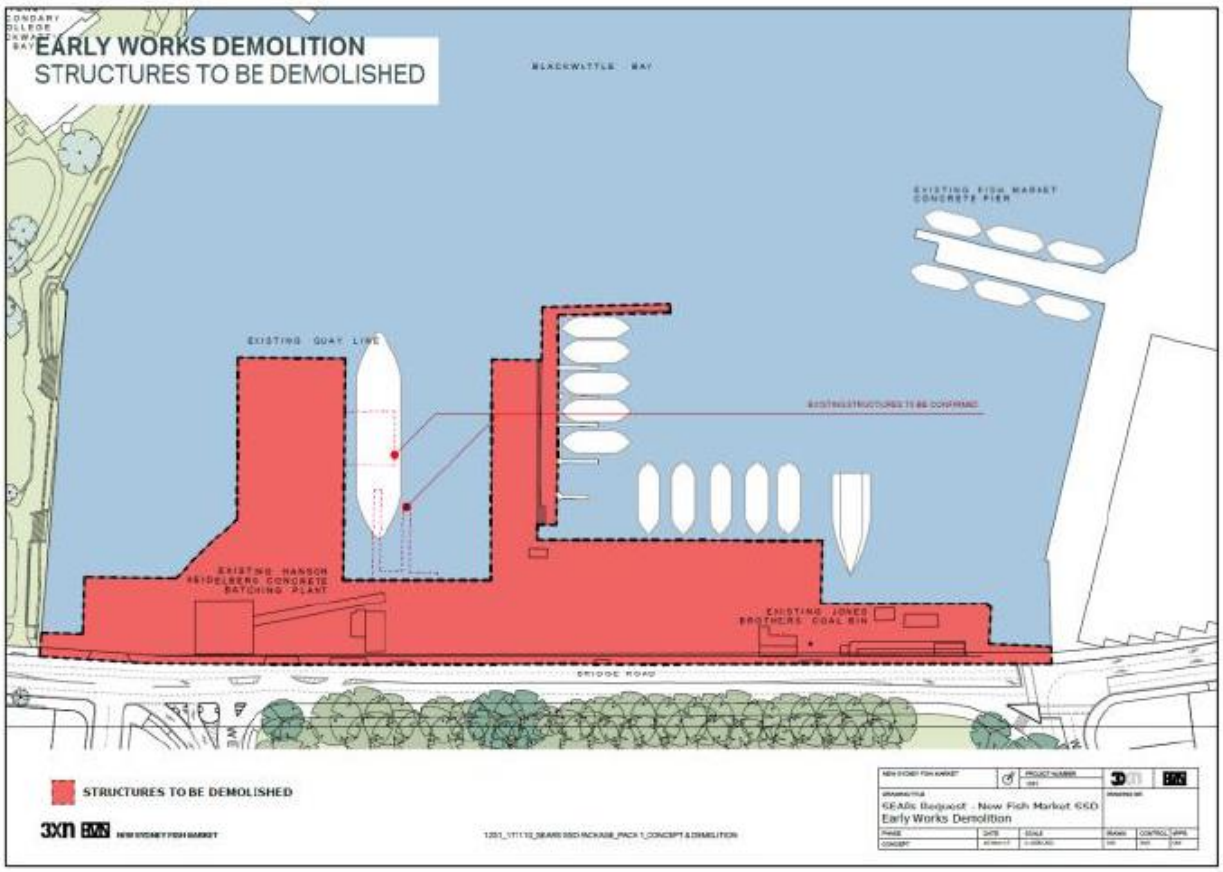


Figure 1 Site Layout

1.1 Purpose

The purpose of this Construction Soil and Water Management Plan (CSWMP) is to manage the impacts on the surface water and groundwater during the New Sydney Fish Markets – Stage 1 works.

This CSWMP addresses the Stage 1 works related to the construction of the New Sydney Fish Markets. This Stage will involve the establishment of construction site facilities; utility services identification, heritage salvage and relocation work and demolition of existing infrastructure and buildings.

It is the policy of Liberty Industrial to ensure that the Project achieves a high standard of care to minimise the impact on the environment, immediate work sites, and the local community.

1.2 Scope of Work

This scope of work is to undertake demolition and early works on the New Sydney Fish Market Stage 1 site, in order to provide access for the subsequent works package/s. It includes the following:

- Establishment of construction site facilities and management of site security;
- Utility services and stormwater identification, termination and removal
- Demolition of existing infrastructure and buildings (hardstand on landside to remain);

A brief description of the activities to be conducted and anticipated time frame for completion during each phase is outlined below.

New Sydney Fish Market Phase 1 – Demolition works

- Site establishment and mobilisation – 1 month
- Hazardous materials removal – 1 month
- Service isolation – 1 month
- Demolition – 7 months

The Minister for Planning has authorised construction, including the delivery of materials to and from the site, to be undertaken during the following hours:

Demolition shall be undertaken during the following standard construction hours, as defined in SSD 8924 conditions C2-C6;

- 7.00 am to 5.30pm Mondays to Fridays
- 7.30 am to 3.30pm Saturdays
- At no time on Sundays or Public Holidays

Activities which may be undertaken outside of these hours if required

(a) by the Police or a public authority for the delivery of vehicles, plant or materials;

(b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm.

Notification of such activities must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

- 9.00 am to 12.00 pm, Monday to Friday;
- 2.00 pm to 5.00 pm Monday to Friday; and
- 9.00 am to 12.00 pm, Saturday.

2 CONDITIONS OF CONSENT

The NSW Minister for Planning granted approval for Application No SSD 8924 which consists of the Demolition & Early Works (NSMF Stage 1) on the New Sydney Fish Market site, as defined in the Consent. The Consent contains several conditions relating to soil and water management as detailed below.

2.1 Requirements as per Conditions of Consent

The following table lists the Conditions of Approval required to be satisfied.

Table 1 Conditions of Consent

Condition No.	Consent Condition	Sub- Plan Ref.
B21	Prior to the commencement of works a Soil and Water Management Plan (SWMP) must be prepared and submitted to the Certifier. The SWMP must include: a) details of all erosion and sediment controls to be implemented during construction; b) a plan of how all construction works will be managed in a wet-weather event (i.e. storage of equipment, stabilisation of the site); c) a summary of any ground investigations to date; d) detail all off-site stormwater flows from the site and methods to ensure that sediment is not mobilised in stormwater flows leaving the site; e) the measures that must be implemented to manage stormwater and flood flows for small and large sized events, including but not limited to 1 in 1-year ARI, 1 in 5-year ARI and 1 in 100-year ARI; f) the proposed stormwater disposal and drainage from the development, designed in accordance with: (i) Australian Rainfall and Runoff – A Guide to Flood Estimation, Volumes 1 and 2 (1987); (ii) SA/NZS 3500.3.2 National Plumbing and Drainage Part 3.2: Stormwater Drainage – Acceptable Solutions; (iii) Managing Urban Stormwater – Soils and Construction Volume 1 (4th Edition March 2004) g) monitoring techniques; h) methods for testing of the water quality (suspended solids, turbidity and contaminants) prior to discharging from the site to ensure compliance with Managing Urban Stormwater – Soils and Construction Volume 1 (4th Edition March 2004) and Conditions C24, C25 and C26 of this consent. Prior to the commencement of works, details demonstrating compliance with the above requirements (B22(a)-(h)) must be submitted to the Certifier. A copy of the SWMP must be submitted to the Certifier.	This Plan Appendix A (a) Section 3.4 (b) Section 3 © Appendix A (d) Section 3.7 (e) Refer to Section 5.9 (f) Section 5.9 (g) Section 5.9 (h)
C12	Any seepage or rainwater collected on-site during construction shall be either re-used or disposed of, so as not to cause pollution. Seepage or rainwater shall not be pumped to the street stormwater system unless separate prior approval is given in writing by the relevant authority.	Section 5.1.
C27	The Applicant must ensure silt curtains are installed throughout the duration of the works to minimise disturbance and mobilisation of sediments and contaminants in the seabed of Blackwattle Bay. The silt curtains must be installed and maintained throughout the duration of works. The silt curtain must extend from the surface of the water to the seabed, and ensure that all attachment points for the silt curtains are firmly anchored to avoid gaps and release of contaminants.	Appendix A

Condition No.	Consent Condition	Sub- Plan Ref.
C29-C31	All works must be undertaken in a manner that ensures the protection of the water quality objectives and environmental values for Sydney Harbour estuarine waters in accordance with the NSW Water Quality Objectives and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) for the environmental values under the ANZECC Guidelines. No contaminated or treated site waters (surface, collected groundwater or contaminated construction waters) are permitted to be discharged into Sydney Harbour. No approval is permitted to pollute waters. All water discharge from the site must meet all requirements of the Protection of Environment Operations Act 1997.	This Plan
C37	All erosion and sediment control measures are to be effectively implemented and maintained at or above design capacity for the duration of the construction works and until such time as all ground disturbed by the works has been stabilised and rehabilitated so that it no longer acts as a source of sediment.	Sections 5.4-5.6

2.2 Legislation, Standards and Codes of Practice

The contractor commits to comply with all relevant sections of legislation, policies, guidelines and standards applicable to the project and are listed below;

- AS/NZS ISO 19011:2014 – Guidelines for Auditing Management Systems
- Australian Standard AS 2601:2001: The Demolition of Structures
- State Environmental Planning Policy No. 55 – Remediation of Land;
- Contaminated Land Management Act, 1997
- Section 120 of the Protection of the Environment Operations Act 1997
- Environment Protection Manual for Authorised Officers: Bunding and Spill Management, Technical Bulletin (Environment Protection Authority, 1997).
- Waste Classification Guidelines (CoA Department of Climate Change and Water 2009)
- AS ISO 10002-2006 Customer satisfaction – Guidelines for complaints handling in organisations (ISO 10002:2004, MOD)
- Guideline for the Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2004).

Key legislation, objectives, application and relevance for the project are further listed and discussed in Table 2 of the CEMP.

2.3 Obligations

The Contractor will undertake the Early Works in a manner that complies with section 120 of the Protection of the Environment Operations Act 1997, which prohibits the pollution of waters.

Details to ensure how this will be achieved are located in Section 5 Controls and Mitigation measures.

As works will be carried out on or under waterfront land, works are to be conducted generally in accordance with the NSW Office of Water's Guidelines for Controlled Activities.

All construction personnel working on the Project have the following general obligations:

- Comply with all Environmental Laws including authorisations, license and approvals required by any government agency for the lawful use of the site to carrying out of contracted work;
- Not contaminate or cause any pollution on or from the site due to the undertaking;
- To undertake all works in a manner that ensures the protection of the water quality objectives and environmental values for Sydney Harbour estuarine waters in accordance with the NSW Water Quality Objectives and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) for the environmental values under the ANZECC Guidelines.
- To not pollute waters. All water discharge from the site must meet all requirements of the Protection of Environment Operations Act 1997 and ensure no contaminated or treated site waters (surface, collected groundwater or contaminated construction waters) are permitted to be discharged into Sydney Harbour
- To notify the Department in writing to compliance@planning.nsw.gov.au within seven days after the Applicant becomes aware of any noncompliance. The Certifier must also notify the Department in writing to compliance@planning.nsw.gov.au within seven days after they identify any non-compliance.
- To notify the Department in writing to compliance@planning.nsw.gov.au immediately after the Applicant becomes aware of an incident. The notification must identify the development (including the development application number and the name of the development if it has one) and set out the location and nature of the incident.
- Not use, keep or handle on the site any dangerous goods or hazardous material except as may be required to carry out contracted work;
- Operate in a proper and efficient manner and maintain in good working order, all plant used in

connection with the carrying out the contracted work;

- Install and maintain pollution control equipment required by an environmental law to be installed and operated in connection the site undertaking;
- Promptly implement any recommendation of an environmental audit, assessment, investigation or report in respect of the site and/or undertaking (whether or not such recommendation is required in order to comply with an environmental law);
- Remediate any contamination of the site if caused by the undertaking;
- Clean up, manage or abate any pollution occurring on and/or from the site;
- Remedy any breach of an environmental law that occurs on or affects the site as soon as it occurs (including by restoring the site to a state as close as practicable to the state it was in prior to that alleged breach);
- Comply with every environmental notice relating to the site or issued in consequence of contracted work;

3 EXISTING ENVIRONMENT

3.1 Site History

From a review of the previous investigations, the following summarises the key aspects of the site history with respect to potential contaminating activities:

- The site and Blackwattle Bay were originally reclaimed between 1836 and 1891;
- The site was used for commercial purposes from 1900 that included timber merchants, abattoirs and garbage collectors;
- Lot 3 in DP1064339 located in the eastern portion of the site was used for unloading coal since before 1951. Coal fragments have been reported on the seafloor and within boreholes previously completed at the site;
- The site formerly had five underground storage tanks (USTs) which were removed from the site in 1995. The USTs contained gasoline, distillate, racing fuel, mineral spirit and mineral oil.
- During the UST removal, impacted soils were reportedly excavated and removed from the site. The resulting excavations were reportedly validated for total petroleum hydrocarbons (TPH), however it was further reported that heavy metal impacts remained in-situ at the limit of the completed investigations;
- Demolition of former site structures reportedly resulted in the removal of 700 m2 of asbestos from the site; and
- The site is currently used as a concrete batching plant and for commercial boat hire operations.

3.2 Topography

The site is situated on predominantly flat terrain (<1%). Review of topographic information obtained from regional topographic maps available on NearMap spatial information database indicated that southern portion of the site that has been subject to land reclamation and has an elevation of approximately 2 m Australian Height Datum (AHD). The ground surface of the northern portion of the site is situated on piers overlying the surface waters of Blackwattle Bay. Site surface water is anticipated to drain directly into Blackwattle Bay.

3.3 Hydrology

A review of the registered bore information (NSW DPI 2017 2) indicated that there are 14 registered bores within a 500 m radius of the site. The closest wells (approximately 250 m south-west of site) were constructed for monitoring purposes and were reported to contain a standing water level of approximately 0.6 m within shallow fill materials.

Groundwater monitoring as undertaken within the extent of the site as part of previous investigation and has identified

- Site groundwater to have reported total dissolved solids (TDS) concentrations consistent with saline waters; and
- Standing water levels correspond with tidal surface water levels of Blackwattle Bay in which site groundwater is anticipated to discharge.

3.4 Meteorology

A review of average climatic data for the nearest Bureau of Meteorology monitoring location (Observatory Hill) indicates the Site is located within the following meteorological setting:

- Average minimum temperatures vary from 8.1 ºC in July to 18.8 ºC in February;
- Average maximum temperatures vary from 16.4 ºC in July to 26.0 ºC in January;
- The average annual rainfall is approximately 1215.7 mm with rainfall greater than 1 mm occurring on an average of 99.9 days per year; and
- Monthly rainfall varies from 68.4 mm in September to 133.2 mm in June with the wettest periods occurring on average from January to June.

In the case of a wet-weather event, the following procedures will be carried out to ensure adequate stabilisation of the site:

- Ensure sediment control measures are in place and well maintained.
- Engineer to carry out a pre and post rainfall environmental inspection to ensure sediment control measures are working adequately.
- Hazardous materials such as those required for servicing of machines to be stored in a properly contained and bunded area.
- Regular street sweeping to ensure the site and the nearby roads are reasonably free of sediment with minimal soil disturbance likely to be encountered during Stage 1 works.
- In regards to maintenance of slurry, wet vacs will be consistently in use during concrete cutting to prevent seepage into drainage channels.
- Potential covering of stockpiles if deemed required.
- Diverting surface runoff around the works areas where feasible.

3.5 Geology

Boreholes that were undertaken for JK (2017a) in Blackwattle Bay show a subsurface profile generally consisting of natural clay and sandy clay soils of medium to high plasticity as well as clayey sand soil overlying sandstone bedrock.

In the bay, it was noticeable that boreholes typically encountered no fill from the seabed level. This was the case for most boreholes, except boreholes close to the existing shoreline. Boreholes close to the shoreline typically show a fill of depth up to 4.7m.

The fill was reported to comprise a clayey sand and silty clay with trace amounts of fine to medium grained sand and coal and plastic fragments. Boreholes in the adjoining Wentworth Park identified fill comprising silty sand or sandy clay containing varying amounts of inclusions such as sandstone and igneous gravel, also timber, tile, ceramic, glass, shell, concrete and brick fragments, slag and ash.

Natural soils were encountered either from seabed level or about 0.5m depth in the Bay comprised interbedded layers of silty clay, sandy clay and clayey sand soils. The predominantly clay samples were assessed as having moisture content greater than their plastic limits and based upon hand penetrometer tests completed on the samples, ranged in strength from very soft to very stiff.

The clays were assessed as generally being of medium to high plasticity, although more sandy clays were generally of low to medium plasticity. The predominantly sandy samples were assessed as wet and ranged from very loose to dense relative density. The natural soils contained varying amounts of fine to coarse grained gravel, shell fragments and other organic materials.

3.6 Acid Sulphate 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, the

neutralising chemical is assumed to be high quality agricultural lime (aglime). The aglime should be fine ground (<1mm) calcium carbonate (CaCO3) or calcite (limestone or marble powder).

Review of the Acid Sulfate Soil (ASS) Risk Map for Prospect/Parramatta indicates that the subject site is located within an area of 'high probability' of acid sulfate soils within bottom sediments. In such areas, there is the potential for severe environmental risk if bottom sediments are disturbed by activities such as dredging.

3.7 Potential Flooding

A Flooding and Water Quality Assessment Report has been previously prepared for Infrastructure NSW by Cardno on 1st October 2019. The report notes that Bridge Road acts as a major overland flow path for upstream runoff to reach the outlet. The majority of the Blackwattle Bay catchment runoff flows around Wentworth Park along Wattle Street and Wentworth Park Road, which then crosses Bridge Road.

Bridge Road is inundated by up to 700mm flood depth for the smallest event assessed (10% AEP). Provisional flood hazard was determined based on the definition of the NSW Floodplain Development Manual (2005) through a relation between the depth and velocity of floodwaters. This definition considers three categories for provisional hazard; High, Medium (Transition Zone) and Low.

The study concludes that:

- For Existing conditions, in all events up to the 1% AEP event, the Study Area and adjoining roads are predominantly defined as low hazard, with the exception being the intersection of Bridge Road and Wentworth Park Road where there are areas of medium and high hazard.
- The proposed development is minimal with decreases in flood levels observed at most locations.

Flood maps from the study can be found in Appendix B – Flooding Assessment and Water Quality Assessment.

The following mitigation measures will be implemented for the following scenarios:

General Management

- Storage of hazardous materials away from flow paths and known drainage channels
- Layout of site compound facilities to take into consideration of the flow paths
- Ensure evacuation routes are kept clear during high risk periods
- Ensure loose materials, fuel, chemicals and equipment can either be secured or removed during a flood event if required.

1-year ARI

- Brief personnel at prestart
- Review of all current ERSED controls and ensure ESCP is still current
- Stormwater would be managed using the following controls
    - o Silt Fencing
    - o Diversion bunds
    - o Coir logs/ sandbags/ silt socks

5 Year ARI

- Implement as above for the 1-year ARI event
- Ensure all plant and equipment are removed from areas of concentrated flow

100 Year ARI

- Implement as above for the 1-year ARI event
- Remove all plant and equipment from site areas where there is potential for inundation
- Perimeter controls are expected to be breached

3.8 Off-Site Stormwater Flows

It is anticipated that site surface water will drain directly into Blackwattle Bay and via ESCP control devices depending on the location. There will no excavation or hardstand removal with these to remain during the project and such the risk of excessive sediment being mobilised into the stormwater flow and thus into Blackwattle Bay is low. However, appropriate mitigation techniques will be maintained to ensure this is the case.

Drainage flow paths can be found in Appendix A – ESCP.

Appropriate measures to minimise the mobilisation of sediment into Blackwattle Bay via off-site stormwater flows include, but are not limited, to the following:

- Wet vacuums for management of slurry resultant from concrete cutting.
- Silt curtain to be installed around the perimeter of the site.
- Regular sweeper trucks as required to ensure sediment on hard standing is adequately managed to minimise tracking of sediment onto public roads.
- Silt fencing to be installed where appropriate to minimise sediment entering Blackwattle Bay.
- Silt socks to be installed around stockpiles where required to divert the flow of stormwater around the stockpile.
- To manage surface water entering the stormwater grates, a combination of silt socks and drainage fabric may be used.
- Regular and reactive monitoring and water quality control testing and reporting to be undertaken.

4 OBJECTIVES AND PERFORMANCE CRITERIA

An aspects and impacts register has been created for the project and is located in Appendix A2 of the CEMP. This section will further discuss the aspects and impacts of the project in relation to soil and water quality.

Error! Reference source not found. summarises the key activities and potential impacts on soil and water quality.

Table 2 Environmental Impacts Activity Table

Activity	Potential Impact
Utility services and stormwater identification, protection, relocation and/or termination	Carriage of nutrients to waterways if soils are not disposed of offsite as planned.
Heritage salvage and relocation works	Transport of hazardous building materials into waterways
	Carriage of nutrients to waterways
	Spills that may result in contamination of
Demolition of existing buildings	Transport of hazardous building materials into waterways
	Carriage of nutrients to waterways
	Spills that may result in contamination of waterways
Demolition of existing wharf infrastructures	Carriage of nutrients to waterways
	Exposure to Acid Sulphate Soils (ASS)
	Pollution arising from contaminated soils
	Spills that may result in contamination of waterways
Management of Acid Sulphate Soils (ASS)	Transport and cross contamination of site areas

4.1 Objectives of this Plan

The Soil and Water quality objectives for the Project are to:

- Minimise the potential for increased turbidity from the Project site and contamination of the harbour.
- Establish a strategy for effective management of demolition works;
- Implement erosion and sediment control measures as per “blue book” Sediment Control guidelines;
- Ensure that all demolition activities do not cause environmental harm with respect to water quality and aquatic ecology.

The objectives associated with potential temporary stockpiling of contaminated soils are to:

- Avoid impacting uncontaminated areas with known contaminations;
- Ensure that stockpiling activities do not result in contamination of the site or the surrounding areas;
- Carry out stockpiling in a manner that minimises any potential impacts on surrounding land uses and access by landholders;

4.2 Performance Criteria

- No degradation of water quality offsite;
- No spills or incidents associated with stored fuels or other contaminants that may result in the contamination of soils and/or watercourses;
- No contamination of land or water, and no breach of water quality objectives;
- Minimise sediments leaving the site by vehicular movement;
- Minimise the generation of dust;
- No complaints from stakeholders regarding sedimentation of the surrounding public roads and/or dust.

5 ENVIRONMENTAL ASPECTS AND IMPACTS

The following sections discuss soil and water mitigation measures for the project.

5.1 General Sediment Mitigation Measures

Table 3 General Sediment Mitigation Measures

Reference No.	Action	Responsibility	Timing
SW1	Establishment of restricted egress points from the site after rain events.	Contractor Site Supervisor	Prior to demolition
SW2	ESCP devices will be protected during demolition. If controls are in the way of demolition they may be removed, but replaced at the end of each day or prior to rainfall events	Contractor Site Supervisor	Project duration
SW3	Surface water diversion systems and erosion control measures shall be in place during demolition works, until such time as the relevant area has been is complete.	Contractor Site Supervisor Contractor Engineer	Project duration
SW4	Continuous monitoring of erosion control measures shall occur for the duration of demolition	Contractor Site Supervisor Contractor Engineer	Weekly
SW5	Sediment controls will be inspected as part of the weekly environmental inspection for UV degradation, effectiveness and capacity.	Contractor Engineer	Weekly
SW6	Erosion and sediment controls will be visually inspected on a regular basis. Inspections will be undertaken prior to a predicted rainfall event, during rainfall as well as post rainfall.	Contractor Site Supervisor Contractor Engineer	Project duration
SW7	Sediment that has been confirmed to be uncontaminated will be stockpiled on site. Sediment control measures such as silt socks may be used to prevent sedimentation of nearby waterways.	Contractor Supervisor Contractor Engineer	Project duration
SW8	Work in contaminated areas will be contained through the use of geofabric, silt socks and other sediment control measures.	Contractor Site Supervisor Contractor Engineer	Project duration
SW9	Soil and water management measures consistent with Managing Urban Stormwater - Soils and Construction Vols 1 and 2, 4th Edition (Landcom, 2004) shall be employed during Early Works to minimise discharge of sediment and other pollutants to land and/or waters.	Contractor Site Supervisor Contractor Engineer	Project duration
SW10	All chemicals, fuels and oils used on-site are to be appropriately stored in bunded areas in accordance with the requirements of all relevant Australian Standards, and/or EPA's Storing and Handling Liquids: Environmental Protection – Participants Handbook.	Contractor Site Supervisor	Project duration

Reference No.	Action	Responsibility	Timing
SW11	Access roads will be clearly indicated through onsite signage and flagging where required.	Contractor Site Supervisor	Prior to demolition
SW12	Vehicles will follow onsite speed limits of 10km/h at all times.	Contractor Site Supervisor	Project duration
SW13	The repair and maintenance of plant and vehicles is to be conducted in a designated area only, which is to be covered to minimise the release of potential contaminants and contain any leaks or spills, due to rain. Spill controls are to be available at all times.	Contractor Site Supervisor Contractor Engineer Contractor Safety Representative	Project duration
SW14	Dangerous goods, as defined by the Australian Dangerous Goods Code, shall be stored and handled strictly in accordance with: a) all relevant Australian Standards; b) 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).	Contractor Project Manager Contractor Site Supervisor Contractor Safety Representative	Project duration
SW15	Any unexpected finds of suspected contamination are to be reported immediately to the Client Representative. Works are not to recommence until written approval has been received from the Client Representative.	Contractor Site Supervisor Contractor Engineer	When required
SW16	Any contaminated material is to be stockpiled separately and as per the ESCP and properly managed to prevent contaminated sediment runoff.	Contractor Site Supervisor Contractor Engineer	When required
SW17	All plant and machinery used on site will undergo regular maintenance and inspections for leaks with all maintenance records to be kept on file.	Contractor Site Supervisor Contractor Safety Representative	Project duration
SW18	Spill Kits are provided in site with location TBC onsite. Spill Kit training sessions will be provided to site workers.	Contractor Site Supervisor	Project duration
SW19	All vehicles are to remain in the designated access areas at all times. Refer to the Traffic Management Plan for the location of access areas.	Contractor Site Supervisor	Project duration
SW20	For all site works, provide temporary diversion around temporary work obstructions to allow low and normal flows to safely bypass the work areas.	Contractor Site Supervisor	Project duration

5.2 Measures for Temporary Stockpiling of Contaminated Materials

Table 4 Measures for Temporary Stockpiling of Contaminated Materials

Reference No.	Action	Responsibility	Timing
SW21	Contaminated soil (potentially ASS) stockpiles are to be bunded using sediment controls using impermeable materials. If required, Acid Sulphate Soils can be treated using aglime that will be stored on site and covered in an impermeable material.	Contractor Site Supervisor Contractor Engineer	Project duration
SW22	ASSs are to be stockpiled separately and will include an impervious liner and bunding in accordance with AS1940.	Contractor Project Manager Contractor Site Supervisor Contractor Engineer	Project duration

5.3 Construction and Traffic Sediment Control Mitigation Measures

Table 5 Construction and Traffic Sediment Control Mitigation Measures

Reference No.	Action	Responsibility	Timing
SW23	Stockpiles will be situated in such a way as to reduce the potential of sediment dispersion by vehicular movements.	Contractor Site Supervisor	Project Duration
SW24	Access routes shall be maintained and inspected prior to a forecast of rain event. Erosion control measures shall also be inspected post rain events and weekly during site inspections	Contractor Project Manager Contractor Engineer	Project Duration and as required
SW25	Any seepage or rainwater collected on-site during construction shall be either re-used or disposed of, so as not to cause pollution. Seepage or rainwater shall not be pumped to the street stormwater system unless separate prior approval is given in writing by the relevant authority.	Contractor Site Supervisor Contractor Engineer Contractor Project Manager	Project Duration and as required

5.4 Erosion and Sediment Controls

The implementation of erosion and sediment controls shall be determined by on-site conditions at the time of possession. Sediment control measures will be implemented prior to, or in conjunction with the commencement of operations on the Sydney Fish Markets – Stage 1 site. All sediment and erosion controls shell be in accordance with NSW EPA Managing Urban, Stormwater, Soils, Construction Vol1 & Vol2 (Blue Book).

During work, erosion and sediment controls shall be adjusted and maintained until completion of the job or stabilization of the area is achieved (e.g. concrete slabs, compaction, sediment barriers, landscaping etc.).

The fundamentals upon which erosion and sediment controls shall be designed are as follows:

- Storm water shall be managed to protect harbour water quality;
- Mitigate against the potential erosion and subsequent sedimentation; and

- Adequate and appropriate drainage and pollution control measures installed to treat run-off from disturbed areas of the site.

The Erosion and Sediment Control Plan shell comply with the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 – Part 7 (Demolition Code).

Erosion and sediment control measures to be implemented are outlined in Appendix A (Erosion and Sediment Control Plan).

5.5 Implementation

Storm water within the site shall be directed to sediment control devices. The structures should be capable of sustaining their designed flow velocity to prevent erosion.

Water and potential sediment will be controlled by ensuring that all existing drains will be kept clear of rubble to remain operational during the works. Sediment filter fabric and sediment buns will be installed across and around the drain inlets to prevent sediment run off. Where the demolition of the structure will create sediment runoff to areas other than to the existing drains then sediment fencing (if required) will be established at the perimeter of the works.

Existing hardstands will be utilised for truck ingress and egress to the site and will be regularly kept clean of demolition debris to ensure no material is tracked onto public footpaths and roads.

No construction traffic shall be allowed outside the marked construction site except at designated entry and exit points.

5.6 Monitoring

Erosion & Sediment Control Plan shall be monitored for effectiveness. This control plan shall be continually updated as required. The maps shall be located in the site office.

The Project/Site Manager shall appoint a suitably qualified worker to inspect all catchment devices, when rain is expected, and after each rain event.

The monitoring program shall include the following (as applicable): -

- Regularly inspections of all erosion, drainage and sediment control structures for structural integrity and capacity;
- Regularly cleaning/desilting of sediment control devices to maintain design capacity;
- Emptying water from the sediment traps as soon as possible after rainfall in preparation for subsequent rainfall and prevention of mosquitoes;
- Inspecting the storm water management devices, particularly following major rainfall events to ensure that these devices are in good working order; and
- Sedimentation and Erosion instruction is regularly reviewed and amended as required;
- Covering of hauled materials, wetting-down loads, reducing load sizes to reduce the risk air-borne contamination;
- Where practical water from run-off basins should be re-used for dust control or compaction; and
- Adequately designed facilities for machinery and truck wash-down before they leaving the site for entry onto sealed public roads.
- The water course surrounding the site will be regularly monitored during the demolition process to ensure no sediment shell be discharged in to the water way surrounding the site.

5.7 Community Relations

- Hansen Yuncken will manage Community Relations through Elton Consulting. Refer to Hansen Yuncken's Stakeholder Management & Communications Management Plan for further information.
- A community information telephone number has been established to provide access and information about the project.
- An email address has been established to manage correspondence and to provide access and information about the project.
- A postal address has been established to manage correspondence and to provide access and information about the project.
- Community notifications and newsletters shall be prepared and distributed as per Hansen Yuncken's Stakeholder Management & Communications Management Plan, to the community in areas that are potentially affected by the project. The contents of the notifications shall include information on the nature of the works, location of works being carried out, possible impacts to amenity, traffic flow or services, and the contact details as listed above.
- Information boards with the above contact details shall be prepared and installed on the site boundary hoarding detailing contacts for information / complaints for the project.
- Should the public enter site they are to be directed to the site office to talk to Hansen Yuncken management.

Once works commence, communication with the community shall be maintained via the aforementioned methods.

Consultation and cooperation between the contractor and the neighbours and the removal of uncertainty and rumour can help to reduce adverse reaction to noise.

5.8 Non-compliance, Non-conformance and Actions

It is the responsibility of all site personnel to report non-compliances and non-conformances to the Site Supervisor and/or the Contractor's EM.

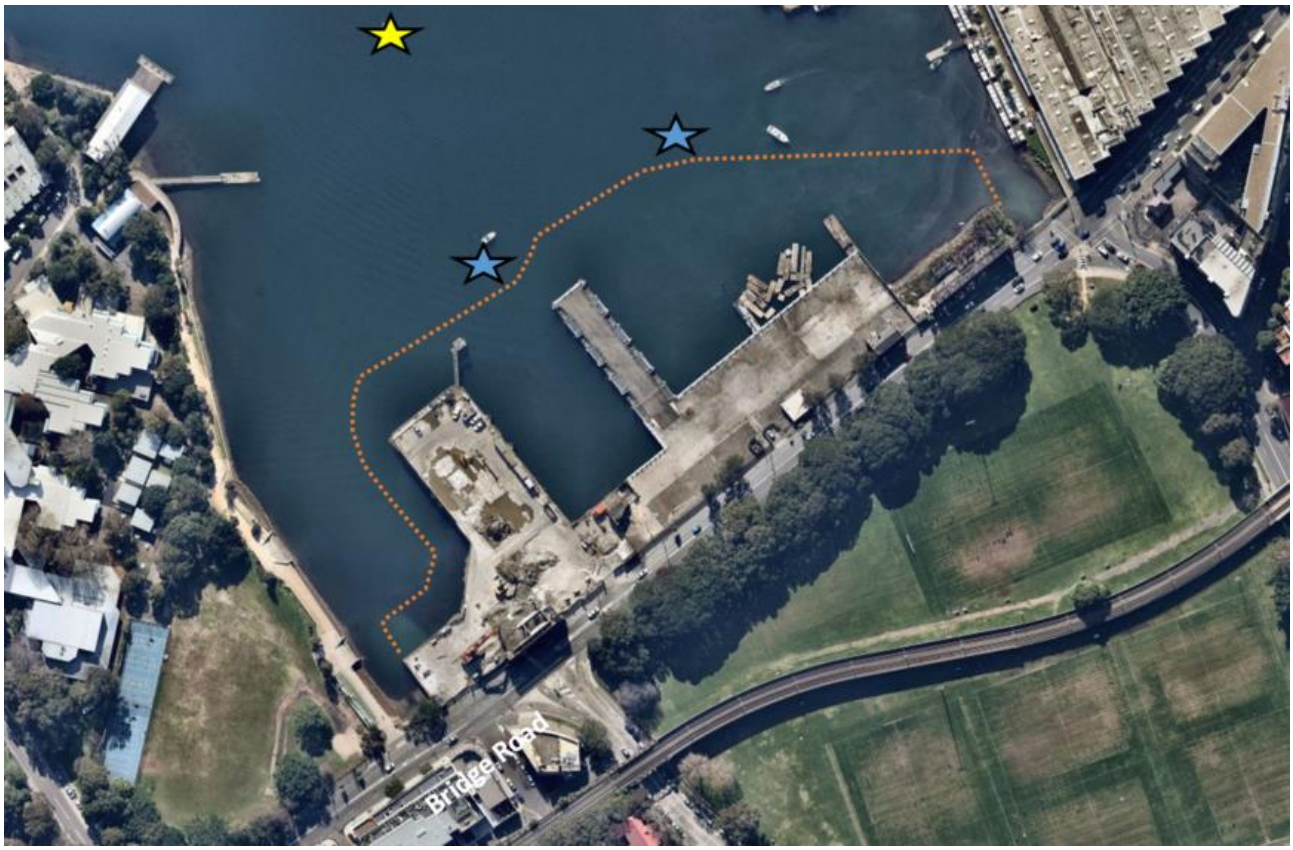
Non-compliances, non-conformances and corrective and preventative actions will be managed in accordance with Section 9 of the CEMP.

5.9 Water Monitoring and Testing

Two locations have been identified as locations for monitoring and weekly testing for the duration of the Stage 1 works or as required. Monitoring and testing will also be conducted at a background location as shown in Figure 2. Prior to the use of any testing equipment on site, the appropriate calibrations must be conducted as per the manufacturer's recommendations and recorded for future referral if required.

Progress and compliance against environmental requirements will be evaluated through:

- Audits, both internal and external;
- Review of documents and/or records;
- Employee and Client feedback;
- Project or work reviews and reporting;
- Direct observation;
- Environmental inspections.
- Weekly testing and reporting.



	Background Testing Location
	Project Testing Location

Figure 2 Proposed Testing Locations

Grab samples will be collected from the above locations and sent to an independent NATA accredited laboratory for testing, analysis and reporting.

pH and turbidity monitoring and testing may be carried out on site using a pH probe and turbidity meter as well as at a NATA accredited laboratory for QA/QC, with laboratory analysis being conducted at least one lab sample to five pH probe and turbidity meter analysis.

The following protocol would apply to all probe water quality monitoring undertaken as part of the project.

- Ensure appropriate PPE is worn in accordance with the SWMS / risk-based assessment.
- Check the calibration records for the water quality probe. The meter must be calibrated before use.
- Use the handheld water quality probe to measure pH and turbidity where required,
- Observe for sheens of oils and / or hydrocarbons and note any scents / odours. If any of these are detected or noticed, further laboratory analysis may be required.
- All information is to be recorded on field sheets and transferred to an electronic register for the site to log all water quality results.

Water quality monitoring and testing for the following will be carried out and reported on weekly based on the minimum trigger parameters shown in Table 6 below.

Table 6 Water Quality Testing Parameters

Parameters	Units	Trigger Value
Physio-chemical		
pH	pH units	8 – 8.5
Turbidity	NTU	0.5 - 10
Suspended Solids	mg/L	
Salinity	μScm^{-1}	20 – 30
Dissolved Oxygen	% saturation	90 - 110
Total Phosphorus (TP)	$\mu g\ P\ L^{-1}$	25
Total Nitrogen (TN)	$\mu g\ P\ L^{-1}$	120
Metals		
Cadmium	μgL^{-1}	0.7
Copper	μgL^{-1}	1.3
Lead	μgL^{-1}	2.2
Mercury	μgL^{-1}	0.1
Zinc	μgL^{-1}	15
Chromium (Cr III)	μgL^{-1}	7.7
Chromium (CrVI)	μgL^{-1}	0.14

Parameters	Units	Trigger Value
Nickel	μgL^{-1}	7

5.10 Testing Results

Testing results will be reported on weekly. Results will be available both on site and on record in an electronic register.

5.11 Compliance Reporting

A Pre-Construction Compliance Report will be prepared for the development and submitted to the Certifier before the commencement of construction. A copy of the compliance report will be provided to the Department at compliance@planning.nsw.gov.au before the commencement of construction.

The Pre-Construction Compliance Report must include:

- details of how the terms of this consent that must be addressed before the commencement of construction have been complied with; and
- the expected commencement date for construction.

Construction Compliance Reports must be submitted to the Department at compliance@planning.nsw.gov.au for information every six months from the date of the commencement of construction, for the duration of construction. The Construction Compliance Reports must provide details on the compliance performance of the development for the preceding six months and must be submitted within one month following the end of each six-month period for the duration of construction of the development, or such other timeframe as required by the Planning Secretary.

The Construction Compliance Reports will include:

- a results summary and analysis of environmental monitoring;

- the number of any complaints received, including a summary of main areas of complaint, action taken, response given and proposed strategies for reducing the recurrence of such complaints;
- details of any review of the Construction Environmental Management Plan (CEMP) and the Environmental Management Strategy and associated sub-plans as a result of construction carried out during the reporting period;
- a register of any modifications undertaken and their status;
- results of any independent environmental audits and details of any actions taken in response to the recommendations of an audit;
- a summary of all incidents notified in accordance with this consent; and
- any other matter relating to compliance with the terms of this consent or requested by the Planning Secretary.

The Applicant must ensure that all of its employees, contractors (and their sub-contractors) are made aware of, and are instructed to comply with, the conditions of this consent relevant to activities they carry out in respect of the development.

5.12 Auditing

Any condition of the consent that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non- compliance notification and independent environmental audit.

APPENDIX A EROSION AND SEDIMENT CONTROL PLAN (ESCP)

APPENDIX B FLOODING AND WATER QUALITY ASSESSMENT

18 APPENDIX B5 WASTE MANAGEMENT PLAN

Waste Management Plan

Prepared by
Liberty Industrial Pty Ltd
For
Hansen Yuncken Pty Ltd
1A, B, and C Bridge Road, Glebe NSW 2037

Revision No.	Revision Date	Authority	Changes
A	27.07.2020	SZ	First Review

PREPARED: *Sean Zhou* Date: 28 - 07 - 20

Site Engineer

ACCEPTED: *Antoine Delort* Date: __ - __ - __

Project Manager

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APPENDIX A – SOIL AND EROSION CONTROL PLAN 4

1 PURPOSE

Liberty Industrial (the company) is committed to the promotion of waste avoidance and reduction, and resource recovery and efficiency actions. This aim is achieved through conserving the environment, recycling demolition waste and using recycled products on all of our projects where practicable, aiming to achieve over 90% recycling by weight.

The purpose of this Waste Management Plan is to:

- Identify the types and quantities of waste that would be generated during the undertaking, and the areas in which waste will be stored prior to removal;
- Outline standards and performance measures for dealing with this waste;
- Outline a detailed description of how this waste would be reused, recycled and, if necessary, appropriately treated and disposed of in accordance with New South Wales Environmental Protection Authority (NSW EPA) guidelines on the management of regulated wastes;
- Outline a description of how the effectiveness of these actions and measures would be monitored over time; and
- Outline a description of what procedures would be followed to ensure compliance if any non-compliance is detected;

2 SCOPE

To ensure that all site waste is managed in a lawful and responsible manner meeting Hansen Yuncken targets, objectives and contract requirements.

3 REFERENCES

- Contaminated Land Management Act 1997;
- Dangerous Goods (Road and Rail Transport) Act 2008;
- Environmentally Hazardous Chemicals Act 1985;
- Protection of the Environment Operations Act 1997;
- Ozone Protection Act 1989;
- Waste Avoidance and Resource Recovery Act 2001;
- Protection of the Environment Operations (Waste) Regulation 2014.
- Work, Health and Safety Act 2011 (NSW)
- Work, Health and Safety Regulation 2017 (NSW);
- How to safely remove asbestos: Code of practice
- Liberty Industrial Management System
- NSW EPA Waste Classification Guidelines (Part 1: Classifying waste)

4 WASTE TYPES AND QUANTITIES

Material	Estimated Quantity Produced / Used (t)	Recyclable (Y/N)	Estimated Quantity Recycled	% Recycled
Concrete	8612t	Y	8612t	100%
Brick	221t	Y	221t	100%
Bitumen	300t	Y	300t	100%
Steel	140t	Y	250t	100%
General rubbish/ Mixed Demolition	300t	N	0	0%
Asbestos	1t	N	0	0%

Notes: All above quantities are estimated figures only. Liberty Industrial will manage all types of waste on site complying with relevant guidelines and regulations listed in section 3 - Reference.

5 OTHER BUILDING WASTE

5.1 FLUOROCARBONS - AIR CONDITIONING UNITS

Depending on their age air conditioning units may contain CFCs, HCFCs or other fluorocarbon refrigerants. It is an offence to discharge fluorocarbon to the atmosphere as they may deplete the ozone layer. The Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995 require the recovery, return and safe disposal of ozone depleting and synthetic greenhouse gas refrigerants.

A Restricted Refrigerant Recovery License holder shall degas all of the air conditioning units across the site prior to their removal and disposal.

5.2 SYNTHETIC MINERAL FIBRES - INSULATION

Insulation used in the buildings across the site will likely contain Synthetic Mineral Fibres (SMFs). SMFs are amorphous (non-crystalline) fibrous material. Dust generated from SMFs may cause:

- Discomfort, tickling and dryness of the nose, throat and respiratory tract, especially for those who suffer hay fever, asthma or bronchitis;
- Temporary skin irritation, particularly where there is rubbing from clothing such as cuffs and collars; and
- Severe irritation to eyes.

All workers in contact with SMFs are to wear appropriate PPE including safety glasses, P2 disposable respirators, and disposable coveralls as required. A mist spray is to be applied to the SMF wherever practicable to do so.

SMF is mixed with general waste and disposed of as mixed demolition waste.

5.3 CAPACITORS

Capacitors will be tested for PCB's. Capacitors found to contain PCB's will be stored separately from other wastes, identified and disposed of as regulated waste.

Capacitors not containing PCB's will be disposed of as general waste.

5.4 FLUORESCENT TUBES

Fluorescent tubes will be segregated from other waste onsite.

Fluorescent tubes will be disposed of with a specialist recycler.

5.5 CONTAMINATED SOIL

All contaminated soil will be tested, classified and disposed of as per the determined waste classification.

Potential contaminated soil will be segregated and signposted until results of testing are known.

6 STANDARDS AND PERFORMANCE MEASURES

In order to achieve the waste avoidance and minimisation objectives (90%) recycle rate, Liberty Industrial follows the following hierarchy of waste management principles in all aspects of operations:

Avoid	unnecessary resource consumption
Reduce	waste generation and disposal
Re-use	waste resources without further manufacturing
Recycle	waste resources to make the same or different products
Recover	waste resources, including the recovery of energy
Treat	waste before disposal, including reducing the hazardous nature of waste
Dispose	of waste only if there is no viable alternative

6.1 WASTE TRACKING

The company uses a Waste Tracking System (FRM-123 Waste Register) to record waste types, quantities and disposal methods for all waste streams in the form of a waste register spreadsheet. This spreadsheet records the disposals and contains the following information:

- Tracking of each waste stream;
- Dates of waste disposal;

- Transport information (contractor, rego, truck etc.);
- Licensed facility accepting the waste;
- Records of Waste Transport Certificates;
- Disposal weights of all waste streams, including cumulative total of each waste stream;
- Percentage Recycling Rate;
- Monthly, Quarterly and Yearly analysis of waste quantities and movements;
- Provide corrective actions to rectify any accidental spillage of waste;

This record keeping demonstrates a step towards better waste management, as it allows for the establishment of standard waste levels. Records of waste quantities allow the Project Manager to assess the performance of the undertaking in line with the above waste management principles to avoid and minimise waste to landfill.

6.1.1 Waste Documentation

Liberty Industrial uses FRM-350 Transport/Tipping Form to track daily waste transportation and disposal activities. FRM-350 Transport/Tipping Form is a docket for all waste contractor drivers to sign off when they are transporting the waste off site. FRM-350 records landfill location, vehicle rego, time in/out and weight of the waste.

Records from FRM-350 will directly reflected in FRM-123 Waste Register.

Ref*:** ***FRM-123 Waste Register

FRM-350 Transport/Tipping Form

7 WASTE MANAGEMENT

All Asbestos will be managed in accordance with the Asbestos Removal Control Plan.

7.1 MONITORING AND MEASUREMENT

The company will monitor the site waste and record all waste movements from site utilising the waste register as the tracking medium. Waste tracking audits will be undertaken to ensure that the licensed waste removalist take the waste to a lawful facility.

7.2 REPORTING REQUIREMENTS

Waste Register Reports will be produced monthly and include the following details:

- audits and inspections;
- corrective actions;
- training and awareness;

- water use data;
- waste disposal;
- recycled materials;

7.3 WASTE TRACKING SYSTEM PROCEDURE

7.3.1 Objective

The objective of the Waste Tracking System (WTS) is to account for the relocation and/or disposal of all waste material, in addition to any recyclable material removed from site. Asbestos containing materials will be managed separately and removed from site packaged pursuant to the "How to Safely Remove Asbestos Code of Practice".

The responsibility for recording, maintaining and reporting of this rests with the site Project Manager.

7.3.2 Controls

The Waste Tracking System (WTS) will be used to manage and monitor the movement of waste.

The WTS will:

- Record and document the transfer of each waste load using a waste tracking dockets;
- Retain dockets to validate the final destination of all hazardous and nonhazardous waste;
- Document the off-site disposal of waste material using the docket system and the appropriate environmental permits for removal of controlled waste from the site pursuant to the Protection of the Environment Operations (Waste) Regulation 2005.

7.3.3 Actions

The following actions will be used to effectively manage the movement of waste material across and out of the site:

- An initial site induction for all worker(s) involved with the movement and relocation of the waste. They will be informed of the site/location of waste and transport routes to be used;
- A General Waste Register will be used to identify the description of the waste, docket number, transport company, vehicle registration, disposal facility and quantity of the waste;
- A NSW EPA permit must be obtained prior to removal for wastes classified as trackable. The form will be in duplicate with the original retained by the landfill operator and the duplicate retained by the transport driver, once signed as received by the landfill operator;

7.4 INTERNAL WASTE HANDLING PROCEDURE

7.4.1 Objective

As part of the demolition works, site waste will be sorted into waste streams to avoid contamination of the various waste.

Soil and possibly some waste material will be excavated, transported across the site and either temporarily stockpiled, or taken directly off-site for disposal. The objective of this procedure is to ensure the transportation and handling of all waste material within the project area is undertaken in a safe and lawful manner.

7.4.2 Controls

This procedure will be used to control the following tasks and items:

- Regulate the transfer of waste within the project area;
- Identify location of stockpiles; and
- Rate of placement of waste based on compliance to air quality, noise, vibration criteria, stockpile height and any safety concerns.
- Hazardous waste will be separated and segregated, sign posted and clearly marked up. Hazardous waste will be stored in designated skip bins as required.
- Areas to be cleaned up as practically as possible.
- Waste will be segregated and locally stockpiled in the most commercially viable option and housekeeping standard will be upheld at all times.
- Waste management procedures to be emphasised and discussed to the workforce on a regular basis in team meetings such as toolbox talks and monitored by site supervision throughout.

7.4.3 Actions

The following actions are to be used for managing the excavation, transfer, and stockpiling of waste fill including the placement of the final cover.

Excavation

In the event that work has to be undertaken below grade the follow shall apply:

- Penetration and Break-in Permit must be issued before a surface penetration occurs;
- All waste material is to be removed in a damp condition to reduce the potential for dust generation and adverse air quality as per the requirements of the Environmental Management Plan;
- Waste material is to be placed directly into trucks for immediate transfer to the temporary stockpile;

Ref: LI-FRM-014 Work Permit

LI-FRM-036 Excavation, Penetration and Break-in Permit

Transportation

- All loads are to be wet down with a fine water spray to prevent dust emissions prior to leaving the exclusion zone;
- Trucks loading scrap out are to follow the route identified on the Traffic Management Plan and is to be clearly defined with signage where required and kept damp to prevent nuisance dust;
- The body of any vehicle or trailer used to transport waste or excavation spoil from site to be covered before leaving the site.
- Spill kits will be located in designated work areas close to haulage routes; and

Stockpiles

- Stockpile locations for waste material will be streamed as identified by the Project Manager in consultation with the client representative;
- Height of Stockpile does not exceed 4 metres.
- Waste material may only be temporarily stockpiled on top of existing waste fill material or on top of compacted material if on natural ground;
- All temporary stockpile locations are to be inspected daily by the Site Supervisor and at regular intervals by the Project Manager; stockpiles of material are constructed and maintained to prevent cross contamination;
- Dust suppression techniques are to be used on the temporary stockpiles in accordance with the Environmental Management Plan.

7.4.4 Monitoring and reporting

Monitoring and reporting will include:

- Accidents involving the spillage of waste material from trucks and the corrective action undertaken using an Incident Report form;
- Earthmoving and traffic accidents are to be reported verbally (radio communication) and in writing directly to the Site Supervisor immediately following the incident; and
- Routine random checks will be undertaken by the Project Manager of waste handling practices to ensure conformance to this procedure;

Ref: FRM-031 Incident Report

7.4.5 Domestic Waste

Domestic waste generated on site will mainly consist of general rubbish from the demolition zones. This rubbish will be located in skips, and recycled or disposed of by a licensed contractor.

7.5 OFF-SITE WASTE DISPOSAL PROCEDURE

7.5.1 Objective

Waste material excavated during the demolition work will only be stockpiled on-site temporarily. These stockpiles will be transported to an approved landfill or recycling facility.

The objective of this procedure is to ensure that all waste material is transported off-site to a lawful appropriate class of landfill in a safe and environmentally responsible and lawful manner.

7.5.2 Controls

This procedure will be used to control the following tasks and items:

- Characterisation of the material for class of landfill;
- Movement of material off-site; and
- Transport route to landfill;
- Waste tracking by Liberty Industrial Transport / Tipping Docket
- Waste Register to be kept: record of information from Transport / Tipping Docket

  Ref: FORM 123 – Waste Register

  Ref: Liberty Industrial Transport / Tipping Docket

7.5.3 Actions

The following actions will be followed for managing the off-site disposal of any waste material:

- Stockpiles of material for off-site disposal will be characterised in accordance with the Waste Tracking Guidelines (NSW EPA). If necessary, stockpile samples will be tested for heavy metals including the leachable fraction;
- Material will be transported off-site to approved EPA landfill sites by certified waste transport contractor

  If required, application for a waste transport certificate to be approved by the NSW EPA;
- All movement of material offsite is to be recorded using the General Waste Register;
- Trucks are to be roadworthy and operated in accordance with transport regulations;
- Two-way radios or mobile phone to be provided in all trucks in case of emergency;
- Truck loads are to be covered with tarpaulins prior to leaving the site to prevent dust emissions whilst in transit (excluding scrap metal loads);
- Trucks to exit site utilising the Traffic Management Plan;
- Off-site transport routes will be decided upon prior to any loads being removed from site; and
- The road condition at the entrance/exit to the work site will be monitored continuously and swept/washed as necessary;

Ref: Traffic Management Plan

7.5.4 Monitoring and reporting

Monitoring and reporting will include:

- Accidents involving the spillage of material from trucks and the corrective action undertaken is to be reported in an Incident Report form;
- Traffic accidents are to be reported to the Police, and verbally to the Project Manager immediately following the incident; and
- Routine random checks will be undertaken by the company Supervisor to ensure the loads are secure and conform to this procedure;

7.5.5 Asbestos transport NSW

In NSW the transport of more than 10 square meters of asbestos sheeting, or 100 kilograms of asbestos waste must be reported to the EPA. Asbestos transporters and facilities receiving asbestos waste must report the movement of this waste to the EPA using WasteLocate. Each load of asbestos waste needs to have a unique EPA consignment ID, which the transport company must generate using WasteLocate. The unique EPA consignment ID will allow each load to be monitored from the place of generation to the site of disposal.

The following actions will be followed for managing the off-site disposal of Asbestos in NSW:

- Quantity and description of asbestos waste will be advised to transport company when engaged.
- The unique EPA consignment ID will be sited before the Asbestos waste is allowed to leave site.
- The transport company will supply Liberty Industrial with a copy of the WasteLocate consignment after delivery to designated waste facility.
- A copy of the WasteLocate consignment note will be saved by Liberty Industrial.

7.6 SURFACE RUNOFF MANAGEMENT PROCEDURE

7.6.1 Objective

The objective of this procedure is to prevent soil erosion of disturbed ground surfaces and potentially waste runoff from entering waterways.

7.6.2 Actions

- The following actions are to be followed for managing surface runoff from waste material.
- All stormwater inlets servicing the project area are to be protected with sediment controls as per the Environmental Management Plan and stormwater sediment control plan drawing;

- Stockpiles of waste will be stored only on exposed surfaces of waste to prevent contaminating clean ground as per the Environmental Management Plan and stormwater sediment control plan drawing, and will also form part of the weekly inspections;
- If required, a dust suppressant will be applied over the clean soil cover following placement to stabilise the ground surface.

7.6.3 Monitoring and reporting

Monitoring and reporting will include:

- Routine random checks will be undertaken by the Site Supervisor of the stormwater system and any bunding to ensure conformance to this procedure; and
- Should there be any uncontrolled surface runoff or uncontained erosion of waste, the incident and any corrective action undertaken is to be reported and recorded in QSE.

Ref: Soil and Erosion Management Plan

Appendix A - Soil and Erosion Control Plan

APPENDIX A – SOIL AND EROSION CONTROL PLAN

19 APPENDIX B6 MICROBAT MANAGEMENT PLAN

The new Sydney Fish Market: Microbat Management Plan

Infrastructure NSW

ecological AUSTRALIA
A TETRA TECH COMPANY

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DOCUMENT TRACKING

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UrbanGrowth NSW Development Corporation (UrbanGrowth NSW) was abolished on 1 July 2019 with all functions transferred to Infrastructure NSW. Any reference to UrbanGrowth NSW throughout this report is interchangeable with Infrastructure NSW (INSW).

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Template 2.8.1

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Abbreviations

Abbreviation	Description
ABLV	Australian Bat Lyssavirus
BC Act	*Biodiversity Conservation Act 2016*
EES	Environment, Energy and Science division of the Department of Planning, Industry and Environment
ELA	Eco Logical Australia Pty Ltd
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
MMP	Microbat Management Plan

1. Introduction

This Microbat Management Plan (MMP) has been updated since its lodgement with the development application for the new Sydney Fish Market (MMP – Version 2 dated 6 May 2020). The current version has been prepared to include an addendum to summarise exclusion activity to date and present revisions to the recommended actions required during demolition and construction.

The reason for this addendum MMP is that during the tender process for the wharf demolition works, which commenced after the exclusion process had begun, the actions required during demolition were identified as being unsafe to perform. Once the demolition process has commenced and the wharf structures are fractured by machinery, all areas of the wharf are unsafe for personnel. Therefore, previous recommendations of replacing the exclusion curtain nightly across the active demolition face, and monitoring bat activity are not possible. This addendum MMP identifies that those actions previously committed by Infrastructure NSW cannot be undertaken. Once the demolition contractor takes control of the site, inspection and monitoring of any remaining bats beneath the wharf will not occur. During physical destruction of the site, the exclusion curtain will be severed and not repaired, potentially allowing bats to enter beneath the wharf undetected. To minimise the risk of microbats being harmed during demolition, the original exclusion processes was extended from the end of May to mid-August 2020. As of 31 July, no bat activity had been recorded beneath the wharf since 22 July.

In addition, actions to secure a second site for box installation were ongoing at the initiation of the MMP and additional detail has been provided in Section 2.4.

Key amendments are marked in this version as either underlined (additional wording) or struck through (removed from the MMP). Unless stated otherwise, the remainder of the relevant MMP sections remain the same as version 2. Once endorsed by Environment, Energy and Science Group (EES) of the Department of Planning Industry and Energy, this addendum MMP (version 5) will supersede actions outlined in Section 3.4 of the MMP (version 2) and constitute the MMP required as a sub-environmental management plan (sub-plan) of the Construction Environmental Management Plans (CEMPs) under the development consents for State significant developments SSD 8924 and SSD 8925.

1.1 Proposal background

Eco Logical Australia (ELA) have been engaged by Infrastructure NSW to prepare a Microbat Management Plan (MMP) for the construction of a new Sydney Fish Market at Blackwattle Bay (the subject site).

The subject site is located at the head of Blackwattle Bay between the Pyrmont Peninsula and the foreshore of Glebe. It is situated less than 2 km west of Sydney's CBD and is partially within the City of Sydney Local Government Area.

The subject site comprises of a range of marine piles, wharves and jetties constructed from a mixture of materials including timber, concrete and steel. As such, the subject site includes structures both above and below the mean high-water mark. There are also several disused buildings located on the structure that are in variable condition, with some derelict and inaccessible and others relatively uncompromised. Drainage networks are present under the wharf and a culvert is located underneath the wharf at the

western end of the subject site. Overall, the subject site covers an area of approximately 36,800 m² (Figure 1).

Infrastructure NSW are proposing to demolish all existing land and water-based structures on the subject site. The demolition works will include the removal of marine piles, wharves and jetties. Repairs to the existing sea wall will also be undertaken. Works include the relocation of all services and the construction of a new Sydney Fish Market including multiple land and water-based structures.

A range of targeted microbat surveys were carried out at the subject site by ELA between February and April 2020, following a requirement by EES to assess the wharves and old buildings as potential habitat at the site and for possible impacts (as 'prescribed impacts' under the Biodiversity Assessment Methodology, OEH 2017. These surveys included two separate ultrasonic detector surveys, diurnal visual inspection of the structures above and below the wharf structures, a nocturnal emergence survey of the structures from the water combined with ultrasonic recording and thermal imaging cameras, and searches for alternative microbat roosting habitat within a 2 km radius of the subject site.

The results of these surveys indicated that there is potential microbat roosting habitat present on site both within a derelict building and beneath the wharf structures (Figure 2– Figure 7). A small colony of *Myotis macropus* (Southern Myotis) and individuals or small numbers of *Miniopterus orianae oceanensis* (Large Bent-winged Bats) are likely to be roosting within the wharf structures, although the exact location of any roosts could not be determined due to the challenging access and complexity of the wharf structure. Access to the potential microbat roosting sites beneath the wharf structures is by boat and is restricted by the depth of water and the large number of densely positioned piles and cabling, pipes, cross supports and other structures.

This MMP sets out the measures required to manage risks to microbats prior to, during and post construction works. The proposed demolition and construction works have the potential to impact microbats in the following ways:

- Death / injury of individual bats during works – roosting bats can be easily overlooked during daylight when they are in torpor and will often remain in a roost when threatened during daylight hours rather than risk predation by leaving roosts during daylight.
- Loss of roosting habitat – a reduction in the amount of suitable roosting habitat locally available, may lead to increased competition or an overcrowding of remaining roosting resources.
- Disruption of reproductive behaviour – microbats may be susceptible to reduced breeding success if they are unable to locate a suitable alternative breeding roost.
- Disturbance during works – excessive noise (especially high pitched), dust and vibrations above the general background levels may cause bats to arouse more often during daylight hours. Microbats are nocturnal and any activity when they would normally be resting has potential to reduce energy reserves and ultimately lead to starvation and possibly eventually death.

1.2 Objective and aims

The overarching objective of this MMP is to minimise impacts to threatened microbat populations as a result of the proposed demolition of land and water-based structures within the subject site and the subsequent construction of a new Sydney Fish Market. To achieve this the MMP:

- Identifies threatened microbat species listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), known or likely to occur on site and listed in the BDAR prepared by ELA that may be potentially impacted by works.
- Reduces the potential for death or injury to microbat species as a result of the proposed works by excluding microbats from the subject site prior to works, and planning exclusion works for the least sensitive time of year for the species present or likely to be present.
- Provides details of microbat exclusion procedures and other management measures required to minimise any potential impacts to microbats for the duration of the works.
- Provides advice and design specifications for the installation of alternative microbat roosting habitat and the replacement of microbat roosting habitat within the new Sydney Fish Market or as close as possible to the subject site within Blackwattle Bay.
- Identifies the risks to construction personnel working in close proximity to microbat roosts.
- Outlines procedures for mitigating risks to construction personnel and provides agreed procedures for managing unexpected microbat finds during proposed works.
- Identifies monitoring and reporting requirements and/or responsibilities with respect to the actions outlined in this MMP.

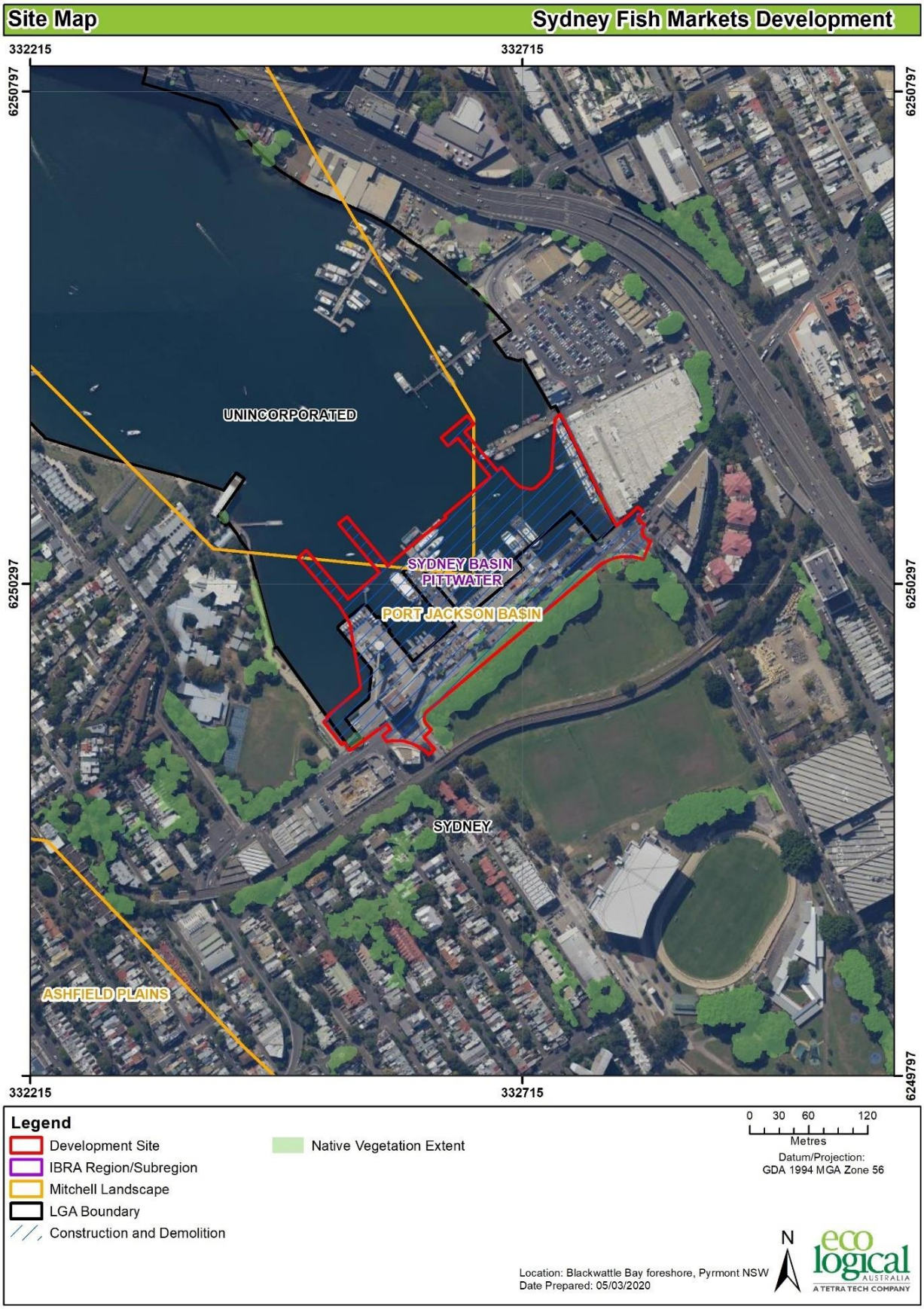

Figure 1: Location of the Subject site between Blackwattle Bay and the Pyrmont Peninsula

Figure 2: The Subject site and location of the new Sydney Fish Markets, showing location and range of potential microbat habitat on site

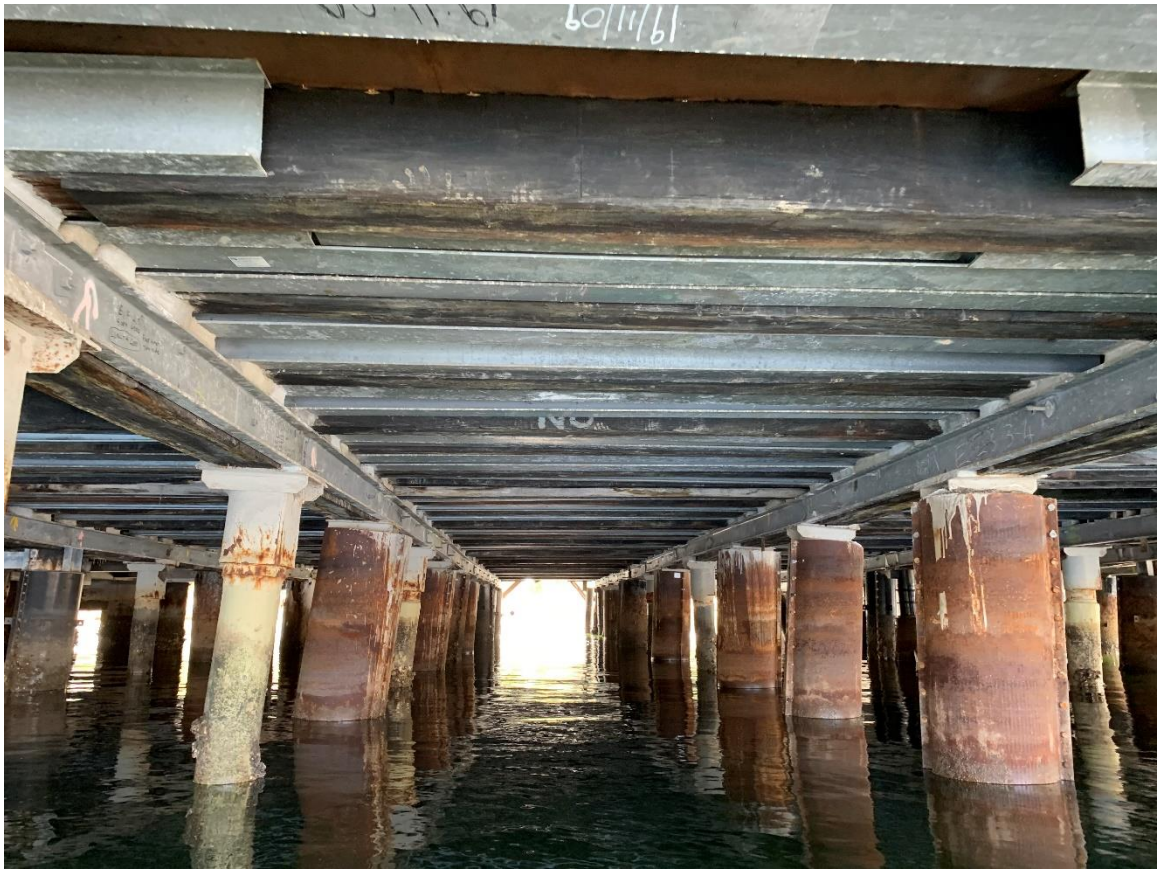

Figure 3: Marine piles and cross beams provide crevices that have the potential to be microbat roosting habitat

Figure 4: Degraded timber and concrete expansion joints that have the potential to be microbat roosting habitat at the Subject site.

Figure 5: Degraded timber posts and beams have potential to be roosting habitat for microbats

Figure 6: Some cement culverts and drains within the Subject site have potential to be microbat roosting habitat where the tide levels leave a gap of 1 m or more between the upper tidal limit and the top of the culvert

Figure 7: The derelict building at the northern end of the Subject site showing multiple potential entry / exit points into cavities within the building that could be used as microbat roosting habitat

2. Summary of microbat survey and roost assessment conducted at the subject site

2.1 Aims and objectives

During early 2020, ELA undertook several targeted surveys of the subject site in order to assess the potential for it to contain microbat roosting or breeding habitat as part of the assessment for the BDAR and to inform the preparation of this MMP. Due to the absence of Plant Community Types (PCTs) within the development site, no ecosystem credit or species credit species were predicted to occur. To determine the Likelihood of Occurrence of threatened species, a 10 km search of BioNet records of threatened species under the BC Act, and 10 km Protected Matters search for threatened species under the EPBC Act, was conducted.

These data base searches, and the advice provided by EES produced a list of six potentially affected microbat species:

- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle)
- *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat)
- *Miniopterus australis* (Little Bent-winged Bat)
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat)
- *Myotis macropus* (Southern Myotis)
- *Scoteanax rueppellii* (Greater Broad-nosed Bat).

Southern Myotis is listed as a species credit species with breeding habitat (i.e. wharf, culverts and buildings) and foraging habitat (waterbodies) considered present within the development site. The two Bent-winged Bats are dual species, however, suitable breeding habitat (i.e. caves) are not present in the development site. The remaining species are listed as ecosystem species and do not require targeted surveys consistent with BAM. However, targeted surveys for all microbats and microbat roosting habitat were conducted under the wharf structures and at one of the buildings and assessed as part of assessment of Prescribed Impacts.

Targeted microbat surveys were undertaken in accordance with the '*Species credit' threatened bats and their habitats NSW survey guide for the Biodiversity Assessment Methodology* (OEH 2018).

Targeted microbat surveys at the subject site included:

- diurnal external structure inspection of the buildings on 14 February 2020 for a total of 2 person hours
- 55 nights of acoustic recording across the site in two separate survey periods, between 17 and 20 February and between 27 and 30 March 2020
- diurnal external structure inspection by boat beneath the wharves on 27 March 2020 which categorised the microbat habitat present beneath the structure into high, medium and low value and searched for evidence of microbats or their roosts for a total of 8 person hours (Figure 2)
- diurnal inspection from the land (24 April 2020) and water (31 March 2020) of surrounding structures and potential microbat habitat (wharves, jetties, piles, culverts, bridges) within 2 km of the subject site for a total effort of 4 person hours

- emergence survey of the southern wharf at dusk from the water using three acoustic detectors and three thermal imaging cameras conducted by three ecologists on 8 April 2020 for a total survey effort of 4.5 person hours.

The aim of the targeted microbat surveys was to determine whether microbats are present within the subject site, determine which microbat species are present, and if they are likely to be roosting within the structures and buildings present within the subject site.

2.2 Summary of results of targeted surveys

2.2.1 Diurnal structure inspection of buildings

Visual surveys of the external surfaces of the buildings were conducted from the wharf to determine if the wharf or buildings within the development site contain potential openings into sheltered crevices that could be utilised by microbats as roosting habitat. The building structure at the northern end of the wharf is a derelict brick building that has been mostly boarded up but still has several obvious small entrances that could be used by microbats as roosting habitat. This survey found that potential microbat roosting and foraging habitat exists at the development site in the form of numerous gaps, cracks and crevices within the structure of the wharf and within one of the buildings on site.

2.2.2 Ultrasonic surveys

Analysis of the ultrasonic call profiles indicated that at least seven (7) and up to thirteen (13) different species of microbat were recorded ultrasonically at the Subject site (ELA 2020). This included up to four threatened species listed as vulnerable under the BC Act, *Miniopterus orianae oceanensis* (Large Bent-winged Bat), *Myotis macropus* (Southern Myotis), *Saccolaimus flaviventris* (Yellow-bellied Sheath-tailed Bat) and *Vespadelus troughtoni* (Eastern Cave Bat).

Based on the call profiles, *Miniopterus orianae oceanensis* (Large Bent-winged Bat) and *Myotis macropus* (Southern Myotis) both listed as Vulnerable under the BC Act were deemed to definitely be present within the study area. *Vespadelus troughtoni* (Eastern Cave Bat) and *Saccolaimus flaviventris* (Yellow-bellied Sheath-tailed Bat), which are also listed as Vulnerable under the BC Act, are potentially present within the study area. Three other non -threatened microbat species were also deemed to be definitely present within the study area and may also roost in the structures present on site; *Chalinolobus gouldii* (Gould's Wattled Bat), *Chalinolobus morio* (Chocolate Wattled Bat) and *Ozimops ridei* (Ride's Free-tailed Bat).

The calls of *Vespadelus troughtoni* (Eastern Cave Bat) overlap with those of other more common and non-threatened *Vespadelus* species known to occur in the Sydney Basin and could not be separated based upon the single call recorded at the south western end of the subject site. This species is known to roost in caves and mines and cliff lines. The development site does not support potential roosting or breeding habitat for this species.

The calls of *Saccolaimus flaviventris* (Yellow-bellied Sheath-tailed Bat) overlap with those of the more common and non-threatened *Austronomus australis* (White-striped Free-tailed Bat) and could not be separated based on the recorded call characteristics.

Southern Myotis is known to roost/breed and forage over water. Due to the time calls from Southern Myotis were recorded (prior to sunset and within 1 hour of sunset and sunrise), it is assumed that this species is roosting within the wharf structure. There is potential that the wharf may also provide

maternity roosting habitat. There were approximately 24 Southern Myotis calls per night recorded during the February 2020 surveys. It should be noted that the calls were recorded in relatively low frequency suggesting only small numbers of Southern Myotis are present. From comparison with long term monitoring data gathered by ELA at a range of known Southern Myotis roosts varying in size from 10 to over 200 bats, it is estimated that between 10 and 30 bats are currently roosting at the development site.

There were a small number (<10) of Large-Bent-winged Bat calls recorded in the ultrasonic data between 27 and 30 March. Calls from Large Bent-winged Bats were recorded both outside the building and beneath the wharf. The timing of one of those calls recorded beneath the wharf coincides with the return to roost period in the 2 hours before sunrise. It is therefore possible that an individual or small number of Large Bent-winged Bats (<10) may use the building and wharf as roosting habitat over winter or throughout the year as non-breeding roosting habitat.

The results of the ultrasonic survey are presented in Table 1. Species for which call profiles were definitive are labelled as definitely present (D) and those where there was some level of uncertainty are labelled as potentially present (P). Table 2 describes the ecology and habitat preferences for all six threatened species which have the potential to occur within the subject site, as well as an assessment of whether each of those species would potentially be affected by the proposed works.

Table 1: Results of acoustic microbat surveys at the Subject site (ELA 2020)

Scientific Name	Common Name	Presence
Austronomus australis	White-striped Free-tailed Bat	P
Chalinolobus gouldii	Gould's Wattled Bat	D
Chalinolobus morio	Chocolate Wattled Bat	D
*Miniopterus orianae oceanensis**	Large Bent-winged Bat	D
*Myotis macropus**	Southern Myotis	D
Nyctophilus geoffroyi	Lesser Long-eared Bat	P
Nyctophilus gouldii	Gould's Long-eared Bat	P
Ozimops ridei	Ride's Free-tailed Bat	D
Rhinolophus megaphyllus	Eastern Horseshoe Bat	P
*Saccolaimus flaviventris**	Yellow-bellied Sheath-tailed Bat	P
Vespadelus pumilus	Eastern Forest Bat	P
*Vespadelus troughtoni**	Eastern Cave Bat	P
Vespadelus vulturnus	Little Forest Bat	P

D = definitely present, P = potentially present (ultrasonic call profile overlaps with other species), *listed as Vulnerable under the BC Act.

2.2.3 Mapping of microbat habitat

On 27 March 2020 an inspection of the wharf structures conducted via boat mapped the microbat habitat across the site (Figure 2). This survey identified that the high conservation value microbat roosting habitat is primarily located within the western section of the site, beneath the largest wharf

currently occupied by Hanson. This wharf is approximately 100 m long and 50 m wide. It is constructed of concrete, timber and steel elements reflecting the history or additions and repairs made to the wharf over time. As a result, there are numerous cracks, gaps and crevices created by joins between materials and sections constructed at different times that provides roosting habitat for microbats. In addition, some of the timber elements are degraded and have split, contain fissures or hollowed cores. Some of the concrete elements have also started to delaminate, are peeling, cracked and have broken edges creating more potential microbat roosting habitat.

In contrast the remainder of the wharf structure to the north of the largest jetty is constructed largely of concrete with minimal joints and is generally of low value as microbat roosting habitat. Although there are several jetties projecting into Blackwattle Bay from this section, one of which is also approximately 100 m long and 20 m wide, potential microbat roosting locations are much fewer and less well developed.

2.2.4 Emergence survey

The emergence survey conducted on 8 April 2020 by three ecologists from the water targeted the largest wharf and associated drainage features that were identified in the mapping exercise as being of high conservation value as roosting habitat. Visual observations combined with ultrasonic recording and thermal imaging surveys were undertaken from outside a large culvert and along the edges of the wharf during a 1.5 hour period at dusk. A single microbat was observed flying from beneath the wharf at a time when the ultrasonic detector recorded the calls of Southern Myotis. These results further support the assumption that Southern Myotis are roosting beneath the wharf.

Table 2: Ecology and life history characteristics of six threatened microbat species known to occur or with the potential to roost within the subject site and likelihood of impacts.

Scientific Name	Common Name	BC Act	Distribution	Habitat requirements	Definitely present / Potentially present	Roost preference	Affected species assessment
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	Eastern NSW, from SE Qld to Tasmania	Most often recorded in tall and wet forests with tall trees greater than 20m in height (Churchill 2008; Law et al. 2008). Females are pregnant in late spring to early summer (Churchill 2008; Law et al. 2008).	Potential	Hollow / Subterranean and buildings on occasion	Not an affected species. Not recorded ultrasonically. The buildings on site do not provide significant roosting or breeding habitat for this species.
Miniopterus australis	Little Bent-winged Bat			Prefers well-timbered areas including rainforest, wet and dry sclerophyll forests, Melaleuca swamps and coastal forests (Churchill 2008).	Potential	Subterranean / Hollow on occasion	Not an affected species. Not recorded ultrasonically during surveys for this report. May forage over the site and use land and water-based structures for roosting occasionally.
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	In NSW it occurs predominately east of the Great Dividing Range.	Rainforest, wet and dry sclerophyll forest, monsoon forest, open woodland, paperbark forests and open grassland.	Definitely	Subterranean	Affected species. Definitely recorded ultrasonically during surveys for this report and likely to roost and forage within the study area. May use land and water-based structures for roosting.

Scientific Name	Common Name	BC Act	Distribution	Habitat requirements	Definitely present / Potentially present	Roost preference	Affected species assessment
Myotis macropus	Southern Myotis	V	In NSW, found in the coastal band. It is rarely found more than 100 km inland, except along major rivers.	Foraging habitat is waterbodies (including streams, or lakes or reservoirs) and fringing areas of vegetation up to 20m.	Definitely	Subterranean / Hollow	Affected species. Definitely recorded ultrasonically during surveys for this report and assumed to roost, forage and potentially breed within the land and water-based structures of the subject site.
Saccolaimus flaviventris	Yellow-bellied Sheath-tailed Bat	V	Wide-ranging distribution across Australia. A summer migrant to southern states, including NSW from January - April.	Almost all habitat types.	Potential	Hollow	Not an affected species. Potentially recorded ultrasonically during surveys for this report and likely to forage over the study area. May roost in tree hollows near the subject site.
Scoteanax rueppellii	Greater Broad-nosed Bat	V	In NSW found along the east coast spreading further inland to the Northern Tablelands.	Associated with moist gullies in mature coastal forest, or rainforest, east of the Great Dividing Range (Churchill 2008), tending to be more frequently located in more productive forests (Hoye & Richards 2008).	Potential	Hollow / buildings	Not an affected species. Not recorded ultrasonically. The buildings on site do not provide significant roosting or breeding habitat for this species.

2.3 Discussion

The results of the targeted microbat survey and impact assessment undertaken by ELA (2020) at the subject site indicate that:

- The site contains multiple potential microbat roost locations within the wharf structures and within the derelict building that could be used throughout the year by a range of microbat species (Figure 2)
- The exact location of any microbat roosts have not been able to be identified at the subject site
- Access to the underside of the wharf structure is by boat and is limited by shallow water and the close proximity of supporting piles. This, combined with the sheer number of potential microbat roosting locations prevents a complete visual assessment of all potential microbat roosting habitat at the subject site
- The derelict building and wharf structures on site represent microbat roosting habitat (Figure 2 – Figure 7) for at least two threatened subterranean roosting microbat species recorded on site during surveys:
    - Large Bent-winged Bat
    - Southern Myotis.
- It is estimated that between 10 and 30 Southern Myotis roost at the subject site with the most likely location assumed to be towards the landward end of the largest wharf at the western end of the site
- The wharf structures and to a lesser extent the derelict building at the subject site also represent potential breeding habitat for Southern Myotis which is known to occur on site and commonly roosts and breeds in similar structures.
- It is estimated that less than 10 Large-Bent-winged Bats may use the site as a non-breeding roost throughout the year or as winter roosting habitat
- From the number of potential roosting spaces available at the site, it is estimated that a colony of approximately 150 Southern Myotis could be accommodated, assuming that the colony would utilise several different roosting locations within the wharf structures (but primarily within the largest wharf at the western end of the site).
- Several other threatened microbat species have the potential to roost in the building or wharf structures on site but were not recorded during surveys and are unlikely to be impacted by proposed works:
    - Eastern Coastal Free-tailed Bat
    - Eastern False Pipistrelle
    - Greater Broad-nosed Bat
    - Little Bent-winged Bat.
- There were several non-threatened microbat species recorded on site that also have the potential to roost within the derelict building or wharf structures:
    - Chocolate Wattled Bat
    - Gould's Wattled Bat
    - Ride's Free-tailed Bat

Large Bent-winged Bats are subterranean roosting species known to occur within the subject site. Large Bent-winged Bats congregate in large numbers at a few known and often shared maternity caves over spring and summer to breed and raise young and disperse to winter hibernation roosts in autumn

(Churchill, 2008). Large Bent-winged Bat winter hibernation roosts can be up to 300 km away from maternity roosts. A known Large Bent-winged Bat winter roost is found in Summer Hill, 5km from the subject site.

Large Bent-winged Bats were confirmed as occurring at the subject site and one call was recorded within the 2 hours preceding sunrise indicating that an individual or small number (<10) of this species could be roosting on site but there was no roosting location confirmed (ELA 2020). This species is likely to forage over the subject site and individuals or small numbers of bats may roost within either the land or water-based structures on site. The concrete structures, building and culvert do represent potential roosting habitat for Large Bent-winged Bats. These features are unlikely to constitute significant breeding habitat because of the limited capacity to accommodate the large numbers of Bent-winged Bats required to generate enough heat in the maternity roosts for the development of young.

Southern Myotis roost in subterranean habitats such as bridges, stormwater culverts, tunnels, bunkers, mines and drains. This species has a strong association with permanent waterways and consistently roost in close proximity to water (Churchill, 2008; Campbell, 2009). This species forages exclusively over water, trawling the surface for small insects and aquatic species such as fish and crustaceans (Barclay & Harder 2003).

Southern Myotis were confirmed as occurring at the subject site and from the timing of the recorded calls and observations made during emergence surveys, this species is known to be roosting beneath the wharf but the exact location of the roost was unable to be confirmed (ELA 2020). This species is known to forage over the waters of Sydney Harbour, with a maternity roost and the nearest foraging 'hot spot' located in the western harbour approximately 4 km from the subject site (Gonsalves and Law 2017).

Gonsalves and Law (2017) found that the waters of the southern bays of the western harbour precinct (Rozelle Bay, Blackwattle Bay and Pirrama Park and surrounding Goat Island) recorded much lower Southern Myotis activity and foraging levels than those recorded at the nearby maternity roost. Activity levels of Southern Myotis in the studies completed for this assessment in Blackwattle Bay were in the order of 24 calls per night which is significantly higher than activity levels recorded in Blackwattle Bay by Gonsalves and Law (0 – 1.2 calls per night) during their study conducted in 2015. Activity levels at the known maternity roost (containing approximately 50 Southern Myotis) as reported by Gonsalves and Law (2017) were in the order of 234 – 312 calls per night.

Given the cessation of marine activities and some of the land-based industries at the subject site over the past couple of years, it is possible Southern Myotis activity at the site has increased in response to the decreased disturbance levels. As the population size of the Southern Myotis maternity roost 4 km from the site increases, the likelihood of splinter roosts associated with the maternity colony being created within nightly foraging range (4 – 12 km) also increases where suitable roosting and foraging habitat is present. The concrete structures, culverts and timber marine piles at the subject site do represent potential roosting and maternity habitat for Southern Myotis.

2.4 Investigation of locations for installation of compensatory habitat

Prior to enacting an exclusion, alternative roosting habitat for microbats that will be displaced by the exclusion must be installed or located. It is important to note that many species of microbat change roosts regularly and depend upon a series of roosts within nightly foraging range for their survival. It is

assumed that all species of microbat will have knowledge of at least one other alternative roost site within nightly foraging range of the known roost location.

Recent studies have shown that Southern Myotis roosts in particular can be permanently inhabited with little or no movement away from the maternity roost throughout the year (Gonsalves and Law 2017, Gorecki 2019, in prep). Some Southern Myotis roosts can also be historically inhabited over many generations and in such cases, individuals can be very reluctant to roost elsewhere (Alicia Scanlon, pers comm.).

Compensatory habitat for Southern Myotis often takes the form of bat boxes installed beneath suitable structures. It is critical to carefully consider the location for installation of bat boxes in order for them to provide suitable alternative habitat for the target species. Important considerations relating to the selection of a suitable location for installation include:

- insulation from rain, wind, light and extremes of temperature
- directly over water (a requirement specifically for Southern Myotis roosting habitat)
- free from human disturbance
- provide some protection from predators
- the ability to view the interior of the bat box to allow for ease of monitoring, and
- tenure of the structure to which the bat boxes will be attached.

During April 2020, ELA inspected five sites located within 2 km of the Subject site to determine their suitability for the installation of compensatory bat boxes (Table 3 and Figure 8). A range of features of each site were inspected and recorded to provide an assessment of how suitable they would likely be as locations for compensatory bat roosting boxes. Two potential locations were identified with the closest most suitable locations determined to be:

- a timber wharf extending around Pirrama Park at Johnston's Bay (Figure 9 – Figure 11)
- a concrete bridge over White's Creek under The Crescent / City West Link at the head of Rozelle Bay (Figure 12).

Both of these locations are approximately 1.5 km from the Subject site and no suitable locations were found any closer to the Subject site.

The wharf at Johnston's Bay provides protection from the weather and predators, is relatively free from human disturbance, is directly over water, and has multiple suitable locations for the installation of bat boxes (Figure 9 – Figure 11). The site encircles Pirrama Park and has options for placing boxes on a northerly, easterly and westerly outlook. Light levels in the afternoon need to be examined before boxes are installed at this location.

The timber wharf near the pontoon area of Pirrama Park has wooden beams approximately 1-2 meters above the mean high-water mark providing enough space for boxes to be installed and allowing enough free air space for bats to drop out and fly before contacting the water (Figure 10). Brackets for the boxes could be drilled into the timber beams. In addition, underneath the pedestrian area on the landward side of some remnant wooden piers, the wooden beams and metal joins underneath the wharf provide another potential location for the installation of bat boxes. There are also sections of steel beam which have a gap between each beam large enough to accommodate bat boxes. Installation and inspection of bat boxes would need to be conducted by boat.

The concrete bridge over White's Creek under The Crescent / City West Link at the head of Rozelle Bay provides good protection from the weather and predators, is relatively free from human disturbance, is directly over water, and has multiple suitable locations for the installation of bat boxes (Figure 12). Installation and inspection of bat boxes would need to be conducted by boat.

2.4.1 Installation of alternative compensatory habitat

Alternative compensatory habitat should be installed at either or both of the suitable identified locations within 2 km of the subject site least one week, but preferably one month prior to any exclusion or construction activities commencing at the subject site. However, this timing could not be met due to challenges with securing permission at suitable sites and to meet the initial exclusion schedule by the end of May 2020 (see timing of box installation in Table 3). Roost selection by microbats is poorly understood in Australia and there is evidence to suggest that a range of factors including very subtle microclimatic variables influence the selection process. For this reason, there is no guarantee that a bat box will be inhabited by microbats displaced from existing roosts despite careful selection of an alternative location for bat box placement. It is therefore recommended that several alternative roosting options be provided.

A ratio of 1 loss of habitat to 4 alternative compensatory bat boxes placed at more than one location is recommended in this situation. Based upon the estimated number of between 10 and 30 Southern Myotis roosting within the subject site and the large number of potential roosting locations present, four x four-chamber microbat roosting boxes (estimated capacity of 30-50 microbats each) should be installed in at least two separate locations within 2 km of the existing roosts prior to the commencement of exclusion process. This will provide a range of roosting options similar to that available within the subject site but allow microbats to select the most suitable alternative roosting locations for their needs and will also allow for movement of the colony between bat boxes / locations. Provision of bat boxes in close proximity to the existing roosts ensures that any bats attempting to return to the existing structures later in the morning following the nocturnal exclusion are not caught short and have a safe location in which to roost during the day light hours.

Appendix B provides detail of four chambered microbat roosting boxes available from Hollow Log Homes (Figure 15). It is preferable for any bat boxes to be installed on brackets so that they can be temporarily moved when maintenance or repairs to the host structure are required and to allow for future management of the roosting habitat.

All bat boxes installed must have a unique identifier and the following data recorded for future monitoring and reporting:

- Date installed
- Unique ID number or code
- Easting and northing
- Name of drainage line, or closest drainage line
- Box type
- Aspect
- Box height above ground
- Distance to water
- Structure type

- Structure size
- Structure composition (concrete / timber).

It will be important to monitor the compensatory habitat to determine whether the bat boxes have been successful and are being utilised by microbats on an ongoing basis for a range of life cycle functions. Details of the required monitoring are provided in Section 8.

Addendum

White's Creek / The Crescent was ruled out as a potential bat box receptor site in discussions with Transport for NSW because of future redevelopment plans for this location.

During May 2020, the search for a second suitable location for installation of bat boxes was expanded to include the neighbouring bays of Balmain, Leichardt, Iron Cove and Dobroyd Point as well as some Sydney Harbour islands. Table 3 below has been updated to include all locations that have been considered as potential bat box receptor sites.

The Glebe Rowing Club footbridge and Sydney University Canoe Club boatshed, plus the entire foreshore of Blackwattle Bay, Rozelle Bay, Jones Bay, Johnstons Bay and Whites Bay were rapidly assessed via boat prior to the more detailed foot inspection outlined in the MMP. Most wharves in this area are concrete commercial wharves with regular boat activity that would limit routine inspections and provide high levels of disturbance during the day.

Timber structures are preferred over narrow concrete wharves. Tide height was considered, with the aim to find structures with enough clearance below any boxes for a clear and unobstructed flight path. Public access and vandalism was considered, with sites accessible to people walking the intertidal area ruled out.

Excessive light and exposure to the elements was considered, ruling out many narrow jetties and boardwalks. The Sydney University Canoe Club boatshed and Glebe Rowing Club footbridge queried by The City of Sydney were excluded because the footbridge is exposed to high light levels, is too narrow and publicly accessible at low tide. Sites beneath the boatshed are limited by low clearance between the mean high water mark and any installed boxes, being at the limit of what is considered safe for bats but was pursued as a potential receptor site because of proximity to the existing roosts.

The resultant searches and enquiries seeking approval to install boxes progressed at four locations, Goat Island (NPWS), Sydney University Canoe Club (Sydney University), Poulos Bros Seafoods building (Poulos Bros Seafoods) and Mort Bay Park (Inner West City Council). Goat Island was removed from the list of potential locations because termite treatment was occurring in the vicinity of the potential receptor site. Chemicals used as part of the termite treatment process are poisonous to microbats. Both Poulos Bros Seafoods and Sydney University Canoe Club were approached for permission to install bat boxes. Both entities declined permission. Mort Bay Reserve was approved as a receptor site for bat box install, with three hardwood boxes installed on 16 June 2020.

During the licence application process, EES suggested that a number of the bat boxes installed could be constructed from hardwood (not only plywood and Cyplas) to ensure longevity when exposed to the maritime climate. Although there is evidence that Southern Myotis use the Cyplas boxes, long term usage has not been documented because this material is new to the market. The lifespan of a Cyplas box is estimated to be at least 30 years and potentially much more than that, providing obvious benefits

over plywood and hardwood timber boxes in the longer term. The lifespan of a timber box is very dependent upon prevailing weather conditions. Boxes for Myotis placed under bridges and in culverts can last longer than those placed in trees because they are better protected from the elements. Boxes constructed from a range of materials will be installed.

Figure 8: Map showing the locations within 2 km of the Subject site inspected and assessed for their suitability as receptor sites for compensatory roosting habitat in the form of bat boxes

Figure 9: Section of the jetty at Pirrama Park, Johnstons Bay providing an example of a potential receptor site for compensatory bat boxes.

Figure 10: Section of the jetty at Pirrama Park, Johnstons Bay showing the timber elements which could provide a suitable point of attachment for compensatory bat boxes

Figure 11: View of the timber pedestrian jetty encircling Pirrama Park, Johnstons Bay that has been identified as a potential location for installation of compensatory bat boxes.

Figure 12: Concrete bridge over White's Creek beneath The Crescent / City West Link, Rozelle Bay that has been identified as a suitable receptor location for compensatory bat box installation.

Table 3: Results of a diurnal land and water-based survey of five potential sites for installation of compensatory habitat within 2 km of the Subject site (see Figure 8 for locations)

Location	Summary of habitat available at site	Suitable/Unsuitable
Pirrama Park – Johnstons Bay	Timber and concrete wharf and jetty structure. Multiple potential receptor locations. The timber wharf near the pontoon area has some wooden beams approx. 1-2m above the water. Boxes could be drilled into the wood here. Underneath the pedestrian area on landward side of remnant wooden piers there are some wooden beams and metal joins underneath the wharf the whole way along which may be appropriate to install boxes. Sections of steel beam which had a gap – boxes could be installed here either by attachment around the gap or putting a box within the gap. Locations on the water side of the old derelict pontoon are fairly exposed to light and weather as the pontoon covers a small surface area (<16 m^2). All areas under the wharf could be investigated further as potential box locations. Pirrama Park wharf has a horizontal depth of about 10 m and is low enough to provide shade (north and west facing area), including consideration of a low westerly sunset and reflection off the water. Large cross beams provide additional shelter from the elements. Box positioning is best at the rear of the wharf, whilst considering boat access and obstacles to flight. The easterly aspect of the wharf was considered too exposed to light and cross-winds because the wharf here does not connect with land (NE point). The owners of the site are TfNSW however Place Management NSW (PMNSW) has a long-term lease over the site. The potential bat box locations were discussed with PMNSW so the boxes can be placed in areas that are unlikely to be disturbed.	Suitable – approval granted by Pace Management NSW (PMNSW). Four four-chambered microbat boxes constructed from recycled plastic (CyplasTM) were installed as part of this MMP on 19 May 2020, two days prior to the first exclusion door being closed at the wharf.
Whites Creek – The Crescent	Concrete bridge spanning White's Creek with approximately 1 m clearance from mean high-water level.	Suitable – but ruled out because of future redevelopment
Whites Creek – Train Tunnel	Brick arch bridge with graffiti at base on either side of arch. Site prone to human disturbance and higher than desirable light levels.	Unsuitable
Whites Creek – Brenan Street	Concrete bridge with a lot of graffiti. Water level very low. High potential for disturbance and vandalism.	Unsuitable
Johnstons Creek – The Crescent	Concrete bridge with lots of graffiti, however less prone to disturbance and vandalism due to a fence.	Unsuitable
Johnstons Creek – The Crescent	Concrete bridge with lots of graffiti, however less prone to disturbance and vandalism due to a fence.	Unsuitable
Rozelle Bay	Inspected by boat, no suitable structures observed, continuous seawall on eastern side of bay, commercial	Unsuitable

Location	Summary of habitat available at site	Suitable/Unsuitable
	wharves on western side of bay will be disturbed by large boat traffic.	
Johnstons Bay	Inspected by boat and kayak, no suitable structures observed other than Pirrama Park wharf. Continuous seawall on eastern side of bay, commercial wharves on western side of bay will be disturbed by large boat traffic.	Unsuitable
Glebe Island Bridge	Steel structure inspected by boat and kayak, very large clearance above water level (>10 m) and exposed to wind and high light levels. High bird usage. Several locations where bat boxes could be installed on eastern bridge span if no other suitable locations secured.	Unsuitable
Goat Island	Several suitable structures including the public pontoon on the south-western end of the island and a number of large trees overhanging the water on the western side of the island. Public pontoon inspected by kayak, timber piles and girders with concrete deck. Numerous potential locations for installation of boxes beneath public pontoon with clearance above mean high water mark of approx. 1 m. Termite damage and treatment occurring – chemicals used for termite treatment are poisonous to microbats. Also, high wash zone from passing ferries with risk that boxes could receive splashback during high tides.	Unsuitable
Ewenton Park – Balmain East	No suitable structures, continuous seawall, restricted access to this bay due to Water Police depot.	Unsuitable
Iron Cove Bridge	Assessed from land, large clearance above water level (>15 m) and exposed to wind and high light levels.	Unsuitable
Rodd Park	No suitable structures, ultrasonic and visual survey conducted around entire foreshore, no Myotis recorded.	Unsuitable
Dobroyd Point foreshore	Several locations where the mangrove community is developing around Henley Marine Drive but is generally not more than a couple of trees wide. High light levels surrounding southern and western edges of this bay. Bat boxes could be installed on mangrove trees. Boxes would be accessible by people fishing from the shore and by boat. Limited evidence of Myotis presence in this bay.	Unsuitable
Leichardt Park – Callan Park	No suitable structures located, continuous seawall. Low light levels on this side of the bay as a result of Leichardt Park and Callan Park woodlands and parklands. Ultrasonic and visual survey conducted along this foreshore with Myotis recorded foraging in the adjacent bay.	Unsuitable
Bridgewater Park – Balmain	No suitable structures, continuous seawall.	Unsuitable
Balmain Cove Park	No suitable structures, continuous seawall.	Unsuitable
Balmain Sailing Club – Water Street Reserve	Large timber wharf with adequate clearance above high water level and several potential sites for box installation. Some elevated light levels as a result of gaps between single layer of timber decking. Fairly quiet location, wharf not regularly utilised by boats due to adjacent marina.	Suitable – no further investigations made

Location	Summary of habitat available at site	Suitable/Unsuitable
Dawn Fraser Baths – Elkington Park	Timber wharf surrounding public baths, clearance above mean high water mark is not high enough for successful box placement.	Unsuitable
Mort Bay Park – Balmain	Large concrete wharf with adequate clearance above mean high water (>1 m) and ample potential locations for installation of bat boxes. Wharf extends seaward >10 m creating ideal dark and protected sites beneath for bat box install. Concrete composition provides excellent insulating properties. Wharf is not used for commercial purposes and will have very limited external disturbances. Surveyed from abutment beneath the wharf and ultrasonically with Myotis calls detected. Ideal location for Myotis bat boxes.	Suitable – approval granted by Inner West City Council. Three hardwood boxes were installed at Mort Bay on 16 June 2020 (2 x single chambered, 1 x multichambered)
Poulos Bros – Blackwattle Bay	Concrete wharf extending <5 m from land. Clearance above mean high water approx. 1m. Wharf appears to be unused, as there are deteriorating elements that would make regular use by commercial boats unlikely. Several potential locations for bat box install. Close to existing roosts. Long-term prospects uncertain as this site forms part of the Master Plan area of Blackwattle Bay earmarked for future redevelopment.	Suitable – but ruled out because of future redevelopment
University of Sydney Canoe Club Boatshed – Blackwattle Bay	Timber wharf extending >15 m from land, but fairly narrow (<8 m wide) and low clearance above mean high water 50 cm – 1 m. Dark, sheltered location very close to existing roosts. Potentially susceptible to disturbance as can be accessed from land at low tide.	Partially suitable – but ruled out due to undisclosed issues with the site
Glebe Island Rowing Club footbridge	Timber wharf, very narrow and exposed to high levels of light pollution. Also, readily accessible by humans from below at low tide.	Unsuitable

3. Microbat Management Plan

3.1 Approach

The exclusion of microbats from the subject site is required because of the risk of injury and death to microbats from the proposed removal of land and water-based structures. The exclusion should be undertaken using methods considered to be best practice by leading bat experts. Given the large number of potential roost spaces and the difficulties of accessing and inspecting them it is unlikely that the supervising ecologist could be certain that the potential roosting habitat is bat free based upon diurnal visual inspection. For this reason, the exclusion must be undertaken gradually and in a staged manner, with sections of the land and water-based structures incrementally excluded to bats over a multi-night period.

Key actions outlined in the MMP involve the following main tasks:

- A project ecologist should be appointed by Infrastructure NSW to ensure the MMP is delivered according to specifications. An ecologist is considered to be an individual with a minimum of five years extensive experience in microbat ecology and management and will have undertaken at least three successful roost exclusions previous to this work. They will hold a NPWS Scientific Licence and Animal Care and Ethics Committee approval as well as current Australian Bat Lyssavirus (ABLV) vaccination (immunity levels tested and acceptable within the last 2 years).
- The exclusion of bats from roosting habitat at the subject site must be planned to avoid periods of time when the species of bats present at the site are most sensitive to disturbance. During the maternity season, disturbance may result in the abandonment or death of juvenile bats. During the extended torpor season over winter, microbats are vulnerable to loss of energy reserves if they are roused from torpor on a too regular basis.
- Installation of alternative compensatory bat roosting habitat in the form of bat boxes.
- A requirement to re-instate or create permanent microbat roosts within the newly built structure so that it contains roosting spaces for 180 Southern Myotis which is the estimated Southern Myotis roosting capacity of the existing structure with an additional 15% buffer.
- Staff environmental inductions which advise contractors of the biodiversity values present onsite, risks to human health and safeguards for dealing with unexpected finds.
- Adaptive management techniques involving close communication between the project ecologist, contractors and client, monitoring and corrective actions. Adaptive management requires flexibility specifically where monitoring determines that microbats are not responding to interventions in an expected manner and additional mitigation actions may be required.

3.2 Timing

The proposed exclusion works must be undertaken and completed outside the breeding season for Large Bent-winged Bats and Southern Myotis (early – mid September to March) or over wintering period (June to August). Exclusion works may therefore only occur from late-March – end of May, providing any juvenile Southern Myotis present are flying independently; or very early in September before microbats have established maternity roosts, providing that temperatures have warmed enough to allow for nightly microbat foraging. Once the exclusion is in place and the land and water-based structures on site have been cleared of bats, works can be undertaken at any time of year.

The potential for injury and death to microbats would be much higher during the breeding period due to the presence of dependant young and/or juveniles. There is a high risk that attempts to remove juveniles from the roost are more likely to result in death or injury due to stress. At the end of the breeding season and before winter, non-breeding males disperse to alternate roost sites and food availability is still relatively high, allowing microbats to build up fat stores for the coming winter.

Microbat exclusions will be planned for a period of mild temperatures (warmer evenings, little or no wind, no rain) with a view to providing ideal foraging conditions for microbats. Microbats can remain in a roost and in torpor for more than 2 weeks during winter and up to 5 days during summer (Geiser and Kortner 2010) but are likely to emerge to forage every night or every few nights when the weather conditions are favourable. The staged exclusion proposed for the subject site will be undertaken over a minimum three-night period for Stage 1 (if required) and minimum five night period for Stage 2 when bats are likely to be foraging, as outlined in Section 3.3.1. This is to allow any bats in torpor to wake naturally and exit the roost before it is excluded to them.

Roost exclusion would not occur during forecast periods of heavy rain (>20 mm in 24 hours according to the Bureau of Meteorology).

Exclusion devices should be installed at least 1 week prior to commencement of works to ensure microbats are not continuing to try to return to the roosts within the subject site.

Addendum

Roost exclusion actions will continue into July 2020 or mid-August until the demolition contractor takes control of the site. This was required because unsuitable weather conditions experienced in the latter part of May and throughout June prevented the exclusion being completed by 1 June 2020 as per the MMP. This situation required amendments to the Threatened Species Licence (C0005923) conditions under which the MMP was approved and justification for extensions to the licence were discussed and agreed to by EES. Also, increasing the duration of exclusion attempts was viewed as less detrimental to the fate of microbats if any were still enclosed beneath the wharf during demolition.

3.3 Roost exclusion methodology

The following exclusion process would be applied to the land and water-based structures within the subject site. Exclusion aims to remove microbat access to the potential roost habitat on site. The objective of controlled roost habitat exclusion is to prevent injury or mortality to roosting microbats and avoid impacts to maternity or overwintering colonies of microbats.

3.3.1 Exclusion process

Roost exclusion of such a large and complex site with challenging site access can best be achieved in stages. At this time, the only means of accessing the potential roosts so that they can be inspected is by boat. Even with a boat not all potential roost spaces are able to be safely accessed due to the configuration of piles beneath the wharf structures and the shallow depth of the water. A procedure to safely access any roosts in this manner and to install exclusion devices will need to be developed by the engaged ecologist.

The exclusion methodology developed for this MMP relies heavily on the assumption that progressively reducing microbat access to potential roosting locations under conditions when they should be active encourages them to leave the site to find suitable roosts elsewhere of their own accord. Without the

ability to visually inspect every potential roost site and be certain that an excluded space is bat free, adequate time has been allowed to minimise the risk that a microbat in torpor would be trapped inside the structure. Equipment that provides additional information on microbat activity to supplement the minimal visual information obtainable by the ecologists conducting the exclusion at the subject site will be invaluable in implementing this MMP. Devices that allow for real time viewing of ultrasonic recordings (e.g. Echo Meter Touch) and detection of microbats through the use of thermal imaging cameras, along with standard inspection tools such as torches, burrow scopes and digital cameras would assist in quantifying microbat activity during the exclusion process.

The wharf structures will be excluded by erecting curtains along all sides of each of the wharf structures which will prevent entry by any microbat. It will be impractical to attempt to individually exclude bats from every potential roosting location beneath the wharves because of the difficulties in safely accessing the site and the large number of potential roosting locations present. Exclusion of the derelict building will be undertaken by installing one-way valves over all potential entrances and leaving them in place for a minimum of three nights, following which each entry point will be permanently sealed.

The subject site can be divided into surface features (the derelict building) and below deck features (everything underneath the deck of the wharves and jetties). The below deck features can be further divided into an eastern and western section, with the highest value microbat roosting habitat present in the western section of the site (Figure 2). Each section will be excluded separately over multiple nights with the exclusion of the eastern and lower value roosting habitat (Stage 1) undertaken before exclusion of the western section (Stage 2) and finally exclusion of the derelict building (Stage 3).

Stage 1 (eastern section of subject site) and Stage 2 (western section of subject site)

Exclusion of both the eastern and western sections of the subject site will commence during daylight hours when the curtain can be installed on all sides of the wharf structures. It is expected that the exclusion of the eastern section of the subject site will be undertaken over three consecutive nights and mornings before exclusion is conducted on the western section. A curtain must also extend from the edge of the wharf structures to the seawall running along the southern edge of the site, screening off the eastern section from the western section of the site.

It is expected that the exclusion of the western section will be undertaken over five consecutive nights and mornings owing to the greater amount of potential bat roosting habitat present.

As the curtain is being installed it will be possible to undertake a cursory visual inspection of the under surface of the wharf structures for microbats and document any findings. It is noted that it will not be possible owing to time and tide constraints and access issues to visually inspect all potential roost spaces. A gap in the curtain 2 m wide will be left open (with curtain material rolled up on the deck of the wharf) every 20 -30 metres. These gaps will allow any microbats roosting within the structures being excluded to exit. The gaps will also allow observers to enter the excluded space beneath the wharf and inspect it for the presence of microbats following emergence surveys conducted in conjunction with installation of exclusion devices.

Following installation of the curtains, an emergence survey including ultrasonic recording must be undertaken outside each of the gaps remaining in the curtain each night for three nights until on the final night following the emergence survey, the curtains will be completely drawn leaving no gaps. The emergence survey should commence 30 minutes prior to sunset and continue until the ecologist is

satisfied that all bats have emerged from the roost, or until there has been a period of sustained inactivity (generally within 60-90 minutes of sunset). The number of microbats recorded exiting the site will be documented.

A follow-up inspection of the excluded space beneath the wharf structures would then be undertaken at the conclusion of the emergence survey to determine whether any microbats remain roosting within the excluded space. Use of a thermal imaging camera will enable a more accurate emergence surveys to be undertaken and assist in conducting post emergence inspections. The exclusion will be undertaken gradually and in a staged manner with the gaps in the curtain progressively blocked off each night over a three-night period for the eastern section and a five-night period for the western section. This process encourages bats to find roosts elsewhere, limiting the number of bats left without a roost once the curtains are fully drawn around the entire structure enclosing all gaps.

Pre-dawn surveys should be made at the site by the ecologists each morning following an evening emergence survey and curtaining event. The pre-dawn surveys will occur over a 1.5-hour period prior to sunrise to determine whether any microbats have returned, rescue any microbats roosting in unsafe places, and to assess the integrity of the exclusion devices. Any microbats roosting in unsafe places will be captured by hand, held in a calico bag (containing no more than a single microbat of the same species) in a cool, dark, quiet place for the day until they can be released at the site after dark. Any breaches of the exclusion devices will be noted and marked for repair later that evening.

This process will be repeated each evening of the three night (Stage 1) or five night schedule (Stage 2). On the final evening once the ecologist is satisfied that all bats have left the roost or 1.5 hours have passed since observations began, and a post emergence survey inspection is completed within the excluded space resulting in no microbat detections, the curtains can be fully drawn over all the gaps. Pre-dawn observations are required on all mornings following an evening change to exclusion devices with the final morning check to ensure that that no microbats obviously remain within the excluded space and to check the integrity of the curtains on the final morning.

The curtains will remain in place until the day that demolition works commence. The ecologist will need to conduct periodic diurnal inspections of the curtains to ensure the exclusion devices continue to function as intended and the structures remain free of microbats. The time frame for inspection of exclusion devices is one week after the completion of the exclusion, then once every four week after that prior to commencement of works. Inspection of the exclusion devices should also occur immediately following any periods of extreme weather (rainfall of > 50 mm in a 24-hour period, wind speeds of greater than 40 km / hr). Inspection of the exclusion devices should then occur on the day demolition of the structure is to commence.

If the final early morning inspection records microbats within the structures, the process described above will be repeated and actions taken to rectify the breach after emergence of the microbats. Any evening changes made to the exclusion devices will always be followed by a morning inspection as outlined above.

It is important to note that additional time may be required to complete the exclusion if the ecologist is not satisfied that the wharf structures are free of bats following the three night (Stage 1) and five night (Stage 2) schedules described above as discussed in the Adaptive Procedures Section 4.1. If microbat activity is not reducing at the Subject site as the exclusion is progressing, additional diurnal and nocturnal

survey effort may be required to try and locate specific roosting locations or dissuade microbats from roosting within the structures.

If specific roosting locations can be located during these additional surveys, it will allow one-way valves to be installed which will ensure that bats can exit from but not return to a roost and the exclusion can proceed for a further three nights before being completed following the installation of one-way valves. If roosting locations cannot be located because they are inaccessible, alternative mitigation measures that discourage bats from roosting beneath the wharf structures may be required alongside continued progressive exclusion until microbat activity levels have reduced to levels that the ecologist considers acceptable for completing the exclusion. Alternative mitigation measures may include 24 hour illumination of the underside of the wharf structures with day makers or similar lights and / or installing a constant spray of water over the underside of the wharf structures or along the edge of the wharf structures.

Stage 3 Derelict building

The process of exclusion for the derelict building relies upon installation of one-way valves over all potential entry points for a period of two to three nights that will allow bats to exit but not re-enter the building followed by installation of barriers that will completely seal up all entry points.

In a similar manner to the process described above for exclusion of the below deck features, one-way valves made from heavy duty plastic sheeting will be installed over all entry points on the derelict building during daylight. Following this an emergence survey including ultrasonic recording should be undertaken outside each of the one-way valves each night for three nights. If no bats are recorded exiting the building on the final night, the entry points can be permanently sealed on the following morning. The emergence survey should commence 30 minutes prior to sunset and continue until the ecologist is satisfied that all bats have emerged from the roost, or until there has been a period of sustained inactivity (generally within 60-90 minutes of sunset). The number of microbats recorded exiting each entry point will be documented each night.

If bats are recorded exiting an entry point via a one-way valve on the third evening, the one-way valve will be left in place and emergence surveys carried out until no bats are observed emerging from the entry point. A one-way valve may only be permanently sealed on the morning following an emergence survey where no bats have been observed exiting the entry point and if the one-way valve has been in place for a minimum of three nights.

3.3.2 Exclusion devices

There are a number of materials that can be used to exclude microbats from a roost. The choice of a reinforced heavy duty polyethylene sheeting which is tear resistant and 240 GSM for use on the below deck features is dictated by the need for a permanent, waterproof barrier that will remain in place through tidal fluctuations, will not degrade in sunlight or with exposure to seawater, is durable and flexible enough to withstand the range of weather conditions expected at the Subject site, is able to be cut and shaped according to need, is manoeuvrable enough to be handled without heavy plant or mechanical assistance, and is cost effective.

In the case of the below deck features of the Subject site, the exclusion is temporary and will remain in place until all structures are demolished during construction works. The exclusion device will effectively be a curtain hanging from the top of the wharf structures down into the water creating a barrier which

prevents microbats from entering the space beneath the wharves and gaining access to any roosting habitat contained therein. The curtain will be weighted so that it remains permanently submerged at the base and will be held together at any joins so that no gaps large enough to allow microbat entry are present. Appendix A provides product data and supplier details for the exclusion material appropriate for use at the Subject site. This heavy-duty plastic sheeting has been used successfully on numerous microbat exclusions.

Heavy duty black plastic sheeting commonly used by builders is recommended for any one-way valves that are required to be installed. The one-way valves only need to remain in place for a short period of time (3- 5 days), following which they will be replaced by a more permanent barrier. The materials used to create a permanent barrier can range from expanding foam to sections of timber affixed over the entry point.

3.3.3 Inspection and maintenance of exclusion devices

An email is to be sent to the project engineer / site supervisor following completion of the exclusion process confirming that the exclusion is complete and providing photos and descriptions of the exclusion devices that have been installed. An action log will be kept during the exclusion process and for any monitoring inspections conducted between the exclusion and commencement of works. This log will be submitted to the project engineer / site supervisor upon completion of the project as part of the reporting requirements. The exclusion log will contain the following information:

- Action undertaken
- Date
- Personnel involved
- Results / outcomes against performance measures
- Effort / time on site
- Adaptive / alternative procedures required / recommended.

Exclusion devices installed on the below deck features would need to be monitored one week after installation, and then monthly by the project ecologist prior to works to ensure they remain effective in excluding bats, as well as following any high rainfall, high wind or flood events (> 50 mm in 24 hours and wind speeds > 40 km / hr).

Exclusion devices installed on the derelict building should be monitored by the site supervisor and checked immediately prior to commencement of works as it should be obvious whether the permanent barrier has remained intact. These exclusion devices will only need inspection by the ecologist if any breaches have been identified.

It will be critical that contractors ensure the all exclusion devices remain secure and in place until the removal of the land and water-based structures is undertaken.

Addendum

Exclusion works to date (3 August 2020) have included:

- Sealing of all potential roost entry points in the derelict building following installation and monitoring of one-way valves over a three night period

- Curtaining of the entire wharf perimeter, including the installation of 10 doors, dividing the underside of the wharf area into three compartments
- Evening and pre-dawn emergence / return surveys (for up to 3 hours post sunset) and progressive closure of all doors around the wharves following evening emergence of roosting bats
- Before, during and after (ongoing) static ultrasonic recordings beneath each of the three wharf compartments and active nocturnal and diurnal searches (ongoing) for roosting microbats with torches, recorders and a thermal imaging camera
- Static ultrasonic monitoring and emergence surveys at a known Southern Myotis reference site within Sydney Harbour to provide context on activity levels of the species
- Ongoing release attempts of trapped microbats through a single door from sunset on evenings when suitable weather conditions are experienced as per the licence conditions (ongoing)
- Installation of three single one-way exit hatches on the Hanson wharf near the last known exit point and near to other suspected roost sites for the bats to allow bats to exit but not re-enter the excluded are beneath the wharf
- Diurnal release of birds roosting under the wharves
- Maintenance of the curtain damaged by wind, pontoon movement and demolition work at the Hanson plant
- Installation of alternative compensatory habitat boxes at:
    - Pirrama Park (four x four-chambered recycled plastic bat boxes)
    - Mort Bay Park (three x multi-chambered hardwood bat boxes)
- Operation under a Threatened Species Licence (C0005923) and ongoing consultation with EES for renewal or variations to the licence conditions. The licence included conditions stipulating that exclusion activities could only occur if the daytime temperature reached at least 18°C. From 30th June, the 18°C restriction was lifted to allow five exclusion attempts per 15 day period until demolition commences, or until at least six consecutive nights of no recorded bat activity had occurred beneath the wharf, whichever was sooner.

3.4 Actions during demolition

The primary change to this section is that surveillance of bat activity or inspections under, on top or near the wharf during demolition will not be undertaken as previously committed to by Infrastructure NSW as it is unsafe for any personnel, and as such, revised monitoring requirements are stated below. Additionally, reinstating the bat exclusion curtain along the active demolition face prior to sunset each day is unsafe for the contractors. Therefore, the best-effort response is to maintain the curtain as much as practical and incrementally dismantle it as the demolition progresses. It is recognised this open face may allow bats to enter undetected. The expectation is that only parts of the curtain along the demolition face, immediate connections and any areas needing emergency access would be removed, and all other parts of the curtain awaiting demolition would be maintained.

No works should commence if roosting bats are seen or heard within a work area and all works should stop if bats are observed flying from a roost or around the works site during daylight. Finds of microbats or signs of microbats must be reported immediately to onsite environmental staff, site supervisor and the supervising ecologist who will advise the best course of action. In the first instance, photographs, if possible and practical, should be taken and then sent to the project ecologist to identify the microbats and to determine what actions are required.

Once the wharves are demolished, the existing seawall and culverts will be repaired and potentially rebuilt to allow for concurrent construction of the new building (initially high-density piling and sediment reshaping). There may be a window of opportunity for microbats to return to the site and utilise crevices and culvert openings along the wall. Tidal movement would provide a natural barrier to passage, especially at 1.8 - 2 m tides where the culvert openings are fully submerged. Barnacle growth observed on the ceiling of largest box culvert indicates the tides are regularly high enough to allow colonisation of marine biota. However, this culvert travels upslope beneath Wentworth Park and other surface drain openings may allow bats to emerge during high tide.

It is unknown what the condition of the walls and culverts will be following demolition. Project engineers have advised that access to the exposed wall would be unsafe within 2 m, and the demolition contractor would control site safety. There may be scope to observe the wall and culvert openings from a distance, depending on safe access, but close inspection of crevices is highly unlikely. Ultrasonic recorders may be used to observe emergence activity from the culvert/s if placed strategically to determine if the bats are flying out of or flying past the culvert/wall. Further discussion with the demolition team is required once the status of the culvert/wall and overlap with construction is known.

3.4.1 Site induction

All staff and contractors undertaking construction works at the subject site should be made aware of the environmental sensitivity of the site and the potential presence of threatened microbat species prior to commencing work. An environmental induction led by the site supervisor should be undertaken as part of pre-start meetings. Pictures of microbats (provided by the project ecologist) should be placed in the crib room as a reference and the location of potential microbat roosts (culverts, drains, wooden cross beams and pylons) marked on site maps / design drawings displayed on site. Staff should be briefed on what to do in the event of an unexpected find of microbats. Some microbats carry diseases that can be lethal to humans if untreated, and inexperienced / unvaccinated people should never handle bats (See Section 4.2. for the unexpected finds procedure).

Microbats or evidence of their presence can manifest in a range of ways and works staff should be made aware of these signs as part of the site induction process. A set of visual aids for use in the induction process is included as part of this MMP. Evidence of microbat occupancy includes the following:

- Visual (diurnal) observations of singles or clusters of roosting microbats hanging from the ceiling or roof space or walls, or lying within horizontal crevices in structures such as bridges, culverts, derelict mines, tunnels, old buildings, chimneys.
- Visual (nocturnal) observations of bats flying from or returning to a structure at dusk and dawn, respectively.
- Audible sounds made by roosting bats include a chattering clicking type noise often heard around dusk and dawn or if bats are disturbed in a roost. Any suspicion of unusual noises within the structures will cause works to stop and must be investigated further by the project ecologist with appropriate equipment to allow identification of the cause of the sound (should include a hand-held ultrasonic call recorder).
- Guano (bat dung / scats) will be present if bats are utilising a roost, even just for a couple of days. Often guano collects immediately under the roost site or sticks to the structure walls under the roost or around the entrances to a roost.
- Staining (urine) may be present where bats frequently access a roost.

- Bat bugs (ectoparasites) or their casings are frequently observed throughout microbat roosts and take the form of tiny tick like or spider like invertebrates.
- Any Welcome Swallow or Fairy Martin nests – mud and earth constructed bird nests are relatively common on bridge and culvert structures and should be investigated as some bat species will utilise disused nests as roost sites.

3.4.2 Daily Inspection

~~A daily check of the exclusion devices at the Subject site is to be undertaken by the site supervisor prior to commencement of works, with each check being recorded. If the exclusion devices are not secure the site supervisor must contact onsite environmental staff, who will contact the project ecologist immediately so that the breach can be inspected and repaired as soon as possible. No works are to commence if the exclusion device(s) are not secure. Works at the subject site can only recommence once the ecologist provides advice that the site is secure and free of roosting microbats.~~

~~If a breach of the exclusion devices has occurred, the exclusion methodology outlined in Section 3.3.2 will be followed by the project ecologist over a single night. The breach will be repaired following conclusion of evening emergence survey and a dawn inspection of the repaired exclusion device(s) will be undertaken.~~

Addendum

Once demolition commences it will be unsafe for damaged curtain panels or joins to be repaired or for personnel to access beneath any wharf structure, therefore, no monitoring, surveys or inspection for bats is possible once the contractor takes control of the site and declares the underside of the wharf a no-go zone.

3.4.3 Pre-works inspections by project ecologist

~~Given that the details of how the demolition process will be undertaken have not yet been finalised, it is imperative that the project ecologist discusses the approach with Infrastructure NSW and the contractor(s) engaged to complete the works prior to the commencement of works to ensure the site remains free of microbats for the duration of works. Current advice suggests that the demolition will be undertaken over an 8 – 9 month period, commencing in June 2020 and concluding in February 2021.~~

~~The demolition process is likely to involve progressive removal of saw cut sections of the deck of the wharf structures from the seaward end to the landward end using cranes based either on the deck or on barges. Following this, the supporting piles will be removed by excavators on barges or remaining sections of deck. Finally, the remaining section of deck will be cut from the seawall and removed. The seawall is to be retained (if structurally intact) and any repairs to the seawall will be completed prior to construction of the new Sydney Fish Markets.~~

~~Removal of the deck is the part of the demolition with the most risk of harm to microbats, because as sections are removed on a daily basis it exposes potential roost spaces beneath the remaining part of the structure. If access to the newly exposed sections of deck are not sealed off prior to nightfall, there is a risk that microbats will return and roost within any accessible roost spaces during the night.~~

~~A pre-works inspection for microbats within the area due to be demolished during the day would be undertaken by the site ecologist on the first morning that demolition works are to commence. The~~

~~inspection would include arranging boat access to the site, actively looking for microbats and / or signs of their presence using a torch / burrow scope within the excluded space beneath the wharf structures and will include removing / lifting the exclusion devices over the section of wharf proposed to be worked on during that day to allow works to occur. A return visit by the ecologist will be required in the afternoon prior to the conclusion of works to advise on and assist with how to reposition the exclusion devices on a daily basis in such a way that there will be no access for roosting microbats to the structure for the duration of demolition.~~

~~It is recommended that the project ecologist returns to site the following morning to conduct a pre-works inspection for microbats and to check whether the exclusion devices re-instated after demolition works the previous day have been successful. This process may need to be repeated until the ecologist is satisfied that the works area is being adequately excluded to microbats at the conclusion of each day's work. It is also recommended that the project ecologist repeats this process (afternoon supervision / assistance with exclusion device replacement followed by a morning pre-works inspection) where there will be a major change in the way that the exclusion devices need to be re-positioned because of the shape of the section of wharf being demolished.~~

~~The intention is that construction crews will re-instate exclusion devices at the end of each day for the majority of the demolition process and that this will be documented daily by the site supervisor. Where uncertainty over the placement of exclusion devices exists, advice from the project ecologist is to be sought and a visit to site may be required.~~

~~A pre-works inspection for microbats beneath the section of the largest wharf identified as high conservation value habitat in Figure 2 must be undertaken by the site ecologist on the morning demolition is due to commence in that area.~~

~~If during any of the pre-works inspections microbats are identified roosting beneath the wharf, the ecologist may elect to retrieve isolated bats (if possible) that are alive and healthy from the work area to allow works to continue. The bats will be held in a calico bag (no more than a single microbat to be held in each bag) that will be hung during the day in a cool, dark, well ventilated place and released at the point of capture once the work area is secured and excluded to microbats. This should only be undertaken if microbats can be safely captured and released on the night after they were captured. Bats should not be held for more than 12 hours.~~

~~If it is not possible to capture and remove the bats, an exclusion zone will be set up by the ecologist and no works can occur in that area until approved by the project ecologist. The exclusion methodology outlined in Section 3.3.1 will be followed that evening by the project ecologist over a single night. Any breaches to the exclusion devices will be repaired following conclusion of the evening emergence survey, and a dawn inspection of the repaired exclusion device(s) will be undertaken. Provided the ecologist is satisfied that no microbats can access roosts beneath the wharf and that the repaired exclusion devices are functional approval will be given to re-commence works in that area. This process may need to be repeated until the ecologist is satisfied that the structure remains excluded to microbats and that no microbats are roosting in the works area.~~

~~No works should commence if roosting bats are found or heard within a work area and all works should stop if bats are observed flying from a roost or around the works site during daylight. Unexpected finds of microbats should be reported immediately to onsite environmental staff, site supervisor and the supervising ecologist who will advise the best course of action. In the first instance, photographs, if~~

~~possible and practical should be taken and then sent to the project ecologist to identify the microbats and to determine what actions are required.~~

Addendum

Ultrasonic monitoring will continue beneath the Hanson wharf until the week leading up to commencement of demolition. A final inspection of the underside of the wharf will be undertaken within 5 days prior to commencing demolition to retrieve ultrasonic detectors and search for and rescue (if possible) any roosting bats detected. This visit will need to coincide with a tide height of between 1.5 – 1.8 m to allow safe passage beneath the wharf and to ensure any bats observed can potentially be hand captured for later release.

Once the demolition contractor takes control of the site and declares the underside of the wharf a no-go zone, the project ecologist will not be able to access any part of the wharf structure due to safety concerns, therefore no monitoring, surveys or inspection for bats is proposed. As discussed above, the curtain along the demolition face cannot be reinstated prior to sunset each day. Therefore, progressive demolition and removal of the curtain can occur without pre-works inspections for bats.

Unexpected finds of microbats require works to cease and should be reported immediately to onsite environmental staff, site supervisor and the supervising ecologist who will advise the best course of action.

As discussed above, once the wharves are removed, investigate whether safe access is possible near the exposed wall and culverts to conduct a habitat survey. This may lead to further emergence surveys if practical and safe.

3.5 Permanent replacement habitat

The creation of permanent microbat roosting habitat within or as near as possible to the new Sydney Fish Market is required to replace the loss of roosting habitat for Southern Myotis (also known as 'The Fishing Bat') from the existing wharf structures at Blackwattle Bay. The permanent microbat roosting habitat created should have a minimum carrying capacity 15% greater than that of the original roosts to allow for errors in estimating the roost carrying capacity based upon the inability to conduct a thorough visual assessment because of access issues to the underside of the wharf structures. The current colony size is estimated to be 10-30 bats, with the roost carrying capacity estimated to be up to 150 bats. The permanent roosting habitat should allow for movement between roosting locations. It is recommended that permanent microbat roosting habitat with a capacity of 180 bats is installed at the new Sydney Fish Markets. It is also recommended that this habitat is spread over a number of locations at the new Sydney Fish Market to provide bats with a range of roosting locations similar to the scenario present at the existing development site. In this way, roosting bats can select the location which most suits their needs at different times of the year as each location will have a slightly different microclimatic regime to other locations.

When looking for suitable places to locate Southern Myotis roosting habitat the following is a general guide:

- Darkness and protection from the elements are critical – the cavity / space / bat box needs to ensure that it is not open to the sky and includes shelter space that is out of the wind

- Insulation / thermal mass – wooden and concrete materials are the preferred substrates for a roost because they dampen environmental conditions and provide a relatively stable roost environment
- Minimal access to the cavity / space / bat box by anything other than flying animals - ideally the roost space / cavity / bat box will be located on the obvert (underside) of a culvert / bridge / wharf / jetty / structure such that snakes, rats, cats, foxes etc cannot climb or crawl into the cavity / space / bat box or reach a position immediately in front of the entrance from where predation could occur. This generally means locating it at least 2 m from the edge of any structure particularly where a structure is attached to land and / or > 1.5m directly above the water.
- Bats prefer to be as far from the edges of any structure as possible if they have a choice of where to roost, so select a point equidistant from the edges and from land
- Clear flight lines to / from the entrance of the cavity / space / bat box entrance with at least 1 square metre of free air space surrounding the entrance
- Proximity to foraging habitat –directly over water or within 100 m of it, but no closer than within 1.5 m above mean high water mark – this gives bats space to drop out of a roost and commence flying
- Minimal disturbance by human or boat traffic / movement, lights, vibrations, high-pitched noises – bats can become habituated to a certain amount of background noise (high pitched noises are not well tolerated compared to low pitched noises) and people / boat movements, but do not like to roost where a light shines directly onto the entrance of a roost or where vehicles / boats / people are moving randomly in their direct line of flight close to a roost.

However, the plans for the new Sydney Fish Markets have been reviewed and found to contain no suitable structural areas that could be used to create 'in situ' habitat that mimics and would replace the roost habitat that is to be removed during the demolition and construction works. The only areas of the new build that will be directly over water are the pedestrian decking and the wharves for the new Ferry Terminal and recreational boats. Neither of the wharves is suitable because the disturbance level will be too high and the wharves too close to mean high water level to allow bat box install.

It is therefore suggested that several bat boxes be installed under the pedestrian decking at the south-western end of the new building at the completion of works. There may also be opportunities to install some boxes under the pedestrian decking at the north-eastern end of the new build, closer to where the existing Sydney Fish Markets are located. Other potential options for box install at the head of Blackwattle Bay include nearby wharves, jetties, bridges and culverts that would need to be inspected and evaluated against the criteria listed above prior to be selected as suitable locations.

In the same way that the compensatory habitat will be installed prior to the exclusion process it is preferable to install boxes on brackets / supporting rails so they can be more easily removed / moved if required for structural maintenance or roost management purposes. In this case there would ideally be several separate locations under the deck / wharf / jetty / structure with supporting rails and boxes installed so that removal or exclusion of bats from a single box would mean that bats still had alternative habitat they are already familiar with in place.

~~The final suite of permanent microbat habitat features incorporated into the newly built structure will be agreed upon by Infrastructure NSW in consultation with the project ecologist(s). Infrastructure NSW, the contractor responsible for building the new Sydney Fish Markets and the project ecologist engaged~~

~~to implement the MMP will need to discuss and agree upon bat box locations and attachment methodologies prior to commencing the build and continue to communicate throughout the build to ensure the bat boxes are installed at the completion of the build in the most suitable locations.~~

Addendum

The only areas of the new build that will be directly over water are the pedestrian decking and the wharves for the new Ferry Terminal and recreational boats. Infrastructure NSW will investigate options to establish four to six bat boxes beneath the pedestrian decking of the new Sydney Fish Markets, with final site selection made by the project ecologist in close consultation with Infrastructure NSW and the contractor to ensure conditions to maximise the likelihood of uptake of the boxes by Myotis. To maximise potential uptake by bats and allow for the possibility that the new build may not provide ideal conditions for bat box installation, Infrastructure NSW will also investigate and advocate options for additional permanent Myotis roosting habitat in Blackwattle Bay through the precinct planning and consultation with future developers of the foreshore. Options for discussion in include:

- Incorporation of Myotis roosting habitat into a purpose built stand-alone floating pontoon or foreshore structure that could double as an art installation / educational installation
- Creation of cavities suitable as Myotis roosting habitat in new structures over water or immediately adjacent to water. More detail needs to be provided by a microbat ecologist on how to achieve this. Several methods can be employed including;
    - the creation of Y-shaped cavities in newly built concrete structures (using in situ moulds prepared on site – a method successfully employed on recent Transport for NSW projects),
    - the creation of recessed chambers in concrete structures into which bat boxes can be installed,
    - ensuring the width between joins in timber and concrete structures is a minimum of 20 mm,
    - retaining lift holes or grab holes in pre-fabricated concrete elements and leaving them uncapped.

4. Contingency measures

Wild animals can display unpredicted and unexpected behaviours, therefore this MMP must be flexible in its application so that a range of potential outcomes can be dealt with in accordance with Department of Planning Industry and Environment scientific licencing and Animal Care and Ethics Committee approvals.

4.1 Adaptive procedures

The procedures of this plan may be adapted in response to factors such as microbats remaining in the roosting habitat at the Subject site and not emerging to forage, which would have implications for the length of time it takes to exclude microbats from the land and water-based structures.

The aim is to facilitate the identification of the best course of action for the particular situation, including time and logistical constraints, as well as the biological constraints posed by the microbats. This would require open communication between the work supervisor, project engineer / site supervisor, onsite environmental staff and the project ecologist.

Microbats are wild animals and do not always behave in the ways we expect or predict. Management plans need to be adaptable enough to react to situations as they arise and deal with a range of possible outcomes. Modifications to the procedures outlined in this plan may be undertaken provided there has been consultation with the supervising ecologist. The aim of this clause is to allow for the identification of the best course of action to facilitate construction given time and logistical constraints as well as ecological constraints imposed by the affected microbat species.

4.2 Capturing and releasing healthy microbats

If healthy microbats are discovered during works or observed flying from a roost site or around the works site during daylight, works will be stopped immediately and the site supervisor, onsite environmental staff, project engineer / site supervisor and supervising ecologist all informed. This is the responsibility of all site personnel. Works that are disruptive to microbats include those which create excessive noise (particularly high-pitched), vibration or light and heat sources, or give off smoke or other potentially noxious gases.

~~The supervising ecologist may elect to retrieve isolated bats (if possible) that are alive and healthy from the work area to allow works to continue. The bats will be held in a calico bag (no more than a single microbat to be held in each bag) that will be hung during the day in a cool, dark, well ventilated place and released at the point of capture once the work area is secured and excluded to microbats. This should only be undertaken if microbats can be safely captured and released on the night after they were captured. Bats should not be held for more than 12 hours.~~

~~If it is not possible to capture and remove the bats, a suitable exclusion zone will be set up by the supervising ecologist and no works will be undertaken within that zone until specifically directed by the supervising ecologist. The exclusion methodology outlined in Section 3.3.2 will be followed that evening by the project ecologist over a single night. Any breaches to the exclusion devices will be repaired following conclusion of the evening emergence survey, and a dawn inspection of the repaired exclusion device(s) will be undertaken. Provided the ecologist is satisfied that no microbats can access roosts beneath the wharf and that the repaired exclusion devices are functional approval will be given to re-~~

~~commence works in that area. This process may need to be repeated until the ecologist is satisfied that the structure remains excluded to microbats and that no microbats are roosting in the works area.~~

Bats should not be handled by unvaccinated ((Australian Bat Lyssavirus (ABLV)) and inexperienced persons. Suitable Personal Protective Equipment (PPE) is required to be worn to prevent bats biting or scratching the handler and to avoid contact with excrement from bats. Whilst very rare, some microbats carry diseases that can be lethal to humans if untreated. Photos are the first and best course of action to help identify microbats and should be supplied to onsite environmental staff and the project ecologist. If a non-vaccinated person does get bitten or scratched by a microbat, they must seek immediate medical attention. A post ABLV exposure vaccine is available and, if administered promptly and appropriately, will be effective in preventing the disease from developing.

Any evidence of a roosting microbat should be documented, photographed and actions recorded with onsite works staff and directed to the project ecologist for further action.

Addendum

A bat in flight during daylight is at risk of predation, exposure and of injury through demolition works. No works should re-commence until the ecologist is satisfied that the bat(s) have flown away from the work site and are unable to be retrieved.

The supervising ecologist will not be able to retrieve bats from the work area as it will be unsafe to approach the active demolition site. If the bat(s) are roosting on the active demolition face, a suitable no-go zone will be set up by the supervising ecologist and no works will be undertaken within that zone until specifically directed by the supervising ecologist. It is assumed that the bat(s) will fly away at dusk and not return to roost in the same location. If the bat remains in the same location after one night, alternative actions will be discussed with regards to moving the bat from the active demolition area. Once the ecologist is satisfied that no microbats are roosting on the active demolition area, approval will be given to re-commence works in that area.

4.3 Injured or dead microbats

If microbats are found unexpectedly injured or dead in a works area, all works in the immediate area should cease and the site supervisor, onsite environmental staff, project engineer / site supervisor and supervising ecologist must be informed. Any evidence of injured or dead microbats should be documented, photographed and actions recorded with onsite works staff and directed to the project ecologist for further action. A suitable exclusion zone will be set up by the supervising ecologist and no works will be undertaken within that zone until specifically directed by the supervising ecologist.

Injured bats will be removed and taken to a local veterinarian or wildlife carer experienced in the care and handling of microbats by the project ecologist. Taronga Zoo is also an option as they have a fully qualified and experience veterinary team on hand who can properly handle any situation that arises. Options for treatment and future release would be decided and then documented by the supervising ecologist. Costs for treatment would be the responsibility of the contractor. Dead microbats will be collected by the project ecologist (using gloves and a plastic bag) and retained for lodgement with the Australian Museum.

5. Risks

Some of the procedures detailed within the plan pose various risks to human safety. The key risks include:

- contact with microbats
- working along a waterway
- working at night
- working at heights.

These risks are to be addressed by the project ecologist through preparation of a Safe Work Method Statement (SWMS) that outlines control measures required to eliminate or reduce the risks to acceptable levels.

5.1 Exposure to diseases such as Australian Bat Lyssavirus (ABLV)

Some microbats carry diseases that can be lethal to humans if untreated. Bats should not be handled by unvaccinated ((Australian Bat Lyssavirus (ABLV)) and unexperienced persons. Photos are the first and best course of action to help identify microbats and should be supplied to onsite environmental staff and the project ecologist.

Even if previously vaccinated against ABLV, if a person is bitten or scratched by a bat anywhere, they should:

- immediately wash the wound thoroughly with soap and water for at least five minutes - proper cleansing of the wound reduces the risk of infection
- apply an antiseptic with anti-virus action such as povidone-iodine, iodine tincture, aqueous iodine solution or alcohol (ethanol) after washing
- seek medical attention as soon as possible to care for the wound and to assess the risk of infection.

Anyone determined to be at risk of infection, regardless of vaccination status, would require treatment consisting of a combination of rabies immunoglobulin and rabies vaccine. Unvaccinated people will require an injection of rabies immunoglobulin as soon as possible and a series of either four or five rabies vaccine injections over one month. Fully vaccinated people usually require two further doses of the ABLV vaccine, but this will be dependent on exposure and current antibody counts. NSW Public Health Units will assess the risk and, where indicated, arrange for rabies vaccines and immunoglobulin to be delivered to a relevant GP or hospital.

The project ecologist and any other ecologists working on site must be vaccinated against Australian Bat Lyssavirus and wear gloves if handling microbats. The equipment and procedures for dealing with potentially infected persons outlined above must be detailed within the SWMS. Appropriate bat rescue equipment/ PPE must be available on site before works commence (cotton bags, gloves, soap and water to wash hands).

Controls to eliminate or reduce the remaining key risks identified above are commonly encountered on construction projects and should be adequately addressed in the SWMS prepared by the project ecologist.

6. Roles and responsibilities

Changes to this section removes the previous commitment made to have the project ecologist actively monitor or inspect the underside or any part of the wharf during demolition. It also removes the requirement for the contractor site supervisor to undertake daily inspection of exclusion devices and to notify the project ecologist if the exclusion devices are not secure.

The construction personnel, project ecologist, project manager and environmental officer form a team that work together to achieve short-term management of microbats at the subject site through delivery of the MMP.

The project engineer / site supervisor is responsible for:

- notifying the project ecologist if there are any changes to the scope of works or works schedule
- including the actions outlined in the MMP in the Construction Environmental Management Plan (CEMP) or Site Environmental Management Plan (SEMP)
- ensuring the location of potential microbat roosts are marked on site maps or drawings
- notifying the project ecologist of the proposed date for removal of land-based structures
- notifying the project ecologist of the proposed date for removal of water-based structures
- immediately notifying the project ecologist in the event of any unexpected finds of microbats during works (alive and healthy, injured or dead)
- covering the costs associated with rehabilitation and release of any microbat injured during the course of works
- ensuring monitoring of any new microbat habitat is undertaken (if required) and reported.

The project ecologist is responsible for:

- providing basic information and pictures of microbats to be included in the environmental induction and to be kept in the crib room and available to all site personnel
- preparing a SWMS and undertaking daily Toolbox Talks for the implementation of the MMP
- ~~procuring exclusion material~~
- maintaining an action log in relation to activities related to the implementation of the MMP
- ~~monitoring and installing exclusion devices (may require assistance from construction personnel to conduct the permanent exclusion)~~
- ~~conducting a pre-works inspection of the land and water-based structures being removed~~
- ~~conducting daily pre-works inspections of the land and water-based structures being removed if removal works will be undertaken over multiple days and the works site could provide potential roosting habitat for microbats~~
- ~~providing regular updates to the project manager and site supervisor on the progress of works~~
- dealing with any unexpected finds of microbats on site, including provision of advice, attendance at site at short notice, rescue, handling, and release of healthy bats, transfer of injured bats to an appropriate wildlife carer and lodgement of dead microbats with the Australian Museum
- reporting on the outcomes of the MMP within one month of completion of works
- undertaking and reporting on monitoring of any new microbat habitat.

The project ecologist is to provide guidance to the project manager such that the aims of the MMP are achieved and impact to microbats are minimised.

The contractor site supervisor is responsible for:

- conducting environmental inductions for all personnel working on site
- providing the relevant materials on site to deal with the immediate care of bites and scratches from microbats
- marking off any sensitive areas to prevent access to all non-essential personnel during works
- ~~conducting daily checks of the exclusion devices during the works period~~
- ~~notifying the project ecologist if the exclusion devices are not secure~~
- notifying the project manager of the proposed dates for removal of land and water-based structures identified as potential microbat habitat within the subject site
- stopping works on site in the event of any unexpected finds of microbats during works (alive and healthy, injured or dead)
- notifying the project manager of any unexpected finds of microbats during works (alive and healthy, injured or dead)
- maintaining a suitable exclusion zone around any unexpected finds on the advice of the project ecologist.

Construction staff and contractors are responsible for:

- attending site inductions including the environmental induction
- avoiding any sensitive areas marked off within the work site
- ~~assisting the project ecologist with installation of a permanent exclusion device (if required)~~
- stopping works immediately and notifying the site supervisor, project manager and environmental officer in the event of any unexpected finds of microbats during works (alive and healthy, injured or dead).

7. Reporting and communication

The project engineer and contractor site supervisor will be kept informed via regular email and phone updates of progress and key milestones throughout the implementation of the MMP by the project ecologist. An action log summarising all site works undertaken will be maintained by the project ecologist. The action log will be a record of the actions taken, personnel responsible, timing, results as measured against performance measures and decisions made regarding adaptive measures (if required) during the installation and monitoring of exclusion devices. The action log will be included in final project report.

A final project report outlining the actions taken in implementing the MMP and the success or otherwise of the MMP in mitigating impacts to microbats, including recommendations for improvements to the process that could be employed on future projects, will be submitted one month following the completion of the exclusion process.

Table 4 below outlines the main actions required in implementing the MMP, this will form the basis of the action log.

Table 4: Action log summary table to be included in the final report for exclusion over 5 days (scalable for exclusions over 3 days).

Management Measures	Details	Timing	Performance Indicators	Responsibility
Site inspection	Project inception	Commencement of project	Completed and documented	Project ecologist, site supervisor, project engineer
Environmental induction	Discussion of risks involved and safety procedures	Commencement of project	All relevant staff inducted	Project ecologist, site supervisor, project engineer, contractors and all site personnel
Action log	Commence logging actions	Commencement of project	Completed and documented	Project ecologist
Procure exclusion materials	Purchase suitable materials	At least two weeks prior to exclusion	Exclusion materials stored at office of project ecologist	Project ecologist
Exclusion – Day 1	First diurnal inspection and install of exclusion devices	Late March – May or early Sept	Correct time of year	Project ecologist
	Emergence survey	After diurnal inspection	Completed and documented	Project ecologist
	Inspection following emergence survey	After emergence survey	Completed and documented	Project ecologist
	Dawn inspection	Morning of Day 2	Completed and documented	Project ecologist
Exclusion – Days 2 - 4	Second, third and fourth diurnal inspection	Late March – May or early Sept	Correct time of year	Project ecologist

Management Measures	Details	Timing	Performance Indicators	Responsibility
	Emergence survey	After diurnal inspection	Completed and documented	Project ecologist
	Inspection following emergence survey	After emergence survey	Completed and documented	Project ecologist
	Incremental closure of exclusion device	After nocturnal inspection	Completed and documented	Project ecologist
	Dawn inspection	Morning of Day 3, 4 & 5	Completed and documented	Project ecologist
Exclusion – Day 5	Final diurnal inspection	Late March – May or early Sept	Correct time of year	Project ecologist
	Emergence survey	After diurnal inspection	Completed and documented	Project ecologist
	Inspection following emergence survey	After emergence survey	Completed and documented	Project ecologist
	Completion of exclusion device	After nocturnal inspection	Completed and documented	Project ecologist
	Dawn inspection	Morning of Day 6	Completed and documented	Project ecologist
Permanent exclusion (relevant to derelict building only)	Install permanent exclusion device	Moring following completion of exclusion	Completed and documented	Project ecologist
Notification	Email to PM to confirm exclusion complete	Day that exclusion is completed	Completed and documented	Project ecologist
Exclusion monitoring	Inspect exclusion device and email results to project manager	One week following completion of exclusion	Exclusion device secure	Project ecologist
Exclusion monitoring	Inspect exclusion device and email results to project manager	Monthly following completion of exclusion and up to commencement of works Following extreme weather events	Exclusion device secure	Project ecologist
~~Pre-works inspection~~	~~Inspect exclusion devices and email results to project manager~~	~~First day of any land and water-based structure removal prior to works, first day of removal of high conservation value sections of wharf structures prior to works (Figure 2)~~	~~Exclusion device secure and no microbats present at start of daily works~~	~~Project ecologist~~

Management Measures	Details	Timing	Performance Indicators	Responsibility
~~Exclusion device re-instatement on first day of works~~	~~Assist and advise contractors on method for re-instatement of exclusion devices at conclusion of first day of works~~	~~Afternoon on first day of demolition and following morning, may need to be repeated on successive afternoons/mornings until ecologist satisfied that process is being completed successfully; if changes to method of re-instatement of exclusion devices is required; at request of site supervisor if uncertainty exists over re-instatement of exclusion devices~~	~~Exclusion devices secure and no microbats present at start of daily works~~	~~Project ecologist~~
~~Daily works inspection~~	~~Inspect exclusion device and inform project ecologist if action required~~	~~Daily during works on Subject site~~	~~Exclusion device secure~~	~~Site supervisor~~
~~Remove exclusion devices at start of daily works and re-instate at end of daily works~~	~~Remove exclusion device for active works area to allow works, re-instate at end of day~~	~~Immediately prior to commencing removal of sections of the structure, at conclusion of daily works~~	~~Works commence daily without interruption or unexpected finds of microbats~~	~~Site supervisor under advice and direction of Project ecologist~~
On-site ecologist for ~~exclusion device~~ advice ~~/ placement, unexpected finds~~	Advise contractors ~~on exclusion device re-instatement at end of daily works~~ and attend site when required to assist or deal with unexpected finds of microbats	As required	Ecologist responds in a timely manner to any issues	Project ecologist
Reporting	Prepare a report outlining actions undertaken	Within one month following removal of structures on site	Completed and documented	Project ecologist
Monitoring of bat boxes and new structures	Diurnal inspection of bat boxes at Subject site and compensatory sites, plus an overnight survey under those supporting structures using ultrasonic recordings	Once in winter and once in summer during years 1, 3 and 5 post construction	Completed and documented	Project ecologist

Management Measures	Details	Timing	Performance Indicators	Responsibility
Monitoring report of bat boxes ~~(if required)~~	Prepare a report outlining monitoring ~~actions and~~ results	Within one month following completion of monitoring years 1, 3 and 5 post construction	Completed and documented	Project ecologist

8. Monitoring

Monitoring requirements have the following items removed (strike through) due to unsafe access beneath the wharf. Additional clarification is underlined below. All other monitoring requirements are unchanged.

The objectives of monitoring are to:

- Ensure no microbats are harmed by the construction works.
- Identify the need to adjust the exclusion methodology to minimise impacts to microbats.
- Identify whether the microbat management actions have been implemented and gauge their success.
- Provide further recommendations for consideration on future projects with similar impacts on threatened microbats.

Monitoring of the potential habitat at the subject site, any bat boxes installed as compensatory habitat and exclusion devices would be undertaken by the project ecologist as follows:

- immediately prior to commencing exclusion (bat boxes only)
- daily during the exclusion process (structures, exclusion devices and bat boxes)
- one week following the completion of the exclusion process (structures, exclusion devices and bat boxes)
- once per month until removal of land and water-based structures occurs (structures, exclusion devices and bat boxes)
- ~~once on the first day any land or water-based structures identified as potential microbat habitat are scheduled to be removed (structures, exclusion devices and bat boxes)~~
- ~~once on the first day that high conservation value habitat beneath the largest wharf (Figure 2) is to be removed (structures, exclusion devices and bat boxes)~~
- ultrasonic monitoring beneath the Hanson wharf (B3) to continue until there has been at least six consecutive nights of no activity recorded, or up until the day prior to commencement of demolition or as close as possible to coincide with favourable tidal access, whichever is sooner, with data downloaded and reviewed about every 3-7 days.
- at the request of the site supervisor where uncertainty exists around exclusion device placement or unexpected finds occur (structures only)
- quarterly monitoring of compensatory bat boxes during the construction period (bat boxes only)
- once at the completion of the project to determine whether microbat habitat exists in the newly created structures, and whether microbats have inhabited any of the compensatory bat boxes (structures and bat boxes)
- twice per year in years 1, 3 and 5 following the completion of works (winter and summer) if microbat habitat is present within the new Sydney Fish Market and for any bat boxes installed as compensatory habitat (structures and bat boxes).

8.1 Monitoring methodology

Monitoring during exclusion and post construction involves diurnal and nocturnal visual inspections of the potential habitat on site by a suitably qualified ecologist with experience in microbats using torches, burrow scopes and cameras, as well as emergence surveys, ultrasonic recording and use of thermal imaging cameras during emergence.

In the case where permanent microbat habitat created within the newly built structure proves difficult to monitor visually during the day, it may be necessary to include a nocturnal emergence survey incorporating ultrasonic recording for a period of up to 1.5 hours during each monitoring event. Information to be recorded during each monitoring event includes:

- unique identifier for each structure, bat box or roost feature
- date and time of inspection
- name of surveyor
- number of microbats present
- species of microbats present
- indications of breeding activity
- occurrence of ectoparasites / bat bugs
- evidence of occupation (guano)
- condition of roost feature
- weather conditions
- photographs of roosting microbats.

Details of all monitoring inspections would be recorded in the log of actions and emailed to the project manager following each monitoring inspection. The action log (Table 4) would be appended to the final report compiled by the project ecologist and provided to the project manager within one month upon completion of the project.

8.2 Performance measures

The project would be considered successful if there are no microbats injured or harmed as a result of the exclusion process and construction works. If microbat habitat is present within the new structures on site, post-construction monitoring will document the nature of this habitat and provide information on evidence for use of this habitat by microbats. Uptake of alternative compensatory habitat provided in the surrounding landscape in the form of bat boxes will also be documented. These measures will be deemed successful if there is evidence of sustained use of any newly created microbat roosting habitat in the new structures or within the boxes by Southern Myotis and / or use of the new habitat or boxes as a maternity roost by southern Myotis.

Evidence of 'Sustained use' is defined as:

At artificial bat boxes installed at Pirrama Park site and Mort Bay Park site:

a. A maternity colony of Southern Myotis observed in any box at the same site (Pirrama Park, Mort Bay Park) in at least three monitoring events in total, of which at least two are during the 5 years following completion of works, or

b. More than one Southern Myotis recorded at the same site (Pirrama Park, Mort Bay Park) in at least four monitoring events in total, of which at least three are in the in the 5 years following completion of works.

Within the new Sydney Fish Market construction or elsewhere in Blackwattle Bay:

c. A maternity colony of Southern Myotis observed in at least three monitoring events during the 5 years following completion of works, or
d. More than one Southern Myotis recorded in at least four monitoring events in the in the 5 years following completion of works.

Monitoring will occur accordance with the schedule specified in Table 4, with a minimum of six monitoring events, in years 1, 3 and 5 during the 5 year period following completion of works. However, a maximum of two monitoring events, separated seasonally, in any one year may be counted for the purposes of the definition of 'sustained use'.

It is noted that even if potential microbat roosting habitat is present within the new structures on site, there may be no evidence of microbats found during any of the post construction monitoring inspections. It is known that it can take years for microbats to take up newly created roosts or bat boxes.

Condition E33 of development consent for SSD 8925 requires that if at the end of the 5th year following completion of the works , there is no evidence of sustained use by Southern Myotis (Myotis Macropus) as a maternity roost and/or use of the compensatory roost boxes or of the habitat within the new Sydney Fish Market structures, the Applicant must purchase and retire Southern Myotis (Myotis Macropus) biodiversity credits to offset the prescribed impacts for the loss of habitat at the site, to the satisfaction of EESG.

8.3 Monitoring report

An annual monitoring report summarising the results of the post construction monitoring events will be prepared by the project ecologist. This will be completed within one month following the conclusion of each year of monitoring (comprising the two post construction monitoring events conducted in summer and winter during years 1, 3 and 5). The monitoring report would include a brief description of the background to the project, details of the microbat habitat lost, details of compensatory habitat installed and details of any microbat habitat present in the new structures, aims and objectives of the monitoring, monitoring methodology, results of monitoring events and recommendations for future improvements to MMPs. The annual monitoring report will be provided to EES and the results will be incorporated in the Construction Compliance Reports required under Part B of the development consents for SSD 8924 and 8925.

9. Potentially occurring microbat species photographs

Figure 13: ***Miniopterus orianae oceanensis*** **Large Bent-winged Bats (Vulnerable species under the NSW BC Act). Photo taken by Alicia Scanlon.**

Figure 14: ***Myotis macropus*** **Southern Myotis roost with unfurred pup in centre of photo (Vulnerable species under the NSW BC Act). Photo taken by Alicia Scanlon.**

10. References

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Appendix A Exclusion material product specification sheet

BURWELL TECHNOLOGIES

Product Data Sheet

Envirogard

Scaffold and Containment Sheeting

Burwell ENVIROGARD is Reinforced Heavy Duty Polyethylene Sheeting used for weatherproofing and containment of Dust, Debris and Blasting Media to protect workers, job sites and the environment in Abrasive Blasting, Painting and Building Construction applications.

Specifications and Technical Data

ENVIROGARD is a Clear, Heavy Duty Polyethylene Sheeting over a tear resistant 1500 denier polypropylene reinforcing grid mesh. Three 50mm wide Reinforcement Bands with pre-punched grommets are fitted lengthwise on each roll for increased strength and security. Only ENVIROGARD has Eyelet Bands with Die-Cut Grommet points spaced every 200mm for super adjustable scaffold attachment.

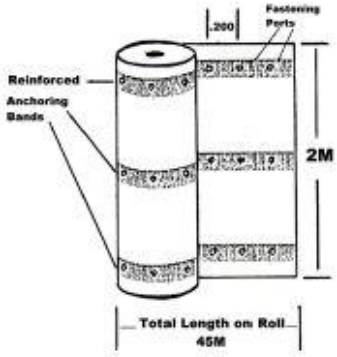
ENVIROGARD adjustable E-Z Ties are designed to pierce through the Die-Cut Grommet and secure the Sheeting to the Scaffold structure.

Panels of ENVIROGARD Scaffold Sheeting can be affixed together to form a single sheet airtight enclosure that meets SSPC Class 1 Containment.

Composition	1500 Denier Polyester yarn encased in low density clear Polyethylene Film.
Temperature Performance	-40ºC to +80ºC
UV Protection	Maximum UV Stabilisers for high durability
Light Transmission	Approximately 80%
Roll Size/Weight	2m Wide x 45m Long @ 240gsm
	4m Wide x 45m Long @ 240gsm
	2m Wide x 45m Long @ 180gsm
Thickness	0.26mm (.010")
Puncture Strength	500N

Exclusive Features

- ENVIROGARD'S three strategically placed reinforcement bands with pre-punched grommets make it the strongest and easiest to erect sheeting on the market.
- Available in FLAME RETARDANT and NON-FLAME RETARDANT styles.
- The unique EZ-TIE is the fastest and easiest way to secure scaffold sheeting directly to any standard scaffold. EZ-TIE is re-useable, adjustable and accessible from the front of the scaffold beam.
- The SCREW LOC connector is the smartest and simplest way to join multiple overlapping panels of ENVIROGARD sheeting.
- ENVIROGARD transparent sheeting provides the ultimate protection for dust and debris containment whilst maximizing light transmittal for an optimum working environment.
- ENVIROGARD containment sheeting is waterproof, tear resistant, impermeable, mildew resistant, UV stabilized, resistant to most chemicals/salts and acids and TOTALLY RE-USEABLE.



For more information: **1300 287 935** / mail@burwell.com.au / www.burwell.com.au

Appendix B Microbat habitat replacement

Figure 15: Four chamber microbat box constructed from recycled plastic (Cyplas™) and available from Hollow Log Homes (www.hollowloghomes.com)

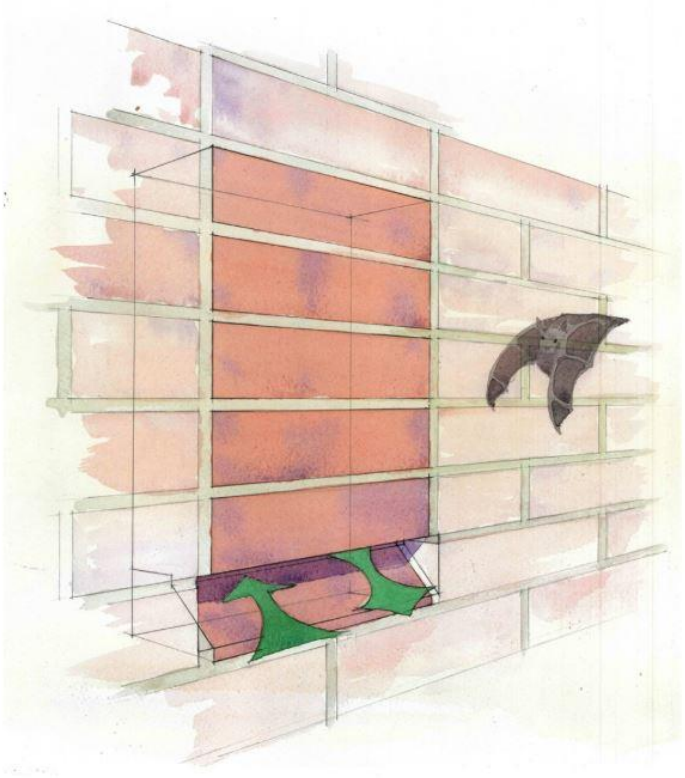


Figure 16: Microbat roost habitat design for use in the walls of solid structures and suitable for a range of cavity roosting and subterranean roosting microbat species

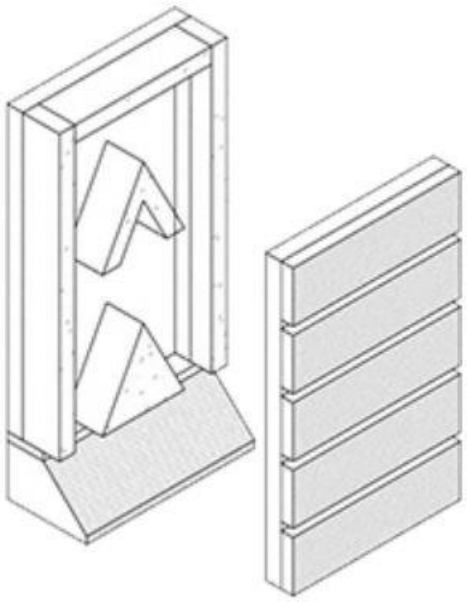


Figure 17: Internal cut away view and design features for the microbat roosting habitat

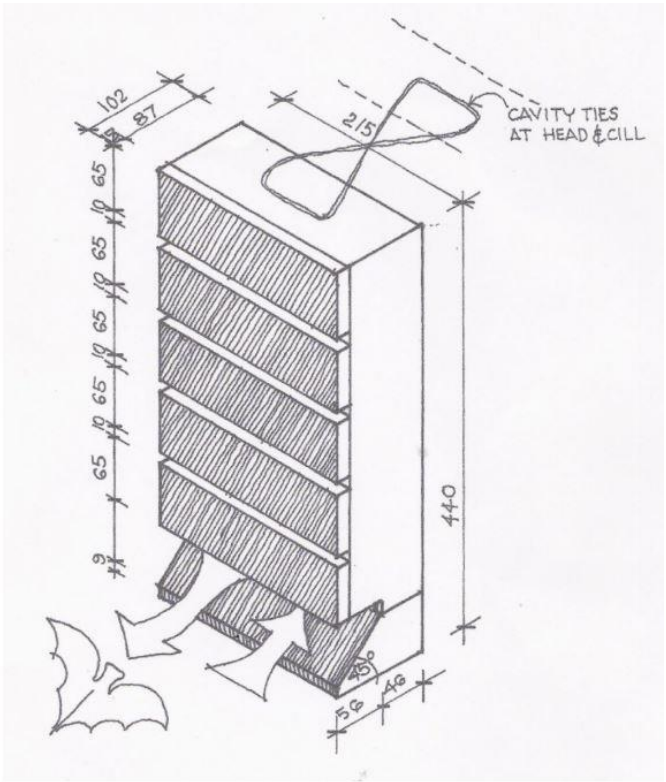


Figure 18: Design specifications for the microbat roosting habitat

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20 APPENDIX B8 DUST MANAGEMENT PLAN

LIBERTY INDUSTRIAL
DECONSTRUCTION, REMEDIATION & CIVIL

Crystalline Silica Dust Management Plan

Revision No.	Revision Date	Authority	Changes
Rev A	12.06.2020	JH	Draft

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1 PURPOSE

The purpose of this management plan is to provide guidance to Liberty Industrial personnel to manage the risk of Crystalline Silica dust on project sites.

2 SCOPE

This procedure applies to all operations were the company is the Principal Contractor or providing personnel as subcontractors.

3 REFERENCE

- Work, Health and Safety Act 2011;
- Work, Health and Safety Regulation 2017 (NSW);
- Workplace exposure standards for airborne contaminants;
- Guidance on the interpretation of workplace exposure standards for airborne contaminants;
- Health monitoring for exposure to hazardous chemicals – guide for persons conducting a business or undertaking;
- AS/NZS 1715-2009 Selection, use and maintenance of respiratory protection;
- AS/2985-2009 Workplace atmospheres method for sampling and gravimetric determination of respirable dust.

4 INTRODUCTION

Crystalline silica (silica) is found in sand, stone, concrete and mortar. It is also used to make a variety of products including composite stone used to fabricate kitchen and bathroom benchtops, bricks, tiles and some plastics. When workers cut, crush, drill, polish, saw or grind products that contain silica, dust particles are generated that are small enough to lodge deep in the lungs and cause illness or disease including silicosis.

Silica dust is generated in workplace mechanical processes such as crushing, cutting, drilling, grinding, sawing or polishing of natural stone or man-made products that contain silica. Some dust particles can be so small that they are not visible; these are commonly referred to as respirable particles.

Respirable crystalline silica (RCS) particles are small enough to penetrate deep into the lungs and can cause irreversible lung damage.

The non-crystalline or amorphous forms of silica do not cause this kind of lung damage.

5 WHAT DISEASES CAN RESPIRABLE SILICA DUST CAUSE?

Respirable crystalline silica (RCS), depending on factors such as how much dust a worker breathes in and for how long, can cause silicosis. Silicosis is a fibrosis (scarring) of the lung resulting in loss of lung function. This fibrosis is incurable and continues to develop after exposure has stopped. Persons with advanced silicosis suffer severe shortness of breath and may suffer complications such as heart failure.
Silicosis can be further classed into:

- Chronic (or classic) silicosis, typically observed in workers after 15 years or more since they were first exposed;
- Accelerated silicosis, appearing in workers after high exposure over a shorter period of time (5 to 10 years); and
- Acute silicosis, observed in workers within a few months to two years after exposure to silica at very high concentrations. Acute silicosis can cause very serious health effects and is life threatening. Significant long term exposure to crystalline silica has also been associated with an increased risk of developing lung cancer.

6 DEMOLITION AND REMEDIATION ACTIVITIES THAT GENERATE RCS

There are a number of activities that may generate RCS on Liberty Industrial sites which include:

- Demolishing concrete structures;
- Remediation activities including excavation, digging and dumping materials;
- Civil construction activities;
- Explosive activities;
- Crushing concrete;
- Loading trucks;
- Stockpiling of materials; and
- Operating plant including excavators, trucks, telehandlers and LV's on dirt roads.

7 THE WORKPLACE EXPOSURE STANDARD

The workplace exposure standard for respirable crystalline silica that must not be exceeded is 0.05 mg/m^3 (eight hour time weighted average).

Liberty Industrial will keep worker exposures to respirable silica dust as low as reasonably practicable. Air monitoring will need to be conducted if there is any doubt that the exposure standard is being exceeded or to find out if there is a risk to a worker's health.

7.1 LIBERTY INDUSTRIAL PLANNED AIR MONITORING 2020

A series of air monitoring events conducted by Occupation Hygienists are planned for the second half of the 2020 to gather baseline data on the level of exposure, and risk to personnel on projects conducted by Liberty Industrial. This monitoring will determine if Liberty Industrial personnel are exposed to significant risk to RCS, and this plan will be revised based on the data.

8 HEALTH MONITORING FOR WORKERS EXPOSED TO CRYSTALLINE SILICA

Workers exposed to respirable crystalline silica at ***levels or a frequency not resulting in a significant risk to health, are not required to undergo health monitoring***.

Under the model WHS Regulations, the company must provide health monitoring for workers if they carrying out ongoing work using, handling, generating or storing crystalline silica and there is a significant risk to the worker's health because of exposure.

The minimum health monitoring requirements for crystalline silica include:

- collection of demographic, medical and occupational history;
- records of personal exposure;
- standardised respiratory questionnaire;
- standardised respiratory function tests, for example, FEV1, FVC and FEV1/FVC; and
- chest X-Ray full PA view (baseline and high risk workers only).

Workers relying on personal protective equipment (PPE) such as respirators for controlling their exposure below the exposure standard must be included in health monitoring.

9 LIBERTY INDIUSTRIAL RISK MITIGATION STRATEGY

Liberty Industrial's Risk Mitigation Strategy includes using" Machines before Manual."
During project planning and execution, Liberty Industrial will use machinery before manpower, this reduces personnel to exposure to RCS during activities that generate dust, and this will significantly reduce exposure to personnel.

Most of the plant operated by Liberty Industrial will have enclosed cabs with air filters and air conditioning as standard features. With the standard workplace practice of operating machinery with closed windows, this will significantly reduce exposure to personnel operating our plant.

10 RCS CONTROL MEASURES

Under the model WHS Regulations, Liberty Industrial have specific duties to manage the risks to health and safety when using, handling, generating and storing hazardous chemicals,

including silica. The company also have a duty to ensure the workplace exposure standard for crystalline silica is not exceeded and to provide a range of controls to reduce dust generation on site.

Managing risks and worker exposures to silica can be achieved by selecting and implementing a range of control measures below:

- Monitoring weather conditions to reduce dust generating activities during windy periods;
- Good planning to prevent unnecessary movement of materials onsite and double handling;
- All personnel to monitor dust levels onsite and notification to Supervisor immediately if visible dust is seen leaving site;
- Air monitoring if working in close vicinity to residential or stakeholders;
- Water to suppress dust onsite can be used by a range of plant including:
    - Workers operating individual hoses for small point source dust creating activities;
    - Water trucks using cannons to spray at long range dust creating activities and dribble bars to be used on road surfaces to reduce dust during hauling activities;
    - Dust-busters for use on any activities creating dust. More than one dust-buster may be used for large scale dust creating activities.
    - High Reach excavator with water suppressing sprays directed at the source of the dust during demolition.
- Polymer additives to water trucks which bind and hold small dust particles to increase dust suppression;
- Local exhaust ventilation for activities in confined spaces that may generate dust;
- Supply personal protective equipment including appropriate respiratory equipment (generally a minimum of a P2 efficiency half face respirator); and
- Spray grass or seeding cleared areas to reduce erosion and dust generation onsite.