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Schedule 16 - Contract Program

Refer to clause 22 of the GC21 General Conditions of Contract.





Schedule 17 - Document Submission Schedule

Refer to clause 39 of the GC21 General Conditions of Contract.

DOCUMENT SUBMISSION SCHEDULE

General Notes:

- The list of documents provided under each submission is not exhaustive and the Contractor is to detail the documents that it will provide for each submission in its Design Management Plan. The Contractor is to provide all documents that would reasonably be expected to be submitted at each submission.
- Documents provided for each submission are to be at suitable scale to for review. The Contractor is to confirm the drawing scales that will be provided in its Design Management Plan.
- The Contractor is permitted to make submissions in a different order to that described below as long as it complies with the requirements in the "Milestone Date for Submission" column.

 Documents for Submission 1 can be submitted in tranches any time before the Milestone date for Submission. Any tranches that include documents that relate to any Functional Requirements must be accompanied by a Base Building Brief compliance schedule.
- Submission 2 must be submitted in one tranche.
- Documents for Submission 4 can be submitted in tranches. Any tranches that include documents that relate to any Functional Requirements must be accompanied by a Base Building Brief compliance schedule.

Discipline	Description	Milestone Date for Submission	Documentation Standard
Submission 1: Developed Design (to c. 90%)		Minimum 45 Business Days prior to Submission 2	
Miscellaneous			
Miscellaneous	Base Building Brief compliance schedule		
Miscellaneous	Safety in Design Report		
Miscellaneous Miscellaneous	BCA Report		
Miscellaneous	DDA Report Fire Engineering Report		
Miscellaneous	Waste Management Report		
Miscellaneous	Operational Traffic Management Plan		
Miscellaneous	Marine Habitat Plan		
Miscellaneous	Roof Design Development Report		
Miscellaneous	Authorities Plans		
Miscellaneous	Building Access and Maintenance Strategy		
Architectural	的现在分词 医阿拉斯氏学科医院学科主席罗斯氏学者的		AND RESIDENCE OF THE PARTY OF T
^ rchitectural	General Arrangement Plans		LOD 300
hitectural	Reflected Ceiling Plans		LOD 300
rchitectural	Fire Compartation Plans		LOD 300
Architectural	Finishes Plans		LOD 300
Architectural	Façade Plans		LOD 300
Architectural	Elevations and Sections		LOD 300
Architectural	Details Section 2015		LOD 300
Architectural	Façade Details		LOD 300
Architectural	Wholesale Tenancy Plans Crate Wash Room Layout Plan		LOD 300
Architectural			LOD 300
Architectural Architectural	Product Receipt Layout Plan Bulk Bin Receipt Layout Plan		LOD 300
Architectural	Transportable Live Fish Tanks Layout Plan		LOD 300
Architectural	Live Crustacean Layout Plan		LOD 300
Architectural	Mud Crab Room Layout Plan		LOD 300
Architectural	Export Facility Layout Plan		LOD 300
Architectural	QA Lab Layout Plan		LOD 300
Architectural	Buyer's Room Layout Plan		LOD 300
Architectural	Invoice Stations Location Plan		LOD 300
Architectural	Net and Tackle Tenancy Plan		LOD 300
Architectural	SFM Office Plan		LOD 300
Architectural	Sydney Seafood School Plan		LOD 300
Architectural	Public Art Plan		LOD 300
Architectural	Room Data Sheets		
Architectural	Finishes Schedule		
Architectural	FF&E Schedule		
Architectural Architectural	Door Schedule Schedule of Areas		
	Specifications		
nitectural	Specifications		
Landscape	General Arrangement Plans		
Landscape	Sections		
Landscape	Levels and Grading Plans		
Landscape	Materials and Finishes Plans		
Landscape	Planting Plans		
Wayfinding and Signage		obsection and the second sections.	
Wayfinding and Signage	General Arrangement Plans		
Wayfinding and Signage	Details		
Wayfinding and Signage	Signage Schedule	STATES OF THE STATE OF THE STAT	
Structural/Marine	Temperany Works Datails		LOD 300
Structural/Marine Structural/Marine	Temporary Works Details General Arrangement Plans		LOD 300
Structural/Marine Structural/Marine	Reinforcement Plans		LOD 300
Structural/Marine	Steel Member Plans		LOD 300
Structural/Marine	Foundations Plans		LOD 300
Structural/Marine	Wharf General Arrangement Plans		LOD 300
Structural/Marine	Wharf Mooring Plans		LOD 300
Structural/Marine	Steel Pile Schedule		LOD 300
Structural/Marine	Details		LOD 300
Structural/Marine	Loading Diagram	Yes a second	
Structural/Marine	Materials Schedule		
Structural/Marine	Specifications		
Structural/Marine	Navigational Impact Report		
Civil Engineering	terrores de la companya de la compa	Market Market and Conference of the	
Civil Engineering	General Arrangement Plans		LOD 300
Civil Engineering	Pavement Plans		LOD 300

Discipline	Description	Milestone Date for Submission	Documentation Standard
Civil Engineering	Road Works Plans		LOD 300
Civil Engineering	Drainage and Utilities Plans		LOD 300
Civil Engineering	Site Works Plans		LOD 300
Civil Engineering	Long Sections		LOD 300
Civil Engineering	Schedules		
Civil Engineering	Specifications		
Building Services (Mechanical, Refrige	ration, Ice Making, Electrical, Lighting, ICT, Security, Audio Visual, I	Fire Protection, Hydraulics, Waste Water, BMS/EMS)	
Building Services	Layout Plans		LOD 300
Building Services	Typical Details		LOD 300
Building Services	Schematics		LOD 300
Building Services	Single Line Diagram		LOD 300
Building Services	Specifications		
Building Services	Equipment Schedules		
Building Services	Luminaire Schedule		
Building Services	Substation Design		
Building Services	Car Park Exhaust System CFD Modelling		
Vertical Transportation			
Vertical Transportation	Drawings		LOD 300
Vertical Transportation	Hoist Drawings and Details		LOD 300
Vertical Transportation	Schedules		
Vertical Transportation	Specifications		
ESD	Market St. Commission of the C	经验证的 是实现的现在分词	
ESD	ESD Report		
ESD	Green Star Scorecard		
Acoustic			
Acoustic	Acoustic Report		

a Contractor proposed to submit design associated with the Foundation / Building Piles ahead of Submission 1 date noted above. The design submission will be circa 90% and will be:

* Submitted to the Principal and include a period for the Contractor to presen the design

* The Principal may provide comment following presentation. The critical factory being lock-down of pile wall thicknesses.

* The Contractor will order the piles on or about 30 November 2020, following lock-down of pile wall thicknesses.

* The Principal will be afforded the ability to provide further feedback, nothing this has not prevented the ordering of piles.

Discipline	Description	Milestone Date for Submission	Documentation Standard
Submission 2: Agreement for Lease Package	ge 4	29/05/2021	
Miscellaneous			
Miscellaneous	Base Building Brief compliance schedule		
Miscellaneous	Safety In Design Report		
Miscellaneous	BCA Report		
Miscellaneous	Building Access and Maintenance Strategy		
Architectural			
Architectural	General Arrangement Plans		LOD 300
architectural	Reflected Ceiling Plans		LOD 300
Architectural	Fire Compartation Plans		LOD 300
Architectural	Finishes Plans		LOD 300
Architectural	Elevations and Sections		LOD 300
Architectural	Details		LOD 300
rchitectural	Room Data Sheets		
rchitectural	Finishes Schedule		
rchitectural	FF&E Schedule		
rchitectural	Door Schedule		
rchitectural	Schedule of Areas		
Architectural	Specifications		
andscape			
andscape	General Arrangement Plans		LOD 300
andscape	Sections		LOD 300
andscape	Levels and Grading Plans		LOD 300
andscape	Materials and Finishes Plans		LOD 300
andscape	Planting Plans		LOD 300
Vayfinding and Signage			
/finding and Signage	General Arrangement Plans		LOD 300
ayfinding and Signage	Details		LOD 300
Vayfinding and Signage	Signage Schedule		
tructural/Marine			
tructural/Marine	Temporary Works Details		LOD 300
tructural/Marine	General Arrangement Plans		LOD 300
tructural/Marine	Reinforcement Plans		LOD 300
tructural/Marine	Steel Member Plans		LOD 300
tructural/Marine	Foundations Plans		LOD 300
tructural/Marine	Wharf General Arrangement Plans		LOD 300
tructural/Marine	Wharf Mooring Plans		LOD 300
tructural/Marine	Steel Pile Schedule		LOD 300
tructural/Marine	Details		LOD 300
tructural/Marine	Loading Diagram		LOD 300
tructural/Marine	Materials Schedule		100 300
tructural/Marine	Specifications		
	n, Ice Making, Electrical, Lighting, ICT, Security, Audio Visual, Fire Prote	ection Hydraulics Waste Water RMS/FMS)	William Company of the Company of th
uilding Services	Layout Plans	ction, Hydraulia, Traste Trater, DIVIS/EIVIS/	LOD 300
uilding Services	Typical Details		LOD 300
uilding Services	Schematics		LOD 300
uilding Services	Single Line Diagram		LOD 300
uilding Services	Specifications		20000
uilding Services	Equipment Schedules		
uilding Services	Luminaire Schedule		
ertical Transportation	Prominging actionals	and the second s	and the responsibility of the same of the
ertical Transportation	Drawings		LOD 300
	Schedules		100 300
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rical fransportation	Pecuications		
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SD	Green Star Scorecard		
coustic	I A southin Dancert		
coustic	Acoustic Report		

Discipline	Description	Milestone Date for Submission	Documentation Standard
Submission 3: Approved for Construction			
Miscellaneous			
Miscellaneous	Base Building Brief compliance schedule		
Miscellaneous	Safety in Design Report		
Miscellaneous	BCA Report		
Miscellaneous Miscellaneous	DDA Report		
Miscellaneous	Fire Engineering Report Waste Management Report		
Miscellaneous	Operational Traffic Management Plan		
Miscellaneous	Authorities Plans		
Miscellaneous	Building Access and Maintenance Strategy		
Miscellaneous	Wind Report		
Miscellaneous	Thermal Comfort Report		
Miscellaneous	Swept Path Analysis		
Architectural	Icana de la companya del companya de la companya de la companya del companya de la companya de l		L op 200 250
Architectural	General Arrangement Plans Coordinated Reflected Ceiling Plans including all ceiling mounted		LOD 300-350
Architectural	services		LOD 300-350
Architectural	Fire Compartation Plans		LOD 300-350
Architectural	Finishes Plans		LOD 300-350
Architectural	Façade Plans		LOD 300-350
Architectural	Elevations and Sections		LOD 300-350
Architectural	Details Feede details		LOD 300-350
Architectural Architectural	Façade details Joinery Plans, Elevations and Details		LOD 300-350
Architectural	Kitchen Plans, Elevations and Details Kitchen Plans, Elevations and Details		LOD 300-350 LOD 300-350
hitectural	SFM Office Plan		LOD 300-350
hitectural	Sydney Seafood School Plan		LOD 300-350
Architectural	Public Art Plans and Details		LOD 300-350
Architectural	Room Data Sheets		
Architectural	Finishes Schedule		
Architectural	FF&E Schedule		
Architectural	Door Schedule		
Architectural	Schedule of Areas		
Architectural Landscape	Specifications		
Landscape	General Arrangement Plans		LOD 300-350
Landscape	Sections		LOD 300-350
Landscape			
, consideration	Levels and Grading Plans		LOD 300-350
Landscape	Levels and Grading Plans Materials and Finishes Plans		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage	Materials and Finishes Plans Planting Plans		LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage	Materials and Finishes Plans Planting Plans General Arrangement Plans		LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage	Materials and Finishes Plans Planting Plans General Arrangement Plans Details		LOD 300-350
Landscape Landscape Wayfinding and Signage	Materials and Finishes Plans Planting Plans General Arrangement Plans		LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details		LOD 300-350 LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine Structural/Marine Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans		LOD 300-350 LOD 300-350 LOD 300-350 LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine Structural/Marine Structural/Marine Structural/Marine Structural/Marine Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans		LOD 300-350 LOD 300-350 LOD 300-350 LOD 300-350 LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans		LOD 300-350 LOD 300-350 LOD 300-350 LOD 300-350 LOD 300-350 LOD 300-350 LOD 300-350 LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Wharf Mooring Plans		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine Utural/Marine uctural/Marine uctural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine yctural/Marine yctural/Marine Structural/Marine Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Plans Steel Plans Under General Arrangement Plans Wharf Mooring Plans Steel Pla Schedule Details Loading Diagram		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine uctural/Marine uctural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine uctural/Marine structural/Marine Structural/Marine Structural/Marine Structural/Marine Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Plie Schedule Details Loading Diagram Materials Schedule		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Plie Schedule Details Loading Diagram Materials Schedule		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine Civil Engineering Civil Engineering Civil Engineering	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans		LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Pavement Plans Road Works Plans		LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine Uctural/Marine Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Ple Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans General Arrangement Plans General Arrangement Plans General Arrangement Plans Auterials Schedule Specifications General Arrangement Plans Road Works Plans Drainage and Utilities Plans		LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine Uctural/Marine Structural/Marine Structural/Marine Uctural/Marine Structural/Marine	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Plie Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans		LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine Structural/Barine Civil Engineering	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Pavement Plans Pavement Plans Drainage and Utilities Plans Site Works Plans Drainage and Utilities Plans Site Works Plans Long Sections		LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine Gutural/Marine Structural/Marine Structural/Marine Structural/Marine Structural/Marine Structural/Marine Structural/Marine Civil Engineering	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules		LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine Structural/Barine Civil Engineering	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Pavement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications		LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine Structural/Barine Civil Engineering	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules		LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine Uctural/Marine Structural/Marine Civil Engineering	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pawement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications Schedules Specifications		LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine Civil Engineering Services (Mechanical, Refrigeration, Ice Mak Building Services Building Services	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Ple Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications General Arrangement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications General Arrangement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications Ing. Electrical, Lighting, ICT, Security, Audio Visual, Fire Protection, Hydrauli Layout Plans		LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine Civil Engineering	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Reinforcement Plans Steel Member Plans Foundations Plans Steel Member Plans Foundations Plans Steel Plans Schedule Details Loading Diagram Materials Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Pavement Plans Pavement Plans Poainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications General Arrangement Plans Pavement Plans Pavement Plans Pavement Plans Pavement Plans Pavement Plans Pavement Plans Poainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications Ing. Electrical, Lighting, ICT, Security, Audio Visual, Fire Protection, Hydrauli Layout Plans Typical Details Schematics		LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine Uctural/Marine Structural/Marine Struct	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications Schedules Specifications Schedules Specifications Schedules Specifications Schedules Specifications Schedules Specifications Schedules Specifications Sing, Electrical, Lighting, ICT, Security, Audio Visual, Fire Protection, Hydrauli Layout Plans Schematics Single Line Diagram Specifications		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine Uctural/Marine Structural/Marine Structural/Marine Structural/Marine Structural/Marine Structural/Marine Structural/Marine Structural/Marine Structural/Marine Civil Engineering Selvices (Mechanical, Refrigeration, Ice Mak Building Services Building Services Building Services Building Services Building Services	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Plie Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pawement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications General Arrangement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications General Arrangement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications General Lepting, ICT, Security, Audio Visual, Fire Protection, Hydrauli Layout Plans Typical Details Schematics Single Line Diagram Specifications Equipment Schedules		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine Uctural/Marine Structural/Marine Struct	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications Schedules Specifications Schedules Specifications Schedules Specifications Schedules Specifications Schedules Specifications Schedules Specifications Sing, Electrical, Lighting, ICT, Security, Audio Visual, Fire Protection, Hydrauli Layout Plans Schematics Single Line Diagram Specifications		LOD 300-350 LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine Structur	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Reinforcement Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Road Works Plans Road Works Plans Drainage and Utilities Plans Sitie Works Plans Long Sections Schedules Specifications General Arrangement Plans Pavement Plans Road Works Plans Long Sections Schedules Specifications Schedules Specifications Specificat		LOD 300-350
Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine Civil Engineering Elidling Services Building Services Vertical Transportation Vertical Transportation	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Reinforcement Plans Steel Member Plans Foundations Plans Steel Member Plans Foundations Plans Steel Plans Foundations Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Pavement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications General Lyrangement Plans Steel Plans Site Works Plans Long Sections Schedules Specifications General Schedules Schematics Single Line Diagram Specifications Equipment Schedules Luminaire Schedule		LOD 300-350
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Landscape Landscape Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Wayfinding and Signage Structural/Marine Civil Engineering Elidling Services Building Services Vertical Transportation Vertical Transportation	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Reinforcement Plans Steel Member Plans Foundations Plans Steel Member Plans Foundations Plans Steel Plans Foundations Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Pavement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications General Lyrangement Plans Steel Plans Site Works Plans Long Sections Schedules Specifications General Schedules Schematics Single Line Diagram Specifications Equipment Schedules Luminaire Schedule		LOD 300-350
Landscape Landscape Wayfinding and Signage Structural/Marine Str	Materials and Finishes Plans Planting Plans General Arrangement Plans Details Signage Schedule Temporary Works Details General Arrangement Plans Reinforcement Plans Steel Member Plans Foundations Plans Steel Member Plans Foundations Plans Wharf General Arrangement Plans Wharf Mooring Plans Steel Pile Schedule Details Loading Diagram Materials Schedule Specifications General Arrangement Plans Pavement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications General Arrangement Plans Road Works Plans Drainage and Utilities Plans Site Works Plans Long Sections Schedules Specifications General CT, Security, Audio Visual, Fire Protection, Hydrauli Layout Plans Typical Details Schematics Single Line Diagram Specifications Equipment Schedules Luminaire Schedule Drawings Hoist Drawings and Details Schedules		LOD 300-350

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Discipline	Description	Milestone Date for Submission	Documentation Standard
ESD	ESD Report		
ESD	Green Star Scorecard		
Acoustic			
Acoustic	Acoustic Report		

Working Street and Street Street Street Street Street	Description	Milestone Date for Submission	Documentation Standard
Submission 4: Retail Tenancy Plans (one set per re	etail tenancy)	Minimum 25 Months prior to the Contractual Completion Date	
Architectural		Contracted Completion Date	
Architectural	Retail Layout Plan - Upper Ground Level		LOD 300-350
Architectural	Retail Layout Plan - Mezzanine Level		LOD 300-350
Architectural	Retail Tenancy General Arrangement Plans		LOD 300-350
Architectural	Retail Tenancy Lettable Area Plans		LOD 300-350
Architectural	Retail Tenancy Elevations and Sections		LOD 300-350
	Retail Tenancy Coordinated Reflected Ceiling Plans with all ceiling		
Architectural	mounted services shown		LOD 300-350
Architectural	Retail Tenancy Finishes Plans		LOD 300-350
Architectural	Finishes Schedule		
	ICT, Security, Fire Protection, Hydraulics, BMS/EMS)		
Building Services	Building Services Point Schedule		LOD 200-300
	Retail Tenancy Service Termination Locations		LOD 200-300
Building Services	Retail Tenancy Service Termination Locations		LOD 200-300
ubmission 5: Shop Drawings			
Miscellaneous			
Miscellaneous	Base Building Brief compliance schedule		
Aiscellaneous	Safety In Design Report		
Aiscellaneous	Authorities Plans		
Aiscellaneous	Building Access and Maintenance Strategy		
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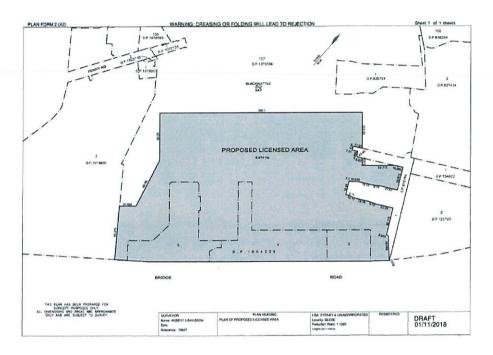
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Submission 6: Completion Documenta	tion (including Agreement for Lease Package 5)	Prior to the Contractual Completion Date	
Miscellaneous			
Miscellaneous	Base Building Brief compliance schedule		
Miscellaneous	All documentation that is reasonably necessary for the use, operation, occupation and maintenance of the Works		
Miscellaneous	Operations and Maintenance Manuals		
Miscellaneous	Testing and Commissioning Reports		
Aiscellaneous	Final Building Access and Maintenance Strategy		
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Architectural	As-Built Fire Compartation Plans		LOD 400
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SD	Tel Lega a		
SD	Final ESD Report		
SD	Final Green Star Scorecard		



Schedule 18 - Site Access Schedule

Refer to clause 34 of the GC21 General Conditions of Contract.

Part A - Licensed area



Part B – Dates for access to the Site





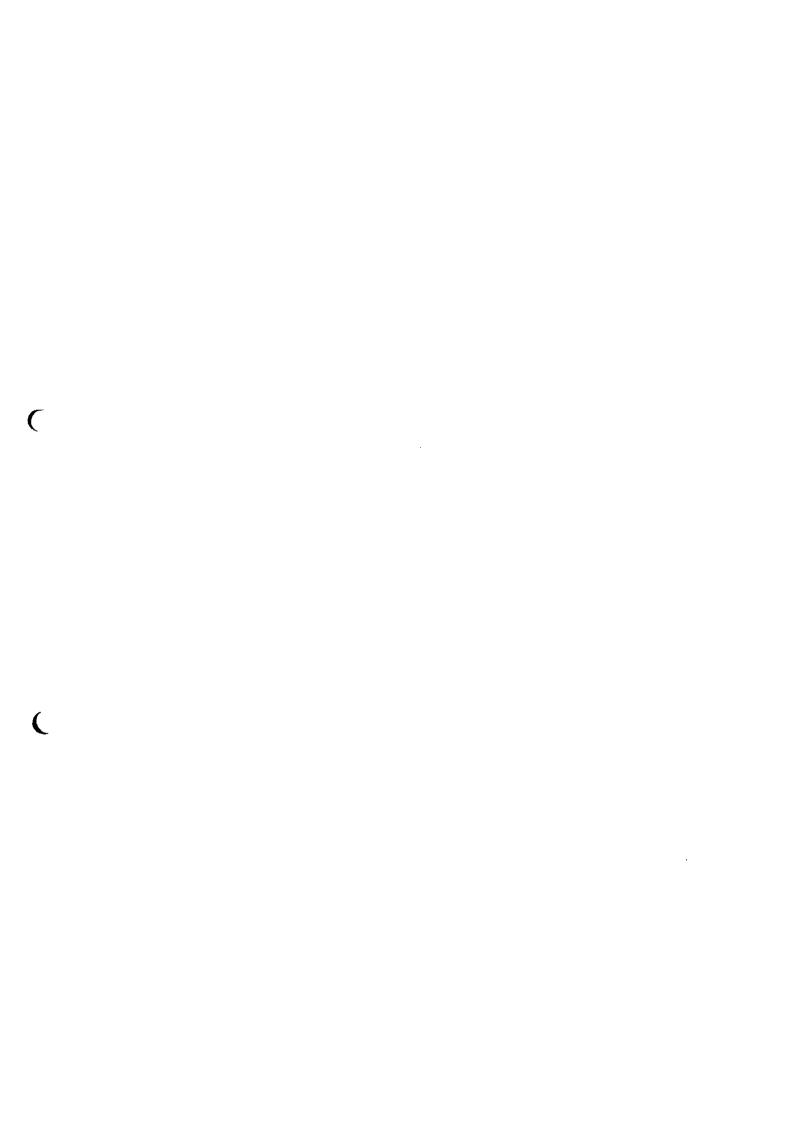
Part C - Site access conditions

- Early Works Contractor's vehicular access, perimeter fencing / hoarding, gates, environmental controls along Bridge Road and site signage handed over
- Class A hoarding to perimeter provided by the Early Works Contractor left in place and in good condition (i.e. no graffiti) inclusive of hoarding design / installation certification handed over to the Contractor
- Services identification and drawings (if possible). Incoming services to remain active or capped off in case of sewer
- Land based concrete slab (south of sea wall) retained in place
- Existing Early Works silt curtain removed
- Early Works site accommodation removed from site (prior to Site Access # 2)
- Temporary or permanent protection measures for stormwater culverts associated with the Early Works are handed over including associated details and heritage sign-off of condition of Stormwater Channel no. 17;

 \mathbf{C} ·

Schedule 19 - Environmental Management Plan

Refer to clause 26A of the GC21 General Conditions of Contract.



Schedule 20 - Work Health and Safety Plan

Refer to clause 16 of the GC21 General Conditions of Contract.

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Schedule 21 - Stakeholder Management and Community Engagement Plan

Refer to clause 25A of the GC21 General Conditions of Contract.

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Schedule 22 - Remediation Action Plan

Refer to clause 26A of the GC21 General Conditions of Contract.



UrbanGrowth NSW Development Corporation

Remedial Action Plan

The new Sydney Fish Market 1A to 1C Bridge Rd, Glebe and part 56-60 Pyrmont Bridge Road, Pyrmont, NSW

> 4 April 2019 54162/113808 (Rev3) JBS&G Australia Pty Ltd

UrbanGrowth NSW Development Corporation

Remedial Action Plan

The new Sydney Fish Market 1A to 1C Bridge Rd, Glebe and Part 56-60 Pyrmont Bridge Road, Pyrmont, NSW

> 4 April 2019 54162/113808 (Rev 3) JBS&G Australia Pty Ltd



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Appendices

Appendix A Proposed Development Plans



Executive Summary

JBS&G Australia Pty Ltd (JBS&G) was engaged by UrbanGrowth NSW Development Corporation (UrbanGrowth NSW, the client) to prepare a Remedial Action Plan (RAP) for the proposed new Sydney Fish Market located at the head of Blackwattle Bay between the Pyrmont Peninsula and the foreshore of Glebe (the site). 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 site has historically been used for a range of commercial/industrial uses. The proposed fish market development will include retail and food and beverage premises, wholesale facilities, auction rooms, offices and commercial space, the Sydney Seafood School, back of house facilities, and car, truck and coach parking facilities.

Previous site contamination investigations as evaluated in JBS&G (2018) in relation to the proposed development have identified that management of a number of potential site contamination issues is required such that at the completion of works, a final validation assessment may confirm the suitability of the site for the proposed use as required under the NSW planning framework.

Given the site conditions and remaining uncertainties, JBS&G (2018) recommended that a RAP be prepared to establish a suitable framework for management of potentially contaminated media and management of material excess to development requirements, such that upon completion of works, the site will be considered suitable for the proposed use. Potential acid sulfate soils (ASS) were also identified within marine soils and sediments underlying the site that will require management in the event of ground disturbance activities. The acid sulfate soil management plan will be issued as a standalone document to complement this RAP.

This RAP document presents a summary of known and suspected site conditions, a conceptual site model (CSM) of contamination conditions and identification of existing data gaps in relation to the proposed development scheme, an evaluation of potential remedial strategies, identification of preferred strategies and details of site management and associated validation requirements to be implemented during the proposed works.

Overall, it is considered that the proposed actions outlined in this RAP conform to the requirements of the *Contaminated Sites Guidelines for the NSW Site Auditor Scheme (3rd Edition)* (EPA 2017) because they are: technically feasible; environmentally justifiable; and consistent with relevant laws policies and guidelines endorsed by NSW EPA.

Subject to the successful implementation of the measures described in this RAP and with consideration to the Limitations presented in **Section 13**, it is considered that the Site can be made suitable for the intended uses and that the risks posed by contamination can be managed in such a way as to be adequately protective of human health and the environment.



Abbreviations

Term	Definition				
ACM	Asbestos Containing Materials				
AEC	Areas of Environmental Concern				
AHD	Australian Height Datum				
ASRIS	Australian Soil Resource Information System				
ASS	Acid Sulfate Soils				
BTEXN	Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene				
CLM Act	Contaminated Land Management Act				
coc	Chain of Custody				
COPC	Contaminants of Potential Concern				
CSM	Conceptual Site Model				
DBYD	Dial Before You Dig				
DO	Dissolved Oxygen				
DP	Development Plan				
DQI	Data Quality Indicators				
DQO	Data Quality Objectives				
DSI	Detailed Site Investigation				
EC	Electrical Conductivity				
Eh	Redox Potential				
EIL	Ecological Investigation Levels				
EPA	NSW Environmental Protection Authority				
ESA	Environmental Site Assessment				
ESLs	Ecological Screening Levels				
На	Hectare				
HAR	Heritage Assessment Report				
HILs	Health Investigation Levels				
HSLs	Health Screening Levels				
JBS&G	JBS&G Australia Pty Ltd				
JRA	Job Risk Assessment				
LEP	Local Environmental Plan				
LOR	Limit of Reporting				
NATA	National Accreditation Testing Authority				
OCP	Organochlorine Pesticides				
OPP	Organophosphate Pesticides				
PAH	Polycyclic Aromatic Hydrocarbons				
PCB	Polychlorinated Biphenyls				
PID	Photoionisation Detector				
POEO Act	Protection of Environment Operations Act				
PSI	Preliminary Site Investigation				
QA/QC	Quality Assurance/Quality Control				
RFQ	Request for Quote				
RPD	Relative Percentage Difference				
SAQP	Sampling Analytical and Quality Plan				
SCID	Stored Chemical Information Database				
SWMS	Safe Work Method Statement				
TRH	Total Recoverable Hydrocarbons				
UCL	Upper Confidence Limit				
UST	Underground storage tank				



1. Introduction & Objectives

1.1 Introduction

JBS&G Australia Pty Ltd (JBS&G) was engaged by UrbanGrowth NSW Development Corporation (UrbanGrowth NSW, the client) to prepare a Remedial Action Plan (RAP) for the proposed new Sydney Fish Market located at the head of Blackwattle Bay between the Pyrmont Peninsula and the foreshore of Glebe (the site). 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 site is currently used for a variety of commercial and industrial uses, primarily comprising a concrete batching plant and commercial boat hire operations. The site is currently zoned as Ports and Employment under State Environmental Planning Policy (SEPP) No. 26 – City West.

An Environmental Site Assessment (JBS&G 2019¹) was previously completed for the site, which comprised review and assessment of site condition data from a range of previous investigations. JBS&G (2018) identified no unacceptable health risks with respect to the proposed development. Notwithstanding, additional assessment of a number of identified data gaps in relation to potentially contaminated media specific to the proposed development proposal was recommended to close out a number of uncertainties such that during the development early works phase, remediation/management of conditions may be completed as necessary to ensure the site is suitable for the proposed use.

Given the site conditions and remaining uncertainties, a RAP was recommended to establish a suitable framework for management of potentially contaminated media, management of material excess to development requirements, etc such that upon completion of works, the site will be considered suitable for the proposed use. Potential acid sulfate soils (ASS) were also identified within marine soils and sediments underlying the site that will require management in the event of ground disturbance activities. The acid sulfate soil management plan will be issued as a standalone document to complement this RAP.

This report has been prepared in accordance with the requirements of the NSW Environment Protection Authority (EPA) published and endorsed guidelines.

1.2 Objective

The objectives of this RAP are to establish a suitable framework for management of potentially contaminated media such that upon completion of works, the site will be considered suitable for the proposed use. As such, the objectives are to: identify the known and/or anticipated extent of environmental impact via presentation of a conceptual site model, identification and evaluation of remedial/management options in relation to regulatory requirements, the development details and overall objectives; and to document the procedures and standards to be followed such that (potentially) contaminated media are appropriately managed whilst ensure the protection of human health and the surrounding environment.

1.3 Proposed Development

The most recent concept plans for the proposed new Sydney Fish Market are provided as **Appendix A**. It is understood that statutory approval for the proposed development scheme will be sought in two stages, comprising the initial concept development application, being for the demolition of existing structures and approval for the proposed development envelope for use of the site as a fish

¹ Environmental Site Assessment, Proposed Sydney Fish Markets, 1A to 1C Bridge Road Glebe, JBS&G Australia Pty Ltd, 4 April 2019, Rev 3 (JBS&G 2018)



market. The second development application (Main Works) will seek approval for the construction of the new fish market and associated works.

Specifically, the Concept development application seeks approval for:

- the use of the site for the fish market including waterfront commercial and tourist facilities and ancillary uses and the distribution of uses;
- a gross floor area of up to 30,000m² contained within a defined building envelope;
- waterfront structures such as wharves;
- concepts for improvements to the public domain including promenades, access to Blackwattle Bay and landscaping;
- pedestrian cycle and road access and circulation principles; and
- principles for infrastructure provision and waste management.

The development application will also set out details of the first stage of the development being the demolition of land and water-based structures on the site including removal of marine piles and any resulting repairs to the existing sea wall, and related services relocations.

The Main Works development application seeks approval for:

- the construction of a new fish market including land and water-based structures.
- the use of the site for the fish market including waterfront commercial and tourist facilities and ancillary uses and the distribution of uses;
- a gross floor area of approximately 26,000m² as calculated according to the definition of GFA under SREP 26 (approximately 25,600m² as calculated according to the definition of GFA under the Standard Instrument).
- public domain works including promenades access to Blackwattle Bay and landscaping;
- pedestrian, cycle and road access and circulation;
- infrastructure provision and waste management; and
- associated works as required.

The proposed uses comprise:

Below Ground Level

- Parking for service and delivery, and private vehicles up to approximately 417 vehicles;
- Plant and storage;
- Waste Management facilities; and
- · End of journey facilities.

Ground Level - Outside of Building Envelope

- Up to three operational wharves for fishing fleet servicing and product unloading/loading, multi-purpose wharf space, private-operated ferry stop, recreational vehicles and the like;
- · Vehicular access driveways; and
- Publicly accessible promenade.

Ground Level - Within Building Envelope

Wholesale services space including product storage and processing;



- Auction floor and associated refrigeration and handling space.
- Loading dock including time-limited delivery and service vehicle parking area;
- · Waste management facilities;
- · Office space including buyers room; and
- Staff amenities, plant and storage.

Upper Ground Level (L1)

- Retail premises including fresh food retail, food and drink premises including harbourside dining;
- External/shared dining space;
- Ancillary back of house space and staff amenities; and
- · Circulation areas.

Upper Level 2 (Mezzanine)

- Catering space;
- The Sydney Seafood School;
- Tenant and subtenant office space; and
- Plant and storage space.

Specifically, the proposed development works as outlined in plans included in **Appendix A** will include:

- Retention, rehabilitation/repair of the existing sea wall structures;
- Removal/decommissioning of all existing industrial and wharf infrastructure;
- Construction of a new basement level carpark in front of the existing sea wall with appropriate measures to allow the continued discharge of stormwater through existing culverts.
- Foundations for the new structures will be completed as driven steel piles with the basement constructed as a precast stainless steel structure within which a membrane will be fitted and in-situ basement pavements poured resulting in a water tight structure.
- The proposed basement finished floor level (FFL) has been designed at -0.3 m AHD.
 Allowing for a hydrostatic slab and steel structure, JBS&G has conservatively assumed a base of structure of approximately -1.3 m AHD.
- A coffer dam will be installed around the construction footprint to enclose the site and enable temporary partial dewatering to facilitate construction requirements whilst ensuring that sediments remain saturated.
- To facilitate continued use of the existing stormwater culverts, etc the proposed works will include some dredging of sediment in the vicinity of an existing culvert within the new building footprint. These works will be completed to provide a gap of at least 1 m between the culvert mouth and the new basement structure. It is anticipated that approximately 55 m³ of sediment/silt will require movement to an elevation of -3.01 m RL. The sediment/silt movement will relocate excess material within the basement footprint so as to minimise the level of disturbance of both the material and ecological receptors. In addition, it is anticipated that approximately 470 m³ of existing rock revetment will also require removal within the zone along the base of the sea wall. Given the inherent



uncertainties associated with the survey methodology and the potential for movement of sediment/silt within the building footprint between the survey period and commencement of works, the reported volumes requiring removal should be preliminary estimates and contingency allowed should additional material required removal to achieve the drainage/construction objectives.

1.4 Previous Assessments

The RAP has been substantially prepared on the basis of a range of previous assessments. This has included:

- Environmental Site Investigation Blackwattle Bay Maritime Precinct Blackwattle Bay Maritime Precinct, NSW, March 2009, Parsons Brinkerhoff (PB 2009);
- Report to Land and Property Management Authority C/- Government Architects Office on Preliminary Environmental Site Assessment for Proposed Redevelopment – Waterfront at Markets, 56-60 Pyrmont Bridge Road, Pyrmont, NSW. Ref: E24125Krpt, EIS, August 2010 (EIS 2010b);
- Sydney Bays Precinct Urban Growth NSW Geotechnical Desktop Review, 6 August 2014, Jacobs Group (Australia) Pty Limited (Jacobs 2014);
- UrbanGrowth NSW Environmental Site Assessment The Bays Precinct Urban Transformation Area rev 1, 18 November 2015, JBS&G Australia Pty Ltd (JBS&G 2015a);
- UrbanGrowth NSW Site Wide Remedial Concept Plan The Bays Precinct Urban
 Transformation Area rev 0, 4 December 2015, JBS&G Australia Pty Ltd (JBS&G 2015b);
- Bays Market Precinct: Blackwattle Bay & Wentworth Park History, Built Heritage, Archaeology & Landscape Study, July 2017, City Plan Heritage (CPH 2017);
- Contamination Investigation The Bays Precinct Separable Portion 1 Blackwattle Bay, Pyrmont, NSW, 12 July 2017, Environmental Investigation Services (EIS 2017);
- Revised Geotechnical Report to Urbangrowth NSW on Geotechnical Investigation for Proposed Bays Market District at Blackwattle Bay & Wentworth Park, Pyrmont, NSW rev 2, 14 September 2017, JK Geotechnics (JK 2017);
- Environmental Site Assessment, the new Sydney Fish Markets, 1A to 1C Bridge Road, Glebe, NSW. 4 April 2019, Rev 3, JBS&G Australia Pty Ltd (JBS&G 2019); and
- Acid Sulfate Soil Management Plan, the new Sydney Fish Market, 1A to 1C Bridge Rd, Glebe NSW. 4 April 2019, Rev 2, JBS&G Australia Pty Ltd (JBS&G 2019b).



2. Site Condition & Surrounding Land Uses

2.1 Site Identification

The site location is shown in **Figure 1**, and current site layout is shown in **Figure 2**. The site details are summarised in **Table 2.1** and described in the following sections. It is understood that the land site is currently zoned as Ports and Employment under State Environmental Planning Policy (SEPP) No. 26 – City West and Maritime Waters under Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005.

Table 2.1: Summary Site Details

	Lots 3-5 in DP 1064339
Lot / DP	Part Lot 107 in DP1076596
	Part Lot 1 in DP835794
Address	1A to 1C Bridge Road, Glebe NSW and part 56-60 Pyrmont Bridge Road, Pyrmont NSW
Local Government Authority	City of Sydney Council
Approximate MGA Coordinates	Easting: 332669.678
(MGA 56)	Northing: 6250259.919
Current Use	Various industrial and commercial uses (concrete batching plant and commercial boat
	hire operations).
Proposed Use	Commercial use (fish market)
Site Area	Approximately 3.7 Ha

2.2 Site Condition

A detailed site description and environmental setting is provided in JBS&G (2019). At the time of preparing this RAP, the site was still operational as a concrete batching plant and commercial boat hire business as described previously. It has been assumed that all site structures will be demolished in accordance with provisions detailed in a Hazardous Building Material Survey (HMBS) understood to have been completed on site structures prior to any remediation/development works.

2.3 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 TPH, however it was further
 reported that heavy metal impacts remained in-situ. At the time of this current assessment,
 no direct records were available as to the former location of these facilities or the
 remediation works completed for their removal, as such there remains uncertainty as to the
 potential for residual infrastructure and/or impacts within the site;
- 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.

2.4 Geology and Soils

Jacobs (2014) has reported that review of existing geotechnical maps indicate that the area of the site is underlain by a significant depth (>3 m) of fill material, as consistent with historical reclamation of the area from Blackwattle Bay. This is consistent with Wentworth Park as located further south of the site. Hawkesbury Sandstone was anticipated under site filling.

JK (2017a) reported that the 1:100,000 Geological Map of Sydney indicated the site to be underlain by man-made fill and estuarine soils overlying Hawkesbury Sandstone of the Wianamatta Group. The Hawkesbury Sandstone comprises medium to coarse grained quartz sandstone with very minor shale and laminite lenses. It was further noted that at least two dykes were believed to extend through the site in a rough north-west to south-east alignment.

Boreholes in Blackwattle Bay undertaken in JK (2017a) disclosed a subsurface profile generally comprising natural clays and sandy clays of medium to high plasticity and clayey sands overlying sandstone bedrock. In the bay, the boreholes typically encountered no fill from the seabed level, except the boreholes close to the existing shoreline where fill extending up to 4.7m depth was encountered. There generally appears to be a fill layer close to the southern shoreline. 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.

Sandstone bedrock was encountered underlying natural soils at depths ranging from approximately 5.5-13.4 m bgs (-9.1 to -18.5 m AHD).

2.5 Topography and Hydrology

The site is situated on predominantly flat terrain. 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.

2.6 Hydrogeology

A review of the registered bore information (NSW DPI 2017²) 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 investigations has identified:

NSW Department of Primary Industries, 2015. Groundwater Monitoring Overview Map. <u>Http://allwaterdata.water.nsw.gov.au/water.stm</u>. Accessed 13 February 2018



- 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.

2.7 Acid Sulfate Soils

Review of the Acid Sulfate Soil (ASS) Risk Map for Prospect/Parramatta indicates³ that the subject site is located within an area of 'high probability' of acid sulfate soils within bottom sediments. In such areas, there is a severe environmental risk if bottom sediments are disturbed by activities such as dredging.

PB (2009) noted potential indicators of ASS comprising odorous marine sediments with sea shells in boreholes located in the southern portion of the site (overlying the land portion of the site) and within marine sediments in Blackwattle Bay. Similar observations were reported in JBS&G (2015) and EIS (2017), however no samples were analysed at a laboratory to confirm if the soils comprised actual ASS.

Given the proposed development scheme and the anticipated acid generation characteristics of the sediment and potentially soil at the site, an acid sulfate soil management plan (ASSMP, JBS&G 2019b) has been prepared in conjunction with this RAP.

2.8 Meteorology

A review of average climatic data for the nearest Bureau of Meteorology monitoring location (Observatory Hill⁴) indicates the Site is located within the following meteorological setting:

- Average minimum temperatures vary from 8.1 °C in July to 18.8 °C in February;
- Average maximum temperatures vary from 16.4 °C in July to 26.0 °C 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.

³ 'Acid Sulfate Soil Risk Map – Prospect/Parramatta, Edition 2', 1997 1:25 000, NSW Department of Land and Water Conservation (DLWC), Ref 9130N3 (NSW DLWC)

⁴ http://www.bom.gov.au/climate/averages/tables/cw_066062.shtml, Commonwealth of Australia, 2013 Bureau of Meteorology, Product IDCJCM0028 prepared on 29 December 2016 and accessed by JBS&G on 5 February 2018



3. Summary of Previous Assessments

A brief summary of a previous assessment that included environmental sampling and analysis from several sources as completed at the site is included below.

3.1 Environmental Site Assessment (JBS&G 2019)

JBS&G conducted an ESA to characterise potential contamination at the site that will require to be addressed by the proposed site preparation and construction works for the fish markets development. The scope of works comprised:

- A review of previous site contamination assessment/investigation reports as made available
 to JBS&G with respect to the suitability of the data for use in evaluating the current
 contamination conditions across the various properties within the extent of the site. The ESA
 was substantially prepared on the basis of previously collected environmental data as
 documented in PB (2009), JBS&G 2015a and EIS 2017 assessments;
- Review of available geotechnical investigation reports as made available; and
- Development of a conceptual site model (CSM) as specific to the environmental characterisation of the site and the proposed development.

The key findings of the ESA are summarised below:

- Review of currently available previous site assessment documents has identified that there is
 sufficient existing data to characterise soil, sediment and groundwater conditions within the
 area of the proposed development in order to establish a CSM. Notwithstanding, a number
 of data gaps were identified as follows that will require additional data to refine specific
 management/remedial actions during application of a future RAP:
 - Shallow soils at PBHA01 and PBHA02 with TPH impacts that may pose a risk to groundwater quality discharging from the site;
 - Groundwater assessment hydraulically downgradient from identified PAH and heavy metal impacts and potential risks to off-site ecological receptors;
 - Additional ground gas and soil vapour investigation to assess the inhalation risks to future site users of the commercial building;
 - Additional characterisation of sediment conditions, particularly in areas where proposed construction activities will result in movement or otherwise, disturbance of sediments to facilitate the implementation of appropriate management measures in relation to contaminant concentrations and acid sulfate soil conditions; and
 - Characterisation of site soils with respect to sampling density as provided in EPA (1995) guidance for the land portion of the site and consideration as to the uncertainty associated with the status of historical remediation of former fuel storage facilities. Whilst any potential soil impacts may not affect site suitability (under the proposed development), the impacts (if any) may require appropriate management during development and construction works. Such potential impacts requiring further assessment include asbestos in soils, characterisation of fill material and natural soils for such that material requiring management in future development works can be refined and leachate data of soils to inform potential waste classification of surplus soils to the development.
- Each of the environmental data sets (as sourced from PB (2009), JBS&G (2015a) and EIS (2017) were found to be reliable for the purposes of making decisions as part of this assessment. It is noted that data collected as part of PB (2009) is approximately eight years



old. However, from a review of the site history since 2009, the site use and immediate surrounds have remained relatively unchanged and therefore the data is considered to be sufficiently representative of current conditions for the purposes of developing the CSM. Groundwater analytical results as reported in PB (2009) were also found to have elevated laboratory LORs that did not allow for a direct comparison to the adopted criteria, whilst some sediment analysis data in EIS (2017) had elevated LORs once consideration was given to normalisation to organic carbon concentrations as per CSIRO (2013);

- Based on the CSM presented, the potential exposure pathways for commercial users of the site will include inhalation (gas or vapours) pathways. On-site ecological receptors will be limited as the whole site will be covered in hardstand. Exposure pathways for off-site receptors will include contaminated groundwater (if any) migrating off-site and contaminant up-take from sediments;
- Based on the results and CSM presented, there were no potential unacceptable health risks identified with respect to the proposed development. Notwithstanding, this is required to be confirmed with the results of a data gaps assessment;
- Heavy metal, PAH and TRH contaminated sediments have been identified within the extent of the development site that were reported to exceed both low and high trigger value sediment quality guidelines protective of ecological communities. UNSW (2017) reported sediments within Blackwattle Bay had significant metal and nutrient contamination that were indicative of highly disturbed conditions. This is supported by the results reported in EIS (2017) in which sediment data collected from sampling points outside the proposed development area (but in Blackwattle Bay) had similar levels of impact to those reported within sediments of the site.
- As reported in ANZECC/ARMCANZ (2000) sediment remediation is not straightforward and should only be undertaken where absolutely warranted. To this extent, UNSW (2017) recommended the following with respect to increasing biodiversity and restore ecosystem services within the Bays Precinct:
 - Reduction of contaminant loads through the treatment of storm water and land runoff;
 and
 - Prevention of the resuspension of sediments during development by minimising sediment disturbance and using sediment curtains during construction activities.
- Consistent with EPA (2017) guidance, in which remediation should not proceed in the
 event that it is likely to cause a greater adverse effect than leaving the site in its current
 condition with regard to contamination, it is considered that sediments should not be
 actively remediated as it will likely result in adverse impacts through requirements for
 excavation, dewatering, ASS treatment and off-site disposal of the resulting stabilised
 material to landfill. Moreover, it will likely not result in any meaningful environmental
 outcomes within the context of the highly disturbed conditions of Blackwattle Bay in
 which sediments with elevated levels of contaminants have been reported throughout the
 entire Bay.
- It is noted that sediments adjacent to the existing sea wall and typically beneath the proposed new Sydney Fish Market building envelope will require adjustment in location within the current site extent to facilitate continued discharge from existing stormwater culverts and allow design levels to be reached for the construction of the basement. It is understood that the adjustment sediments will extend to a maximum depth of approximately 1.4 m in minor areas of the site. Review of the existing data has identified that, consistent with sediments more broadly at the site, near surface sediments (0-0.4 m) are impacted with heavy metals, PAHs and TRH. Sediment samples were further collected



from depths of 0.5-1.0 m and 1.0-1.5 m at PBSS05 in which the concentrations of heavy metals and PAHs were consistent with those in the overlying surface sample (0-0.4 m) and additional surface sediment samples collected throughout the investigation area. On this basis, it is considered that these sediments are suitable from a contamination perspective to placed elsewhere within the proposed basement footprint. In addition, the removal of the surface sediments from within these locations is not expected to expose any underlying sediments (at depth) with greater contaminant concentrations that would result in a net-increase in contaminant exposure risks to ecological receptors on or in the vicinity of the site.

Consistent with the previous point, the potential for resuspension of sediments during development works is required to be minimised such that mobilisation of contaminants and associated short-term ecological risks are appropriately managed. To enable an appropriate understanding of sediment characteristics within areas of disturbance, it is recommended that further site investigation activities be undertaken across the development works footprint prior to the commencement of any works that will result in disturbance of the sediments. These additional works will be designed to provide a suitable data set to guide management and if required, rehabilitation of these sediments during/following the required disturbance activities.

- A temporary a coffer dam will be constructed at the limits of the development works area prior to construction activities that will isolate the construction works footprint from the balance of the Bay. This will minimise the risk of any environmental impacts beyond the site boundary. Within the site, potential environmental impacts associated with localised movement of the sediment to achieve the construction requirements will be managed via selection of a methodology to minimise the suspension of sediments in the water column. It is expected that this will include use of either a long arm excavator, clam shell apparatus or similar to collect and locally transport small quantities of saturated sediment across the bed floor, within a silt curtain surround, followed by gentle placement at the final location. Resuspension of sediment will be minimised and with consideration to the continued saturated condition of the sediment, the low concentration of oxygen in water when compared to the atmosphere, the high buffering capacity of the marine Bay waters and the isolated nature of the works area from the balance of the surrounding environment, it is considered that the environmental (contamination and acid sulfate soil) risks associated with disturbance of the sediments may be suitably managed.
- The site is situated within an area of high probability of ASS. Indicators of potential ASS
 comprising sulfide odours and the presence of sea shells were observed within media
 inspected from boreholes conducted on both the land and water portion of the site. On this
 basis, the disturbance of materials during site redevelopment works will be required to be
 conducted in accordance with an acid sulfate soils management plan (ASSMP)(JBS&G
 2019b).

It was recommended that a RAP be prepared to establish a suitable framework for management of potentially contaminated media such that upon completion of works, the site will be considered suitable for the proposed use.



4. Contamination Status / Conceptual Site Model

The conceptual site model (CSM) presented in this Section is based on the assessment and conclusions presented in JBS&G (2018).

4.1 Current Extent of Known Impacts

Soil

The concentration of COPCs within all historical soil samples were below the adopted health based criteria. In addition, with the exception of zinc, the concentration of all COPCs were reported below the adopted ecological criteria. It is noted that under the proposed development there is unlikely to be any land based ecological receptors (see **Section 4.2**) within the site. On this basis, there are no identified impacts to site soils that require management or remediation with respect to making the site suitable for the proposed development.

It is noted that TPH impact was identified in shallow soils at locations PBHA01 and PBHA02 and comprised heavy end TPH fractions (C_{10} - C_{38}) in which the reported fractions did not allow for a direct comparison to the current adopted criteria. To this extent, additional assessment is recommended to establish the potential risks to any receptors from the impact, noting that it is unlikely to pose a health risk in the absence of any exposure pathways (owing to the presence of site pavements and the non-volatile nature of the impact).

Potential indicators of ASS comprising odorous marine sediments and the presence of sea shells were observed within boreholes conducted at the site. Given that the site is located within an area of high probability for the presence of ASS, a default position that fill material and/or natural soils exposed or otherwise disturbed during works will require management for acid sulfate soil has been adopted prior to further assessment to delineate the extent of such soil/sediments. Further characterisation of materials will be completed prior to the commencement of ground disturbance activities to ensure an appropriate data set is available to guide management of the associated environmental risks.

Groundwater

Groundwater with elevated levels of copper, zinc and PAH compounds has been recorded at the site. The elevated zinc levels are considered to most likely reflect urban background conditions or a potential off-site source (possibly comprising fill material underlying Bridge Road and Wentworth Park), as the highest reported concentration was located off-site and hydraulically upgradient from the site. Elevated PAH compounds in groundwater were found to marginally exceed the adopted ecosystem criteria at a single location (PBMWH2) within the central portion of the site.

It is noted that the adopted groundwater criteria have been conservatively applied to this assessment whereby they are intended to be applied at the point of discharge within receiving waters. It is important to note that that the adopted screening criteria are not threshold values at which an environmental problem is likely to occur if exceeded, rather, if the criteria are exceeded, then further action is required which may include additional assessment.

Sediments

Heavy metals, total PAH, (limited) total PCBs and TRH contaminated sediments have been identified within the extent of the development site. A baseline ecological assessment (UNSW 2017⁶) was conducted within the Bays Precinct and included sediment sampling within the greater area of Blackwattle Bay. The report found that the sediments of Blackwattle Bay had significant metal and nutrient contamination that were indicative of highly disturbed conditions. On this basis, the

⁶ Baseline Assessment of Ecological Structure and Environmental Conditions at the Bays Precinct, University of New South Wales, March 2017 (UNSW 2017).



elevated contaminant concentrations reported in sediments within the subject site are likely reflective of conditions throughout the extent of Blackwattle Bay as a result of historical industrial activities along the foreshore of the Bay.

All sediments are also anticipated to be ASS. As such, management of the potential for acid generation conditions will be required during all ground/sediment disturbance activities completed at the site.

Ground Gases and Vapour

Ground gases were identified as a potentially impacted media due to potentially reclaimed land areas containing high organic matter content as used as fill material or otherwise disturbed so as to result in conditions favouring the generation of ground gases. A screening level gas monitoring event was undertaken at a single location (HHMW1) in September 2015, in which the reported result was indicative of very low risk conditions with reference to the Modified Wilson and Card Classification (EPA 2012).

In addition, VOCs were identified as a COPC in JBS&G (2018). Whilst completed soil and groundwater investigation have not identified the occurrence of significant volatile compound impacts in soil and/or groundwater at the site, to date there has been no specific vapour sampling or analysis undertaken to verify the absence of conditions that would require management prior to, or following the proposed construction works.

4.2 Human and Ecological Receptors

Table 4.1 summarises potential human receptors and associated exposure pathways for the site, based on the range of exposure scenarios that may occur under the proposed commercial redevelopment of the site.

Table 4.1: Summary of Potential Human Exposures

Receptor	Location (redeveloped site)	Media	Potential Exposure Pathways
Commercial patron (adult or child)	Commercial building and	Soils	Inhalation (vapours)
and Commercial Worker (adult)	land area of the site	Groundwater	Inhalation (vapours)
Construction worker or intrusive maintenance worker (short duration)	Excavations	Soils	Inhalation (vapours and particulates) Oral Dermal
		Groundwater	Inhalation (vapours) Oral (infiltrating seepage water) Dermal (infiltrating seepage water)
		Sediments	Inhalation (vapours and particulates) Oral Dermal

On-site ecological receptors are limited as it is understood that the whole land area of the site will be paved, with either a building above, or high pedestrian load public domain areas. Potential off-site ecological receptors include impacted groundwater or surface water (if present) migrating from the site to the surface waters of Blackwattle Bay. These receptors can be identified from the water quality objectives (WQO) from the Parramatta River/Sydney Harbour catchment and include:

- Aquatic ecosystems; and
- Aquatic foods.

Typical ecological exposure pathways to sediments are identified in *Handbook for Sediment Quality Assessment*, 2005, CSIRO Environmental Trust (CSIRO 2005). It is reported here that sediment-



dwelling organisms receive contaminant exposures from four sources: overlying water, pore water, sediment particles and food.

4.3 Potential and Complete Exposure Pathways

Future commercial human receptors on the site will be potentially exposed to soil and groundwater contaminants by inhalation pathways only.

Direct contact pathways (oral and dermal) will be limited for most site users. Site plans have revealed that the majority of the site will be sealed, and as such direct contact to contaminated soils or groundwater is limited. In addition, direct contact with sediments underlying the proposed building will also be unlikely owing to the depth of the materials underlying the bay.

It is noted that there is a surface water feature in the south-eastern portion of the site where it is unclear if the pool will be lined such that there will be no direct contact exposures to soils/sediments, or also if swimming in this area will be permitted. Notwithstanding, soil and sediment data were compared to direct contact criteria (where available), whereby all results were identified to be below the adopted criteria under a recreational use scenario.

Potential construction and future intrusive / excavation worker exposures could occur for soils, groundwater and sediments.

Inhalation pathways will only be relevant where asbestos, volatile or semi-volatile COPCs and ground gases are present. The results of soil, groundwater and ground gas investigations to date indicate concentrations of COPCs are less than relevant screening assessment criteria.

With regard to potentially completed ecological exposure pathways on-site, the majority of the site will be sealed as a result of building and/or accessway construction. If present, vegetation will likely be constructed in raised planter beds or similar, rather than within site soils. As such there are considered to be no direct exposure pathways for ecological receptors to soil.

It is further noted that the proposed development will include construction of a suspended basement structure at or above the approximate sediment bed level within the site. As such, it reasonable to presume that there will be no complete ecological exposure pathways to marine life and/or aquatic foods within the site upon completion of development works.

4.4 Potential for Migration from Site

Contaminants generally migrate from site via a combination of windblown dusts, rainwater infiltration, groundwater migration, lateral vapour/gas migration and surface water runoff. The potential contaminants of concern identified as part of the site history review and site inspection are in solid (e.g.: asbestos, metals), dissolved (e.g.: TPH, VOCs) and/or gas form.

The ground surface of the land area of the site will be covered in hardstand. As such, there is a low potential for windblown contaminants or entrainment in surface runoff to migrate from the site, or for contaminants to leach through the soil profile and impact and subsequently migrate via groundwater.

The groundwater encountered during investigations is inferred to comprise a shallow system in which all wells contained groundwater with total dissolved solids consistent with marine levels. The standing water levels were observed to be influenced by tidal movements of Blackwattle Bay, where site groundwater is anticipated to ultimately discharge.

As discussed in Section 6.1, groundwater with elevated levels of copper, zinc and PAH compounds have been recorded at the site. It has not been established whether these impacts are relatively isolated or have the potential to be migrating from site.

In-situ sediment within the site has previously been considered generally consistent in contaminant character to sediments across the broader Blackwattle Bay area. It is anticipated that the potential



for migration of sediments will primarily occur via suspension as a result of disturbance during construction works, which will require addressing during works. However, it is also noted that the proposed development will result in changes in sediment bed levels and the movement of vessels within the Bay. This may lead to changes in hydrodynamic flow conditions, such that surficial sediments may at times be disturbed/re-suspended in different areas of the Bay, resulting in localised changes in sediment/water chemistry and ecosystem condition. Further consideration as to the potential environmental impacts of such changes are beyond the scope of this assessment, but may require further consideration during the broader design of the development.

4.5 Data Gaps

With consideration to the proposed development and the CSM described herein, the only potential human health exposure pathways for commercial users of the site will comprise inhalation (of gas/vapour) pathways. To date, only a limited hazardous ground gas assessment has been completed at the site. Additional investigation is required to assess any spatial or temporal variations within ground gas conditions that may exist within the land portion of the site. In addition, a soil vapour survey is required to assess for the presence of potential VOCs in vapour that were identified as potential COPCs as part of the initial site history review (JBS&G 2018).

With respect to data gaps surrounding the assessment of potential risks to ecological receptors at the site, this is limited to potential groundwater migrating from the site (if any) and discharging to Blackwattle Bay as soil conditions are sufficiently well understood from an ecological view point with regard to establishing site suitability. An additional groundwater assessment is required at locations downgradient of previously identified heavy metal and PAH impacts to assess for potential off-site migration. In addition, the risk posed to groundwater from previously identified TPH impacts (PBHAO1 and PBHAO2) in shallow soils requires assessment.

The current development proposal will result in the movement of some bed sediments within the development footprint to facilitate continued use of a stormwater discharge culvert. The existing data set is considered sufficient to characterise conditions broadly within the development area in regard to site suitability, however to ensure sediment conditions are suitably understood from a contamination and acid sulfate soils viewpoint, such that appropriate management measures may be employed during the proposed construction works, it is recommended that further characterisation activities be completed prior to the commencement of any activities that may result in disturbance of the sediment bed within the site. During these activities, additional surface water quality data should also be collected to provide a baseline data set by which to monitor the success of management measures to be implemented during construction activities.

Further data gaps with respect to characterisation of site soils are listed following:

- The sampling density within the land-based portion of the site, with approximate area of 0.76 Ha is less than the recommended number of sampling locations. For sites with an approximate area of 0.76 Ha, EPA (1995⁷) sampling guidelines recommends a minimum of 19 sampling points. To date, only 8 sample points have been completed within the land portion of the site. On this basis, certain COPCs have not been adequately assessed within site soils. Whilst any potential soil impacts may not affect site suitability (under the proposed development), the impacts (if any) may require appropriate management during development and construction works;
- Characterisation of fill materials for the presence of asbestos via quantification in accordance with the procedures included in NEPC (2013) as derived from Guidelines for the Assessment Remediation and Management of Asbestos Contaminated Sites in Western Australia. May 2009, Western Australia Depart of Health (WA DOH) (DOH 2009) is

⁷ Contaminated Sites Sampling Design Guidelines, NSW Environment Protection Authority, September 1995 (EPA 1995).



recommended to determine the asbestos management requirements (if any) during the site development works;

- There is uncertainty as to the historical location of fuel infrastructure known to have previously been located at the site. Whilst there is indirect evidence that such facilities were removed, the original documentation associated with the remediation and validation works is no longer available. As such, there remains uncertainty as to the nature and extent of any residual impacts that may remain in the vicinity of these former features. Given the current characterisation data, further investigation to address the density of soil sampling data available for the site should consider the potential for fuel infrastructure related contamination;
- Characterisation of fill material and natural soils for ASS has not been completed to date and
 is required to verify the extent of material requiring management in future development
 works and assist with refinement of the acid sulfate soil management plan (ASSMP) required
 to be implemented during development activities. Whilst all sediments are expected to be
 ASS, specific characterisation of the conditions has not been completed to date, which may
 assist with refining lime (or other material) addition requirements; and
- Additional leachate data will be required to confirm waste classifications for the potential
 off-site disposal of surplus materials as part of the development works.



5. Data Gap Investigation

JBS&G (2018a) identified that available previous site assessment documents contained sufficient existing data to characterise soil, sediment and groundwater conditions within the area of the proposed development in order to establish a CSM. Notwithstanding, a number of data gaps were identified with regard to site conditions as follows that will require additional data to refine specific management/remedial actions during application of a future RAP.

The following areas have been identified as data gaps on the site requiring additional investigation:

- Shallow soils at PBHA01 and PBHA02 with TPH impacts that may pose a risk to groundwater quality discharging from the site;
- Groundwater assessment hydraulically downgradient from identified PAH and heavy metal impacts;
- Additional ground gas and soil vapour investigation to assess the inhalation risks to future site users of the commercial building; and
- Additional soil characterisation within the land portion of the site to identify/refine potential impacts that potentially require management during development construction works.

It is recommended that investigation activities be undertaken to close out the data gaps prior to the commencement of remedial works. Further, the scope of the work should be documented prior to the commencement of a field investigation within a Sampling Analytical and Quality Plan (SAQP). The sections below provide an overview of the proposed investigation requirements.

5.1 Soil Investigation

For a site of approximately 0.72 Ha (land portion of the site), the EPA sampling guidelines require a minimum of 19 systematic soil sampling locations, based on detection of circular contamination 'hotspots'. To adequately assess the site condition, it is proposed to complement the 8 existing soil sampling locations with an additional 11 locations utilising a combination of systematic and targeted sampling regimes.

Investigations will be completed by auger of sufficient diameter to enable assessment of potential asbestos in soil impacts including collection of 500 mL samples for laboratory analysis, consistent with NEPC (2013) and WA DOH (2009) guidance on asbestos assessment.

Soil samples will be collected as appropriate based on observations to adequately characterise fill and natural materials (including natural sediments) to depths below the standing water level at low tide. Soil samples are required to be screened for potential volatile organic compound (VOC) using a portable photoionisation detector (PID). During the collection of soil samples, features such as seepage, discolouration, staining, odours and other indicators of contamination should be noted.

Soil samples will then be immediately transferred to laboratory supplied sample jars and sealed with a Teflon-lined screw closure. The sample containers will be placed in a pre-chilled esky for sample preservation prior to transportation to the testing laboratory. Preservation of the primary soil and QA/QC samples obtained during the investigation will be completed in accordance with the protocols outlined in NEPC 2013.

The samples will be transported under standard JBS&G chain-of-custody protocols to Eurofins MGT, a laboratory accredited by the National Association of Testing Authority (NATA) for the proposed analyses.

Samples will be analysed in accordance with the analytical schedule (**Table 5.1**).



5.2 Groundwater Investigation

The groundwater investigation is required to delineate the lateral extent of groundwater potentially impacted by site-related contaminants to assess the potential for off-site migration of impacted groundwater. It is further required to assess the potential impacts of groundwater as associated with shallow soils impacted with TPH at PBHA01 and PBHA02. The proposed locations are shown on **Figure 4**.

Boreholes for well installation will be advanced to the nominated depth using solid flight augers in fill and shallow sandy soils. Bores will be advanced to the target depth based on conditions encountered (lithology/geology conditions encountered, PID screening) during drilling.

The wells will be constructed in accordance with relevant NSW EPA endorsed guidance such as National Uniform Drillers Licensing Committee, 2012, *Minimum Construction Requirements for Water Bores in Australia*, and Victoria EPA, 2000, *Publication 669 Groundwater Sampling Guidelines*.

Monitoring wells will be constructed out of Class 18 uPVC (50mm) screen (3 m) and casing. A gravel filter pack will be placed adjacent to the screened interval with a 0.5 m bentonite seal above. The remaining bore annulus in shallow wells will be backfilled with soil cuttings to the ground surface. The wells will be finished with a lockable gas cap (see **Section 5.3**) and a flush-mounted gatic cover.

Well Development

Subsequent to well construction, each newly installed monitoring well will be developed to remove fines, settle the filter pack and ensure representative groundwater samples will be able to be collected. Well development will be undertaken using an inertial pump to remove a volume of water until visible indicators of turbidity and field-measured water quality parameters (electrical conductivity, pH, dissolved oxygen, redox and temperature) have stabilised.

Wastewater will be required to be appropriately managed and disposed of in accordance with relevant regulatory requirements.

Groundwater Sampling

Following a five-day (at least) stabilisation period, sampling will be undertaken including measurement of the depth to standing water and assessment of the presence of light non-aqueous phase liquid (LNAPL)/dense non-aqueous phase liquid (DNAPL) using an interface probe.

Wells will be purged and sampled using a low-flow methodology. Purging will be undertaken to ensure the sample collected is representative of groundwater. Field parameters of pH, conductivity, redox and temperature will be measured using a flow cell and samples obtained once the parameters have stabilised such that:

- Consecutive EC readings are within 3 %;
- Consecutive Eh readings are within 10 mV;
- · Consecutive DO readings are within 10 %; and
- Consecutive pH readings are within 0.5.

A low-flow peristaltic pump with dedicated tubing will be used to purge and sample wells. Submersible micro-purge sample pumps may be used when the depth to water exceeds 6 m. It is noted that EPA Victoria (2000) indicates use of pumps which induce a vacuum are not preferred in Victoria for assessment of volatile organic compounds. However, JBS&G considers that there will not be a measurable loss of VOCs when sampling at low flow rates, with small diameter tubing and shallow groundwater; and there is a lower risk of cross-contamination between locations due to use of dedicated materials.



Collected groundwater samples will be immediately transferred to laboratory supplied sample bottles in the order of those for most-volatile to least volatile contaminants. Field filtering using a 0.45 μ m filter will be undertaken for metals/metalloid samples. The sample containers will then be transferred to a chilled iced box for sample preservation prior to and during shipment to the testing laboratory. A chain-of-custody form will be completed and forwarded with the samples.

A record of gauging data, sample observations (including colour, odour, presence of phase separated hydrocarbons (PSH)) and sampling method details will be recorded.

Duplicate groundwater samples will be collected at a rate of one per 20 primary samples. A trip spike BTEX only) and rinsate blank (for non-dedicated equipment) will be collected per batch of samples.

5.3 Ground Gas Investigation

The ground gas assessment will be conducted within monitoring wells installed in the vicinity of the commercial building footprint as shown on **Figure 4**.

Subsurface gases will be measured using a landfill gas meter to record levels of methane, carbon dioxide, carbon monoxide, hydrogen sulphide and oxygen, in accordance with *Benchmark Technique* 15 'Subsurface Gas Monitoring Devices' and Benchmark Technique 16 'Subsurface Gas Monitoring Program' provided in NSW EPA (1996).

Each of the monitoring wells will be monitored for gas flow rates and concentrations. The monitoring will be required to be conducted over a number of rounds in order to capture any temporal variability as could potentially occur with climatic conditions. The sampling will be required to be undertaken in a period of dropping or low atmospheric pressure in order to sample potential 'worst case' conditions. The following testing procedure will be undertaken at each well:

- The sampling ports on the gas analyser (GFM435 or similar) will be connected to the well cap via the gas sampling port using disposable tubing.
- Initial gas flow rates will be reported and then flow rates will be monitored for a period of approximately 5 minutes with variation in flow rates documented.
- The analyser unit will then be disconnected from the gas sampling port and the meter connection changed to the concentration sampling port prior to reconnection to the gas well. Initial gas concentration readings will be collected from the monitoring wells after a 10 second period (where possible) and then again once the gas concentrations stabilised (methane concentrations were stable for greater than 10 seconds). The gas meter will then be disconnected from the gas sampling port.

5.4 Vapour Investigation

The vapour assessment will comprise a sub-slab vapour assessment with the proposed sampling locations shown on **Figure 4**. Given the uncertainty associated with the former fuel infrastructure locations and the general historical industrial use of lubricants, fuels etc, the proposed investigation locations will be placed on a generally systematic grid spacing within the vicinity of the proposed building footprint within the land portion of the site.

The sub-slab vapour investigation will be conducted by the following methodology:

- Recording of location;
- Coring of concrete slab (20 mm diameter); and
- Placement of a section of 6 mm diameter Teflon tube fixed with a Teflon sample tip into the
 cored hole to below the base of the slab, then sealing the core hole with air-drying clay and
 an overlying layer of bentonite slurry. The sub-slab point will be purged and sampled
 immediately following installation.



The following methodology will be adopted for the sampling of sub-slab vapour points:

- Placement of a shroud around the sample point, and sealing by placement of clay or 'blue-tack' around the shroud edge;
- Purging of the sub-slab vapour point or soil vapour probe for a period using a calibrated photo-ionisation detector (PID) (10.6 eV lamp) and multi-gas meter to measure and record oxygen and methane (as lower explosive limit, LEL) concentrations until the parameters stabilise;
- Assessment of leaks, by placing a rag soaked in 2-propanol around the probe/tubing within
 the shroud at the ground surface and continue purging with the PID. In the event of PID
 readings increasing significantly this would be considered to indicate a potential leak and
 mitigation measures will be required to adequately seal the point. The 2-propanol soaked
 rag and shroud remained in place during the sampling process as an indicator of leaks;
- Removal of tips from a carbon sorbent tube and connect to vapour point tubing. Connection
 of the downstream end of carbon sorbent tube to a closed three-way valve and syringe of
 known volume (100 mL);
- Collection of an approximate 6 L volume vapour sample by hand use of the syringe to draw the vapour sample through the carbon sorbent tube, using the three-way valve to prevent back-flow from the syringe through the tube. The volume of air can be confirmed by the known volume of the syringe used to collect samples and by counting the number of syringe volumes passed through the carbon tube;
- Disassembly of the syringe and tubing, removal of the carbon tube, replacement of tube caps and placement in Zip-Lock bag; and
- Submission carbon tube for analysis as per Table 5.1.

Duplicate vapour samples will be collected at a rate of one per 20 primary samples by splitting the flow into three carbon tubes using a three-way valve. One field blank will be collected by sampling a 6 L volume of ambient air.

5.5 Laboratory Analyses

JBS&G will contract project laboratories which are NATA accredited for the required analyses. In addition, the laboratories will be required to meet JBS&G's internal Quality Assurance requirements. The proposed analytical schedule has been developed in accordance with the current knowledge of the site (Table A).



Table 5.1: Proposed Sampling and Analytical Program

Sample Type	No. of Sampling Locations	Analyses (exc. QA/QC)
Soil	11 locations	Heavy metals – 18 samples
		Polycyclic aromatic hydrocarbons (PAHs) – 18 samples
		Total recoverable hydrocarbons (TRH) – 18 samples
		Tributyltin (TBT) – 11 samples
		Asbestos – 18 samples
		SPOCAS (acid sulfate soils) – 11 samples
		Toxicity characteristic leaching procedure (TCLP) for heavy
		metals and PAHs (waste classification).
Groundwater	6 locations	PAH – 6 samples
		Heavy metals – 6 samples
		TRH/BTEX – 6 samples
		pH, EC, total alkalinity– 6 samples
Ground gases	6 locations	Field monitoring:
		Methane – 6 samples
		Carbon dioxide – 6 samples
		Oxygen – 6 samples
		Hydrogen Sulphide – 6 samples
Sub-slab/soil vapour	20 locations	VOC 8260 – 20 samples
		Isopropanol (tracer) – 20 samples
		Field monitoring of methane, carbon dioxide, oxygen and
		hydrogen sulfide – 20 samples

Pending further design of the proposed development work and evaluation of construction methods, it is anticipated that a site sampling program to further characterise sediments in areas of the site to be the subject of disturbance will be undertaken. The scope and nature of the assessment will be sufficient to enable a suitable data set to guide management of potential contaminant and acid release during the construction works.



6. Remediation Options

6.1 Remedial Goals

The goal of the site management/remediation works is to ensure that the following is achieved:

- Prevention of exposure of human populations occupying/working on/using the site to impacted soils etc underlying the site;
- Prevent potential phyto-toxicity effects on flora and fauna contact to impacted soils and/or sediments;
- Appropriate management and/or disposal of soil, water and/or sediment disturbed during development activities in accordance with in force regulations and relevant EPA guidelines;
- Removal of potential ongoing sources of environmental contamination (unexpected finds such as historical sub-surface petroleum storage, if encountered); and
- Validation of site management and remedial works in accordance with the relevant EPA guidelines; and
- Documentation of works as completed is appropriate to demonstrate the suitability of the site for the proposed land use and compliance with applicable legislation, regulations, guidelines and development consent conditions as may apply to the site.

6.2 Guidance Framework

The RAP has been prepared with consideration to the following list of NSW EPA endorsed guidelines:

- National Environment Protection (Assessment of Site Contamination) Measure 1999, Amendment No.1 2013, National Environment Protection Council (NEPC 2013).
- Contaminated Sites: Sampling Design Guidelines, September 1995 (EPA 1995).
- Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, 2011 (OEH 2011).
- Contaminated Sites: Guidelines for NSW Site Auditor Scheme, 3rd edition October 2017 (NSW EPA 2017).
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZAST 2018).
- Guidelines for the Assessment and Management of Groundwater Contamination, DECC March 2007 (DECC 2007).

In addition, consideration is also required to guidelines made or endorsed by the EPA under the Protection of the Environment Operations (POEO) Act 1997 and associated regulations, including:

- Guidelines for Implementing the POEO (Underground Petroleum Storage Systems) Regulation 2008.
- Waste Classification Guidelines, Part 1 Classifying Waste. NSW EPA 2014
- Waste Classification Guidelines, Part 2 Immobilising Waste. NSW EPA 2014
- Waste Classification Guidelines, Part 3 Waste Containing Radioactive Material. NSW EPA 2014
- Waste Classification Guidelines, Part 4 Acid Sulfate Soils. NSW EPA 2014.

Other guidance that should also be considered in relation to site conditions includes:

Work Health and Safety Act 2011 and Work Health and Safety Regulation 2011.



- Managing Land Contamination, Planning Guidelines, SEPP 55 Remediation of Land (DUAP 1998).
- Code of Practice for the Safe Removal of Asbestos, SafeWork NSW, September 2016 (SafeWork 2011).
- Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases, NSW EPA (2012); and
- Acid Sulfate Soil Manual, Acid Sulfate Soil Management Advisory Committee 1998.
- Organotin Waste Materials Chemical Control Order 1989.
- National Acid Sulfate Soils Guidance Guidelines for the Dredging of acid sulfate soil sediments and associated dredge spoil management. Water Quality Australia, June 2018 (WQA, 2018a)
- National Acid Sulfate Soils Guidance Guidance for dewatering of acid sulfate soils in shallow groundwater environments. Water Quality Australia, June 2018 (WQA, 2018b)

6.3 Regulatory and Planning Requirements

Where a proponent seeks approval for a change of permitted use of the land, either in the form of a rezoning, sub-division or project approval, it is required that the proponent satisfies the consent authority, and relevant regulator (including the NSW EPA), that contamination conditions as may be present at the site will be appropriately managed such that the site may be considered suitable for the proposed use.

6.3.1 Requirements in Relation to Planning Approvals

Under SEPP55 it is noted that the consent authority must not consent to the carrying out of development on the subject land unless:

- a) It has been considered whether the land is contaminated; and
- b) If the land is contaminated that the planning authority is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for all purposes for which the development is proposed to be carried out; and
- c) If the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, the planning authority is satisfied that the land will be remediated prior to use for that purpose.

Further, it is required that the planning authority obtains from the proponent a report specifying the findings of an investigation of the land prepared in accordance with the contaminated land planning guidelines. The consent authority may also require the applicant to provide further information if the findings of the preliminary investigation warrant such additional assessment.

With regard to classification as Category 1 or 2 works, given the proposed remediation works are considered to be "ancillary to the proposed development works" development consent for the remediation works will be obtained as part of the broader State Significant Development (SSD) and as such are de facto Category 1 works.

6.3.2 Other Requirements

In addition to the requirements of SEPP55 as outlined above, consideration of the regulatory requirements under NSW legislation will also necessary as briefly outlined following:

POEO Act (1997) – All potential discharges from the site during remediation works will
require to be maintained below applicable assessment criteria/threshold guidelines during
the remediation/development works. This would apply to potential emissions in air,



water and discharges to surface and groundwater. Levels of discharges are typically assessed at a site boundary. The RAP prepared for the assessment area has provided a process to be followed during the remediation activities and subsequent development works to ensure that the beneficial re-use of materials does not cause pollution of groundwater and/or waters by reference to any applicable criteria as may be used to assess pollution under the POEO Act (including s120).

Evaluation of the proposed remediation/validation activities in relation to the categories and/or thresholds presented in Schedule 1 of this Act. Where works trigger one or more categories presented in Schedule 1, the works will require to be licensed by the EPA in addition to the requirements of the consent authority. These activities may for this project relate to: the treatment of contaminated soil and/or groundwater, dredging and/or quarrying activities, etc.

The proposed remediation/validation activities are not expected to require a license given the will not treat more than 1000 m³ per year of contaminated soil received from off-site, or involve the treatment of contaminated soil originating on-site with the capacity: (i) to incinerate more than 1000 m³ per year of contaminated soil, or (ii) to treat (otherwise than by incineration) and store more than 30 000 m³ of contaminated soil, or (iii) disturb an aggregate area of 3 hectares of contaminated soil

- Water Management Act (2000) Where remediation works require the extraction (and treatment, reinjection or otherwise) of groundwater, consent for these works may be required under a temporary dewatering licence even if the triggers for an EPL are not met. Such requirements may potentially be stipulated as a condition of the development consent via the integrated development approvals process.
- POEO (Waste) Regulation 2014 In addition to triggers for an EPL, consideration will be needed with respect to the POEO Waste Regulation in relation to non-licensed waste activities and waste transporting. This includes requirements for management of asbestos waste during transport/disposal, the approval of methods associated with the immobilisation of specific waste streams etc. as may be required under this RAP.
- Work Health and Safety Act 2011 and associated Regulations including those related to
 Asbestos Where asbestos impacts in soil are identified during either site investigation
 works, or during/following demolition of existing improvements, the site will be required
 to be considered as having asbestos contaminated soils and appropriate protections
 implemented with respect to the exposure of site workers and nearby sensitive receptors.
 In such instances, management requirements are outlined in How to Manage and Control
 Asbestos in the Workplace Code of Practice, WorkSafe NSW (2016). Given asbestos in soil
 has not currently been identified during limited intrusive investigation activities, should
 asbestos be identified, its occurrence will be assessed and managed via application of the
 Unexpected Finds Protocol (UFP) outlined in Section 8.6.
- Waste Classification Guidelines (2014) All wastes generated and proposed to be disposed offsite shall be assessed, classified and managed in accordance with this guideline. Where wastes require immobilisation prior to offsite disposal (to reduce waste classifications) an immobilisation approval shall be sought in accordance with Part 2 of this guideline. Immobilisations are only anticipated to be required with unexpected finds that cannot be retained on site and cannot be disposed directly offsite to a licensed facility. Material identified as ASS will be required to be disposed of from the site in accordance with Part 4 of this guideline.
- Protection of the Environment Operations (Underground Storage Systems UPSS)
 Regulation 2014 The removal of USTs and associated infrastructure will be undertaken in accordance with WorkSafe NSW requirements and a validation report will be provided in



accordance with the provisions of the *Protection of the Environment Operations (UPSS)* Regulation 2014 as per guidance provided in DECCW (2009). The removal of underground petroleum storage infrastructure will be undertaken in accordance with *The Removal and Disposal of Underground Petroleum Storage Tanks – Australian Standard 4976-2008*.

- City of Sydney (2004) "Contaminated Land Development Control Plan" The Council
 development control plan (DCP) provides a number of environmental and site
 management provisions required to be employed during remediation works. These have
 been incorporated into this RAP as minimum standards for the environmental
 management of remediation works.
- Organotin Waste Materials Chemical Control Order 1989 (CCO) The CCO defines the
 management requirements for activities related to waste material contaminated with
 organotin contaminated waste, including the manufacture, storage and disposal of such
 waste. This includes material containing tributyltin or other organotin compounds either
 individually or in combination, including but not limited to paint waste,
 soil/sediment/water contaminated with organotins and materials to which paint remains
 adhered. Where appropriate, the requirements of this CCO have been incorporated into
 this RAP.

6.4 Extent of Remediation and/or Management Required

6.4.1 Soil

The identified environmental impacts at the site that require management will generally comprise material (fill material and natural soil) identified during the early works and future main works periods as excess to site requirements. This is anticipated to generally comprise piling spoil, trenching spoil associated with foundations, services infrastructure, or other works requiring below ground activities to achieve construction objectives. Based on the existing general site observations, it is anticipated that such materials will also require treatment in accordance with the ASSMP (JBS&G 2018a) prior to off-site disposal.

It is noted that some data gaps were identified in **Section 4.5** that will require further assessment as per **Section 5** prior to the finalisation of the complete appropriate definition of the management/remedial scope.

Given the preliminary nature of inground design activities to date, no specific identified areas of the site requiring management have been specifically identified, however it is noted that there is the potential that some areas of bay sediments may require movement to adjust sediment bed levels to facilitate ongoing use of the existing stormwater culvert and construction of the suspended basement structure.

For the purposes of this RAP, it has been assumed that soil and sediment conditions at the site may require some remediation and/or management where disturbed during development activities to ensure the site is suitable upon completion of the development works. It is envisaged that once the proposed detailed development scheme (Construction Certificate stage civil/structural design) information is available, the extent of site areas/proposed works requiring management will be apparent.

6.4.2 Sediment

As discussed in **Section 4.1**, sediments at the site and in the surrounding Blackwattle Bay are impacted with heavy metals, total PAHs and (limited total PCBs) and TRH with regard to ecological concerns. The elevated contaminant concentrations reported in sediments within the subject site are considered to be likely reflective of conditions throughout the extent of Blackwattle Bay as a result of historical industrial activities along the foreshore of the Bay. On this basis, no active remediation of the in-situ sediment is required.



Notwithstanding, a minor area of sediment located adjacent to the existing sea wall beneath the proposed new Sydney Fish Market building envelope will require adjustment in location to facilitate continued discharge from existing stormwater culverts. These works will require management, from both a contamination and ASS view point. The management measures will primarily comprise controlling the potential for resuspension of sediments during development works such that mobilisation of contaminants and changes in the sulfate-sulfide equilibrium of the sediment are minimised such that associated short-term ecological risks are appropriately mitigated. It is expected that best-practice management procedures will be informed by development of a site-specific CEMP based on management principles provided in a separate ASSMP (JBS&G 2019b) and therefore the appropriate management of sediments during development works requires no further detail herein.

6.5 Consideration of Possible Remedial Options

The preferred hierarchy of options for remediation (clean up) and/or management adopted by NSW EPA has been established within the NEPC (2013) Assessment of Site Contamination Policy Framework as follows:

- On-site treatment of the material so that the contaminant is either destroyed or the associated risk is reduced to an acceptable level; and
- Off-site treatment of excavated material so that the contaminant is either destroyed or the
 associated hazard is reduced to an acceptable level, after which the soil is returned to the
 site; or

if the above options are not practicable:

- Consolidation and isolation of the material on site by containment with a properly designed barrier; and
- Removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material; or
- Where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

In addition, when deciding which option to choose, consideration is also required to be given to the sustainability (environmental, economic and social) aspects of each option to ensure an appropriate balance between the benefits and effects of undertaking remedial/management options.

In cases where no readily available or economically feasible method is available for remediation, it may be possibly to adopt appropriate regulatory controls or develop other forms of remediation.

Consideration of each of the approaches (EPA 2017), is presented in **Table 6.1**.



Table 6.1: Remedial Options Screening Matrix

With the second of the second		
Remedial Option	Applicability	Assessment
1. On-site treatment so	Siois	Not a viable option.
that the contaminants are	Although any excavated soils will require on-site management in accordance with an ASSMP (JBS&G 2018a),	
either destroyed or the		
associated hazards are	originate from piling spoil, installation of services, and excavation of land-based soils to accommodate a	
reduced to an acceptable	portion of the basement.	
level.		
2. Off-site treatment so	Soils	Not a viable option.
that the contaminants are	As above (Option 1).	
either destroyed or the		
associated hazards are		
reduced to an acceptable		
level, after which the soil is		
returned to the site.		
3. On-site in-situ	Soils	Not a viable option.
management of the	As with Option 1, the material requires management as it has been identified as surplus material on-site	
material by capping and	with respect to the proposed development. On this basis, this is not a viable option.	
cover, and ongoing		
management.		
4. Excavation and off-site	Soils/Sediments	This is the preferred option for all
removal of the impacted	For this option material is required to be transported to a facility lawfully able to accept the type of waste	surplus materials.
material.	and associated fees including government waste levies apply. There are facilities within the Sydney region	
	able to accept material classified as General Solid Waste (GSW), Special (asbestos) Waste and Restricted	
	Solid Waste (RSW).	
	In the unlikely event that material is identified to be impacted such that contaminant concentrations exceed	
	the thresholds for characterisation as GSW, GSW mixed with Special or RSW, material may require to be	
	treated prior to off-site disposal to a lawful facility as discussed above.	
	Social impacts, including high volume truck movements and potential environmental emissions associated	
	with on-site activities and vehicle movements also require consideration with regard to this strategy.	
	Material will also require management in accordance with the ASSMP (JBS&G 2018a) requirements prior to	
	removal from the site.	



Should the data gaps investigation (Section 5) identify any impacts that require remediation, the remedial options screening matrix in Table 6.1 will be required to be reviewed. Notwithstanding, it is anticipated that any impacts will be relatively isolated and could be appropriately managed through the controlled excavation and off-site disposal of impacted materials acting as source material. On this basis, the data gaps identified in Section 4.5 are not considered to affect the successful execution of this RAP.



7. Remediation Plan

A summary of the remedial scope of works is provided in the following sections.

7.1 Data Gap Assessment

In order to refine the finalised remedial scope, a data gaps assessment is required prior to any remedial works. The details of the required data gaps assessment are provided in **Section 5**.

7.2 Site Establishment

All safety and environmental controls are to be implemented as the first stage of remediation works. These controls will include, but not be limited to:

- Locate and isolate all required underground utilities within the site such that excavation works can safely proceed;
- Assess the potential impacts of the excavation works to neighbouring properties. It is recommended that a suitably qualified engineer be consulted prior to any excavation works, such that appropriate controls (if required) can be implemented;
- Assess need for traffic controls;
- Work area security fencing;
- Site signage and contact numbers; and
- Sediment fencing (attached to security fencing) and silt curtains adjacent to the site in Blackwattle Bay.

7.3 Buildings and Structure Demolition

Existing structures on the site require demolition and removal from the site prior to remedial works. The key processes are briefly summarised below:

- Consult the findings and recommendations of a pre-demolition HMBS prepared for all structures to be demolished in order to safely and lawfully remove hazardous material previously identified prior to commencement of general demolition activities;
- Removal and disposal of hazardous materials in accordance with relevant regulatory guidance including SWA 2016 and the Waste Classification Guidelines 2014 (EPA 2014);
- Conduct hazardous materials clearances to confirm the successful removal of all HBMs;
- Demolish remainder of buildings/structures and remove redundant infrastructure;
- Beneficial reuse of environmentally validated material onsite (i.e., reuse of crushed recycled concrete) or lawfully remove all materials off-site; and
- Expose underlying soils as required to facilitate the commencement of construction activities.

7.4 Disturbed/Excavated Material Management Principles

As part of site remediation/redevelopment works it is anticipated that material excavated during works will fall into one of a number of categories, comprising material:

required to be removed from the site as a result of contaminant characteristics identified
during the data gap and/or unexpected find investigation activities. Such material is
characterised as having contaminant concentrations in exceedance of site validation criteria
for the proposed landuse and so will require disposal to a lawful waste facility; or



required to be removed from the specific location to achieve site development objectives
(ie. piling spoil, material excavated for foundations, services installation etc), that could
potentially be reused within the broader development site should material be required, but
will otherwise require disposal as waste if it could not be reused on site.

Appropriate sampling protocols including the required density of sampling for differing materials types, sampling methodology and documentation requirements will be required for each material type to ensure compliance with NSW EPA Regulations and guidance.

Based on assessment outcomes, material falling within the first category will automatically require classification and off-site disposal to a lawful facility. Tracking of this material will be required with resulting documentation to be included in the relevant validation report. Material for the second category will require management under a material tracking plan appropriate to document the source, temporary storage and final placement locations for inclusion of such information in the final validation report.

7.5 Excavation of Impacted Materials / Generation of Material Excess to Site Requirements

Should the data gaps assessment identify the requirement to remediate environmental impacts, it will be required to be undertaken through the controlled excavation of impacted materials. The excavation will be designed to remove source material as potentially causing impacts to soil, soil gas and/or groundwater. Remediation activities associated with the removal of impacted source materials will include:

- Excavation of the contaminated material to the depth of identified contamination as
 delineated via visual/olfactory observations by the remediation consultant during remedial
 works. The excavated material will be required to be stockpiled on plastic sheeting with
 appropriate environmental controls.
- Excavations are to be validated as per **Section 8.2.1** by the remediation consultant. Should validation fail, the failed wall/s or base of the excavation will be excavated a further 0.3 m in the direction of the failure, or as otherwise indicated by visual/olfactory observations and the validation process repeated until validation is achieved.
- Following validation of the excavation as outlined in Section 8.2.1, the excavations
 generated by the removal of impacted soil will be backfilled using fill material validated in
 accordance with Section 8.2.
- Stockpiled (impacted) material is to be sampled by the remediation consultant for the purposes of waste classification for off-site disposal to an appropriately licensed facility lawfully able to accept the waste in accordance with EPA (2014).

It is noted that depending on the nature of the impact (soil, soil gas or groundwater), final validation will be required to be tailored to confirm that the affected media has been successfully remediated.

7.6 Off-site Disposal

Material identified as requiring management/remediation is proposed to be disposed of off-site to a facility lawfully able to receive it. Materials shall be classified in accordance with EPA (2014) requirements or an appropriate exemption as created under the *Protection of the Environment Operations (Waste) Regulation* 2015.

Details of completed additional assessment activities including material characterisation reports will be included in the final validation documentation to be prepared in accordance with the requirements of an area specific RAP. Records associated with material tracking, including trucking receipts, landfill disposal records, etc will also be reviewed to ensure material removed from the site can be accounted for and has been disposed of lawfully.



7.7 Material Importation

Based on the scope of remedial works described herein, it is not anticipated that there will be a significant requirement to import materials to establish site levels. However, it is noted that detailed excavations may result in requirements for importation of select materials, potentially including trench backfill aggregate, pavement backfill, growing media, etc, such materials.

Prior to importation of all material, appropriate assessment of such materials must be completed to demonstrate the material is both fit for purpose and suitable from a contamination view point. In accordance with EPA requirements, the extent of assessment will be determined by the type of material proposed to be imported. Whilst it is anticipated that an appropriate assessment strategy (including sampling methodology, density and analysis details) will be developed at a site specific RAP level once details of likely importation details can be considered, the following overall principles will require consideration.

Where material proposed to be imported is Virgin Excavated Natural Material (VENM), an assessment must demonstrate that the material is compliant with the definition of VENM as presented in the POEO Act 1997, adopting in the minimum requirements for characterisation of fill material as presented in EPA (1995).

Where material proposed to be imported has been characterised under the Resource Recovery Framework (Order/Exemption), the material must firstly be demonstrated by the supplier as suitable for use in accordance with the requirements of the Order via provision of a statement of compliance. Such materials are anticipated to comprise, but will not necessarily be limited to: excavated natural material – ENM, recycled aggregate, basalt fines, compost, mixed organic waste, pasteurised garden organics and recovered fines, with reference to the list of current orders and exemptions on the NSW website required to be reviewed.

In addition to the testing completed by the supplier, given the low frequency of compliance testing required under these Exemptions, the specific material proposed to be imported will require an additional compliance assessment prior to approval to import. The additional assessment is required to ensure that the incoming material does not pose an unacceptable risk to human health and/or environment at the placement site and is therefore suitable for use. It is anticipated that such assessment activities will include visual inspections, representative sampling and laboratory analysis of material to demonstrate the material meets the requirements to be outlined in the site specific RAP in relation to use of material on-site. As for VENM assessments, it is considered suitable to define such requirements on a specific site basis given the potential variability of project site requirements.

Material tracking records in addition to the import assessment report are required to be included in the final validation report for each site specific area.

7.8 Validation

Validation of the remedial works will be conducted by the Remediation Consultant to demonstrate the remediation/management objectives have been achieved and to document the final condition of the site at the completion of works such that conclusions may be drawn on the end use suitability of the site for the proposed development. Details of the validation program are provided in **Section 8**.

7.9 Site Dis-establishment

On completion of the remediation works all plant/equipment and safety/environmental controls shall be removed from the site. Details are provided in the Site Management Plan in **Section 9**.



8. Validation Plan

Data will be required to be collected during remediation/management and developments works to assess the effectiveness of the implemented management actions and document the final condition of the site at the completion of all works such that conclusions may be drawn on the end suitability of the site for the proposed development use. The general principles to be implemented with regard to the validation assessment are discussed in accordance with EPA (2017) requirements in the following sections.

It is anticipated that the validation assessment will be required to address the following broad issues:

- Confirm the site conditions are consistent with those identified during previous site
 investigation activities as documented herein and characterise identified data gaps
 identified in preparation of this RAP via implementation of the assessment as discussed in
 Section 5;
- Removal of any contaminated material and/or contamination sources as may be identified during the data gap assessment;
- Verification that uncapped / accessible soils (including imported filling and growing media) are suitable for the proposed use;
- Characterisation and off-site disposal and/or beneficial use of materials excess to development requirements;
- Characterisation of material required to be imported to achieve development objectives, potentially including subgrade material, trench aggregate, growing media, etc to demonstrate its suitability for use at the site; and
- Assessment and close out of any Unexpected Finds assessments.

8.1 Data Quality Objectives

Data quality objectives (DQOs) have been developed for the validation assessment, as discussed in the following sections.

8.1.1 State the Problem

The site, which has historically been used for a range of commercial/industrial uses, is proposed to be redeveloped as the Sydney Fish Markets. Previous investigations as evaluated in JBS&G (2018) have identified that management of a number of potential site contamination issues is required such that at the completion of works, a final validation assessment may confirm the suitability of the site for the proposed use as required under the NSW planning framework.

As such, during remediation activities, sufficient validation of site activities is required to demonstrate that the identified environmental and health based risks (if any) to site users have been adequately managed to render the site suitable for the proposed land use.

8.1.2 Identify the Decision

The following decisions are required to be made during the validation works:

- Are there any unacceptable risks to future on-site receptors from any residual contamination following the implementation of the proposed in-ground development works at the site?
- Have all aesthetic issues been addressed?
- Has the potential for migration of contaminants from the site been appropriately addressed?



- Have the Site remediation activities been undertaken in compliance with the regulatory requirements set by the EPA, WorkSafe NSW, local government and other agencies?
- Was the impacted/surplus materials classified and disposed off-site to a facility licensed to accept the classified waste?
- Has all material imported to site to achieve development objectives been demonstrated as suitable for use?
- Have Site works been completed in accordance with the RAP requirements, or where variations to the works required by the RAP have occurred, have these been appropriate to meet the objectives of the RAP, with respect to site validation?
- Is the site suitable for the proposed land use?

During the remediation/management activities, sufficient validation of Site activities is required to demonstrate that the identified environmental and health based risks to future use(s) of the Site have been adequately managed to render the Site suitable for the proposed land use and future construction works.

8.1.3 Identify Inputs to the Decision

The inputs to the decisions are:

- Previous investigation results including the data gaps assessment to be completed prior to the remediation works;
- Field observations in relation to inspection of all excavation bases, walls and stockpiles for odours, sheen, discolouration, and other indicators of potential contamination;
- Environmental data as collected from the validation of remedial excavations (if required);
- Waste classification and material characterisation data obtained during assessment of surplus material prior to off-site disposal;
- Disposal dockets and relevant documents in relation to appropriate disposal of material to be removed from site as part of the remediation works (landfill dockets, beneficial reuse / recycling dockets, trade waste disposal, etc.);
- Material characterisation data (including field observations, sampling and analytical data) obtained during assessment of material proposed to be imported to the site;
- Relevant guideline criteria for validation and waste classification; and
- Data quality indicators (DQIs) as assessed by quality assurance / quality control (QA/QC).

Specifically, sufficient data needs to be collected from each of the identified potentially impacted media (e.g. fill material and natural soils) across the Site for associated COPC (Section 4).

8.1.4 Define the Study Boundaries

The validation study boundaries are restricted to the lateral extent of the approved development works, comprising the site as shown on **Figure 1**. The vertical extent of the validation study is anticipated to be restricted to soils extending to the maximum depth of disturbance as part of piling activities.

Due to the nature of potential contaminants identified, temporal variables will not be assessed as part of this investigation. The temporal boundaries of this investigation will be limited to the period of field validation assessment works.

8.1.5 Develop a Decision Rule

The decision rules adopted to answer the decisions identified in Section 8.1.2 are discussed below.



Table 8.1: Summary of Decision Rules

Decision Required to be Made	Decision Rule
 Are there any unacceptable risks to 	Environmental analytical data will be compared against EPA endorsed
future on-site receptors from any residual	criteria established as validation criteria.
contamination following the remediation of contaminated materials on-site?	A CONTRACTOR OF THE PROPERTY O
	be Yes.
2. Are there any aesthetic issues remaining following remediation works?	If there are any remaining unacceptable inclusions or soil discolouration, the answer to the decision will be Yes. Otherwise, the answer to the decision will be No.
2. Are there any unacceptable risks to future off-site receptors from site impacted groundwater and/or soil vapour?	Are site-related contaminants present in groundwater and/or soil vapour migrating off-site at concentrations exceeding levels found to present a potential health risk (recreational exposure) or ecological risk? If the answer to the decision is Yes, further assessment and/or management is required. Otherwise, the answer to the decision is No.
3. Are there any outstanding regulatory compliance issues associated with Site remediation activities?	Qualitative assessment of the works in relation to EPA, WorkSafe NSW, Department of Planning, etc. approvals will be undertaken during and following the completion of remediation/management activities. If there are any outstanding requirements with respect to the regulatory approvals, the answer to the decision will be Yes. Otherwise, the answer to the decision will be No.
4. Was all material required to be removed from site classified and disposed of off-site to a facility lawfully able to accept the classified waste?	Soil/sediment analytical data will be compared against EPA (2014) criteria. Statistical analysis of the data in accordance with relevant guidance documents will be undertaken, where appropriate, to facilitate the decisions (as detailed above). Documentation from the operation receiving the material including the dates, tonnage and classification of the accepted material will be required to facilitate the decision. If the statistical criteria stated above are satisfied, the decision is Yes, and if receipts are provided recording the disposal of material to an off-site licensed facility, the decision is Yes. If the material fail the criteria, and no disposal receipts are provided, the answer is No.



Decision Required to be Made	Decision Rule
5. Where material is imported to site for development purposes are there any outstanding issues identified in relation to documentation of the material's suitability for use?	Analytical data sets and inspection data will be reviewed for each proposed material type/source against established definitions for acceptable material (ie. VENM, resource recovery exemptions, etc) and EPA endorsed criteria as established in the RAP as validation criteria. If the complete data set for the applicable material meet the requirements relevant to the material type, the answer to the decision is No and material may be imported to site. If the data set exceeds the adopted criterion, the answer to the decision is Yes and the material cannot be imported to site for use in development activities.
6. Have remedial works met requirements of the RAP?	Were any of the answers to Question 1 to 5 Yes, the answer to the decision is No. Further assessment is required to establish the nature and extent of additional remediation/management as may be required. If the RAP requirements were addressed, and there are no outstanding issues, the answer to the decision is Yes.
7. Is the Site considered suitable for the proposed use?	With the exception of question 6, is the answer to any of the above decisions Yes? If yes, have the outstanding issues appropriately addressed by further assessment/remediation/management or implementation of an EMP? If the issues have been appropriately addressed, the answer to the decision is Yes, potentially subject to ongoing implementation of the EMP. Otherwise, the decision is No and the requirements for further remediation of the Site and/or implementation of additional management measures (as documented in an amended EMP) are required to be documented such that the answer to the decision can be Yes.

8.1.6 Specify Limits of Decision Error

This step is to establish the decision maker's tolerable limits on decision errors, which are used to establish performance goals for limiting uncertainty in the data. Data generated during this project must be appropriate to allow decisions to be made with confidence.

Specific limits for this project have been adopted in accordance with the appropriate guidance from the NSW EPA, NEPC (2013), appropriate indicators of data quality (DQIs used to assess quality assurance / quality control) and standard JBS&G procedures for field sampling and handling.

To assess the usability of the data prior to making decisions, the data will be assessed against predetermined DQIs for to precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS parameters). The acceptable limit on decision error is 95% compliance with DQIs.

The pre-determined DQIs established for the project are discussed below in relation to the PARCC parameters, and are shown in **Table 8.2**.

Precision - measures the reproducibility of measurements under a given set of conditions.
 The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD⁸) of duplicate samples.

$$RPD(\%) = \frac{\left|C_o - C_d\right|}{C_o + C_d} \times 200$$

Where C0 is the analyte concentration of the original sample Cd is the analyte concentration of the duplicate sample



- Accuracy measures the bias in a measurement system. The accuracy of the laboratory data
 that are generated during this study is a measure of the closeness of the analytical results
 obtained by a method to the 'true' value. Accuracy is assessed by reference to the analytical
 results of laboratory control samples, laboratory spikes and analyses against reference
 standards.
- Representativeness expresses the degree which sample data accurately and precisely represent a characteristic of a population or an environmental condition.
 Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- Comparability expresses the confidence with which one data set can be compared with
 another. This is achieved through maintaining a level of consistency in techniques used to
 collect samples; and ensuring analysing laboratories use consistent analysis techniques; and
 reporting methods.
- Completeness is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is set at there being sufficient valid data generated during the study.
- Sensitivity expresses the appropriateness of the chosen laboratory methods, including the limits of reporting, in producing reliable data in relation to the adopted site assessment criteria.

Table 8.2: Summary of Data Quality Indicators

Data Quality Indicators	Frequency	Data Quality Criteria
Precision		
Split duplicates (intra laboratory)	1 / 20 samples	<50% RPD1
Blind duplicates (inter laboratory)	1 / 20 samples	<50% RPD1
Laboratory Duplicates	1 / 20 samples	<50% RPD ¹
Accuracy		
Surrogate spikes	All organic samples	70-130%
Laboratory control samples	1 per lab batch	70-130%
Matrix spikes	1 per lab batch	70-130%
Representativeness		
Sampling appropriate for media and analytes	All samples	_2
Samples extracted and analysed within holding times.	All samples	Soil: organics (14 days), inorganics (6 months) Water: organics (7 days to extract and 14 days to analyses). Metals (6 months)
Laboratory Blanks	1 per lab batch	<lor< td=""></lor<>
Trip spike	1 per lab batch	70-130% recovery
Storage blank	1 per lab batch	<lor< td=""></lor<>
Rinsate sample	1 per sampling event/media	<lor< td=""></lor<>
Comparability		
Standard operating procedures for sample collection & handling	All Samples	All Samples
Standard analytical methods used for all analyses	All Samples extracted and analysed within holding times	NATA accreditation
Consistent field conditions, sampling staff and laboratory analysis	All Samples	All samples ²
Limits of reporting appropriate and consistent	All Samples extracted and analysed within holding times	All samples ²



Data Quality Indicators	Frequency	Data Quality Criteria
Completeness		
Sample description and COCs completed and appropriate	All Samples	All samples ²
Appropriate documentation	All Samples	All samples ²
Satisfactory frequency and result for QC samples		95% compliance
Data from critical samples is considered valid	-	Critical samples valid
Sensitivity		
Analytical methods and limits of recovery appropriate for media and adopted Site assessment criteria	All samples	LOR<= Site assessment criteria

⁽¹⁾ If the RPD between duplicates is greater than the pre-determined data quality indicator, a judgment will be made as to whether the excess is critical in relation to the validation of the data set or unacceptable sampling error is occurring in the field.

8.1.7 Optimise the Design for Obtaining Data

The purpose of this step is to identify a resource-effective field validation sampling design that generates data that are expected to satisfy the decision performance criteria, as specified in the preceding steps of the DQO process. The output of this step is the sampling design that will guide development of the field sampling and analysis plan. This step provides a general description of the activities necessary to generate and select data collection designs that satisfy decision performance criteria.

The remediation validation and subsequent laboratory analysis program as outlined in the following sections will need to be implemented during site remediation activities to demonstrate the successful completion of works in compliance with the RAP goals. The validation / characterisation sampling and analytical program for the site is outlined in **Table 8.3** in **Section 8.2** below.

8.2 Validation Inspections and Sampling

The validation inspections, sampling and analysis required for remediation of potential impacts arising from the data gaps assessment are summarised in **Table 8.3** and detailed in the following sections.

Table 8.3: Validation Sampling Plan

Item	RAP Sampling Frequency			Analytical Suite
Potential Source Removal R	emedial Excavation			
	Excavation Floors	Excavation Walls	Materials	
Excavations formed by the	1 / 100 m ²	1 / 10 m	N/A	As determined by the nature
removal of impacted	(10 m grid)	(from each distinct		of the impact
materials	1000000	horizon / material		
		type / 1 m vertical		
		soil profile)		
Materials Importation				
Imported VENM	Minimum of 3 samp	les per source site / ma	terial type to 500	TRH/BTEX
	m ³ then 1 sample pe	er 500 m³ thereafter		PAH
	•			Heavy Metals
			OCP/PCBs	
				Asbestos (500 ml)
Quarry VENM Materials	Confirmation that the material is quarried rock (VENM) prior		Site Inspection required.	
(e.g. blue metal,	to importation, and visual confirmation.			
sandstone, shale)				
Material subject to a NSW	Confirmation by the	supplier that the mater	ial meets the	TRH/BTEX
EPA Resource Recovery	terms of the order.	Then Remediation Cons	ultant sampling at	PAH
Order/Exemption	a minimum of 3 samples per source site / material type to		Heavy Metals	
	500 m ³ then 1 sample per 500 m ³ thereafter, prior to		OCP/PCBs	
	importation			Asbestos (500 ml)

⁽²⁾ A qualitative assessment of compliance with standard procedures and appropriate sample collection methods will be completed during the DQI compliance assessment.



Item	RAP Sampling Frequency	Analytical Suite
Export of Materials		
Surplus materials for off- site disposal are to be classified in accordance with NSW EPA (2014) and ASSMP (JBS&G 2018a)	Stockpiled materials for off-site disposal require a sampling density of 1/100 m ³ to 500 m ³ then 1 sample per 500 m ³ thereafter	TRH/BTEX PAH Heavy Metals OCP/PCBs Asbestos sPOCAS / pH

Notes: 1) The sampling density proposed for assessment of stockpiles is derived from Table 4 of Schedule 2 from the NEPM. The measure recommends that three samples are collected from homogeneous material suspected of contamination to a maximum volume of 75 m³. Given the anticipated type and quantities of material a reduced rate has been adopted where less than 75 m³ of material is produced.

In addition to the validation sampling required in **Table 8.3**, with respect to soil gas and groundwater impacts, the final successful validation of the impacts will be required to be demonstrated by the installation and sampling of either a groundwater monitoring well or soil gas monitoring well or probe in the area of the previously identified impact.

8.2.1 Impacted Material Removal

The validation program for the removal of impacted materials (should they be identified in the data gaps assessment) comprises:

- Inspection of the excavated areas by a suitably trained and experienced environmental
 consultant to confirm the extent of potentially impacted materials have been removed. If
 additional potentially impacted material is identified, further excavation will be conducted
 and the affected area will be re-inspected until such time as visual and olfactory validation is
 obtained.
- Following visual and olfactory validation, soil or soil gas (as appropriate to the nature of the impact) samples will be collected from the remediation area walls at a rate of 1 sample per 10 linear m, and from the excavation bases at a rate of 1 sample per 100 m²;
- Excavation validation samples will be analysed at a laboratory NATA accredited for the
 required analyses. If the concentration of COPCs are identified in any of the excavation
 validation samples exceeding criteria, then the soils will be excavated 0.3 m further in the
 direction of failure and the validation process repeated. Alternatively, where impact
 exceeding criteria is not identified by the laboratory, the remedial areas will be deemed to
 have been successfully remediated and validated;
- Excavated soils shall be stockpiled and the materials will be required to be classified in accordance with NSW EPA (2014) and disposed off-site to a facility legally able to accept the waste.

8.2.2 Sampling Methodology

<u>Soil</u>

The soil sampling method shall be determined by the Remediation Consultant as consistent with the observations of the site sub-surface and appropriate to generate representative samples. The soil sampling method shall be consistent with the data quality indicators in **Section 8.5**.

Where sample locations are placed by boreholes, undisturbed samples as collected by push tube or SPT sampler, are preferred if able to be effectively implemented. Otherwise samples may be recovered from solid flight augers (sampled off the piling auger in concurrence with the piling operations), via test pitting or direct sampling of stockpiles as per the below. Re-usable equipment shall require to be decontaminated between sampling locations.

Samples of near surface material and stockpiled soils shall be collected by appropriately trained and experienced personnel by the use of a stainless steel hand trowel. The hand trowel will be



thoroughly decontaminated using phosphate free detergent and distilled water before each sample is collected. Where deeper soil samples are required from excavation walls or floor, the material shall be retrieved using an excavator. Samples of the retrieved material shall be collected from the centre of the excavator bucket ensuring that no part of the sample has contacted the sides of the excavator bucket.

Sufficient sample material will be collected to allow both field and laboratory analyses. Additional samples will be collected from any soil horizons which exhibit staining, odours, or other physical evidence of potential contamination.

During the collection of soil samples, features such as seepage, discolouration, staining, odours and other indications of contamination will be noted on the field documentation. Collected soil samples will be immediately transferred to laboratory supplied sample jars, which will be sealed with Teflon lined screw closures. The sample containers will be transferred to a chilled esky for sample preservation prior to and during shipment to the testing laboratory. A chain-of-custody form will be completed and forwarded with the samples to the testing laboratory.

Soil Gas and Groundwater

As per the methods outlined in Section 5.

8.2.3 Laboratory Analyses

Laboratory methods and LOR as summarised in **Table 8.4** are proposed to be adopted for analysis of soil samples collected during remediation/validation activities. All laboratories are required to be National Association of Testing Authorities (NATA) registered for the relevant analyses. . Appropriate methods and LORs are required for comparison to relevant criteria.

Table 8.4: Soil Laboratory Analysis Methods (all units in mg/kg unless stated)

Analyte	Limit of Reporting	Laboratory Method
METALS		
Arsenic	4.0	ICP-AES (USEPA 200.7)
Cadmium	1.0	ICP-AES (USEPA 200.7)
Chromium (total)	1.0	ICP-AES (USEPA 200.7)
Chromium (VI)	1.0	Alkali leach colorimetric (APHA3500-Cr/USEAP3060A)
Copper	1.0	ICP-AES (USEPA 200.7)
Lead	1.0	ICP-AES (USEPA 200.7)
Nickel	1.0	ICP-AES (USEPA 200.7)
Zinc	1.0	ICP-AES (USEPA 200.7)
Mercury (inorganic)	0.05	ICP-AES (USEPA 200.7)
TRH		
F1 C ₆ -C ₁₀	10	Purge Trap-GCMS (USEPA8260)
F2 >C ₁₀ -C ₁₆	50	Purge Trap-GCFID (USEPA8000)
F3 >C ₁₆ -C ₃₄	100	Purge Trap-GCFID (USEPA8000)
F4 >C ₃₄ -C ₄₀	100	Purge Trap-GCFID (USEPA8000)
BTEX		
Benzene	1.0	Purge Trap-GCMS (USEPA8260)
Toluene	1.0	Purge Trap-GCMS (USEPA8260)
Ethylbenzene	1.0	Purge Trap-GCMS (USEPA8260)
Total Xylenes	3.0	Purge Trap-GCMS (USEPA8260)
PAH		
Benzo(a)pyrene as TEQ	0.5	GCMS (USEPA8270)
Total PAHs	0.5	GCMS (USEPA8270)
PCBs		
PCBs (total)	0.9	GCECD (USEPA8140,8080)
OCP/OPP		
Aldrin + Dieldrin	0.2	GCECD (USEPA8140,8080)
Chlordane	0.1	GCECD (USEPA8140,8080)
DDT + DDD + DDE	0.3	GCECD (USEPA8140,8080)
Heptachlor	0.1	GCECD (USEPA8140,8080)



Analyte	Limit of Reporting	Laboratory Method
HENOLS		
Total Phenols	5	Distillation-Colorimetric (APHA 5530)
OC C		
PCE	1.0	Purge Trap-GCMS (USEPA8260)
TCE	1.0	Purge Trap-GCMS (USEPA8260)
Cis 1,2 DCE	1.0	Purge Trap-GCMS (USEPA8260)
Trans 1,2 DCE	1.0	Purge Trap-GCMS (USEPA8260)
VC	1.0	Purge Trap-GCMS (USEPA8260)
THER		
Asbestos	Presence/0.1 g/kg	PLM / Dispersion Staining as per AS4964:2004
Soil pH	0.1	5:1 leach

8.3 Validation Criteria

The site is to be used for commercial purposes and is required to be validated as suitable for commercial and industrial land use, pursuant to the NEPC (2013). As such, health-based criteria for Commercial/Industrial (HIL-D) will be adopted for remedial excavation / site validation. The criteria are based on NSW EPA endorsed investigation levels which, while being used as clean-up levels instead of site-specific criteria derived through a process of risk assessment, are considered adequately conservative for the purposes of characterising and validating the site.

Decisions with respect to criteria have been developed based on the proposed end uses as follows:

- HILs for commercial/industrial land use HIL-D;
- HSL for petroleum hydrocarbons considering potential for vapour intrusion, coarse grained soil for commercial/industrial land use at 0.0-1.0 m depth;
- As a conservative measure, generic and site specific EILs derived through the added contaminant limits for commercial/industrial land use;
- Management Limits for TRH, coarse grained soils for commercial/industrial land use;
- ESLs for TRH fractions, BTEX and benzo(a)pyrene in coarse grained soil for commercial/industrial land use; and
- Where there are no NSW EPA endorsed thresholds the laboratory LOR has been adopted as an initial screening value for the purposes of this assessment.

Given the adopted validation criteria will in some instances be dependent upon soil texture and depth below final ground level, final site validation criteria will only be defined at the time of data evaluation.

Where consideration of potential ecological risk is required for validation of sediment and/or exposed soil media, representative soil samples will be the subject of total organic carbon (TOC %), cation exchange capacity (CEC) and soil pH analysis to support the development of the assessment criteria. Where multiple soil validation criteria can be derived based on the above, as for example in the case for F4 TRH, the lowest of the possible applicable values will be adopted as the validation criteria.

Where a valid data set can be generated as based on assessment of the soils within the Site and the potential exposure scenarios, the following statistical criteria will apply:

Either:

all contaminant concentrations were less than the adopted site assessment criteria,

Or:



- The 95 % upper confidence limit (UCL) average concentrations shall be below the soil criteria;
- The standard deviation of the generated data set shall be below 50 % of the soil criteria; and
- The maximum concentration shall be below 250 % of the soil criteria.

Existing data for chemical constituents (not asbestos) from materials remaining at the Site shall also be included in analytical data sets created for the soils.

In the event of accessible soils, further consideration is also required to the following, observations will also supplement the validation process:

- There shall be no visible asbestos in addition to laboratory analyses results; and
- Soils shall not emit recognisable odours, be discoloured as a result of contamination and/or have any significant additional aesthetic concerns with respect to future site users.

8.4 Validation Reporting

At the completion of the remedial works, a validation report will be prepared in general accordance with the *Guidelines for Consultants Reporting on Contaminated Sites* (OEH 2011), documenting the works as completed. The report will contain information including:

- Update relevant portions of the site description and CSM as prepared in this RAP to the condition of the validation assessment footprint at the time of the validation assessment;
- Present all sampling field notes and laboratory data including calibration certificates for field monitoring equipment, environmental monitoring etc.;
- Undertake an assessment of QA/QC of analytical data generated by the works and identify data that is reliable for use in characterising the applicable portion of the Block 15 Site;
- Sort data into data sets as required by the decision rules;
- Assess whether sufficient data has been obtained to meet required limits on decision error;
- Undertake assessment to the decision rules and identify any environmental data which causes decision rules to be failed;
- Provide a summary of waste disposal/off-site removal activities and volumes of material removed from the Site including supply of all waste disposal dockets confirming final waste disposal/landfill destination;
- Provide a summary of material importation activities (general fill soil/crushed rock, growing media, earthworks aggregates, drainage backfill etc), including material source, type, assessment of suitability, approximate quantities, date of importation and final placement location;
- Details of the remediation works conducted;
- Information demonstrating that the objectives of the RAP have been achieved, in particular
 the validation sample results and assessment of the data against both the pre-defined data
 quality objectives and the remediation acceptance (validation) criteria;
- Information demonstrating compliance with appropriate regulations and guidelines;
- Document any variations to the strategy undertaken during the implementation of the remedial works;
- Details of any environmental incidents occurring during the course of the remedial works and the actions undertaken in response to these incidents;



- Other information as appropriate, including requirements (if any) for ongoing monitoring / management; and
- Provide a comment on the suitability of the Block 15 Site (or portions thereof) for the proposed use and requirements for any ongoing monitoring/management (where applicable).

The report will serve to document the remediation works for future reference.

8.5 Contingency Plan

Given the development history of the site and that the existing assessment data does have a number of identified data gaps, consideration has been given to the potential for additional small scale issues that may arise during works (from a contamination viewpoint). Contingency plans for a range of potential identified scenarios are discussed following to ensure firstly the safety and health of people and the environment and secondly that the overall project objectives are achieved.

8.5.1 Identification of an Underground Storage Tank

There is the potential that one or more USTs may be encountered during demolition of the pavements or subsequent earthworks. In the event of such an occurrence, the Unexpected Finds Protocol as presented below (**Figure 8.1**) will be implemented and remedial actions defined EPA (2014b⁹) implemented as summarised below.

In general, the procedure will comprise:

- Documentation of work instructions and preparation of relevant permits to work prior to the commencement of decommissioning works;
- Removal of any tank and pipework contents using equipment suitable for operation in hazardous areas and off-site disposal of resulting liquid by a licensed contractor;
- Isolation of ground level connections to the tanks (if present) via sealing and exposure of subsurface lines back to the tank via removal of concrete/asphalt pavements;
- Purging of vapours within the tank removal of all pipework, followed by plugging of openings, other than one hole to act as a pressure equalising vent;
- Excavation to expose the total width and length of the tank and removal of any identified anchors (where present);
- Removal of the tank from the excavation followed by cleaning down to remove any excess soil to provide for inspection of the tank base condition. Identified holes should be patched/plugged prior to loading onto a transport vehicle for off-site disposal to a licensed destruction facility. The tank should be appropriately labelled with spray paint to warn of its previous contents and the associated dangers.
- Excavation and stockpiling of surrounding and underlying backfill and apparent impacted natural soils using observations including odour, staining/discolouration and/or a photoionisation detector (PID).

Subsequent to the removal of the petroleum infrastructure and associated backfill, validation requirements, consistent with NSW EPA (2014b) shall include:

 Sample locations from the walls of excavations formed by the removal of USTs/backfill sands at the frequency of one sample per 5 m of excavation wall, with a minimum of one per wall;

⁹ Technical Note: Investigation of Service Station Sites. NSW EPA dated April 2014 (EPA 2014b)



- Sample locations from the base of excavations formed by the removal of USTs at the frequency of one sample per 25 m², with a minimum of one per former UST location;
- Discrete sample locations under other petroleum infrastructure (i.e. remote fill points, fuel dispensers). In the event that significant impacted soil volumes are removed from these areas, the adopted sampling frequency for excavation bases and walls following UST removal will be adopted; and
- Sample locations at a linear spacing of 5 m underlying pipelines.

Soil samples shall be analysed for TRH, lead and VOCs.

Excavated backfill/surrounding soils shall be characterised in accordance with EPA (2014a) Waste Classification Guidelines.

8.5.2 Identification of Oily Materials

In the event that oily materials are encountered, the provisions outlined in the unexpected finds protocol will be implemented, comprising inspection, testing and appropriate action as advised by the Remediation Consultant (Figure 8.1).

Any suspected oily materials must be segregated from other excavated materials and placed in a designated area with appropriate odour and sediment controls until such time as appropriate assessment is completed and a methodology is confirmed for their appropriate management. In the event that the oily materials do not meet the Site Validation Criteria, then they shall removed from the site and disposed of at an appropriately licensed facility.

8.5.3 Material Storage Breach

In the event that any materials storage containment controls are breached and stockpiled materials classified as asbestos contaminated soil or otherwise have escaped (or have the potential to escape), then the management controls shall be rectified and investigations undertaken to review the adequacy of the controls and any improvements implemented. The REMP (Section 9.1) shall include a documented process for identifying and responding to such incidents.

8.5.4 Emissions Complaints

Due to the nature of the activities and type of contaminants identified at the Site, there is a potential for complaints to be received from members of the public relating to environmental emissions including:

- Odour emissions arising from handling of malodorous soil;
- Noise and vibration arising from excavation, piling and other works;
- Dust emissions arising from excavation, material handling and placement; and
- Visibly impacted surface water quality in stormwater system in proximity of the site.

Monitoring of all environmental emissions shall be undertaken during the works as detailed in the REMP (discussed in **Section 9.1**) and appropriate actions taken to further control emissions following receipt of a complaint. Such additional controls may include the following actions, required to be detailed in the REMP (discussed in **Section 9.1**):

- Increased application of odour masking chemicals on odorous materials;
- Revision of odour control provided to open excavations, stockpiled materials, etc;
- Disturbance of soils during meteorologically favourable periods only; and/or
- Covering highly impacted soils which are potentially generating asbestos fibres.



8.5.5 Groundwater Dewatering

As referenced above in **Section 6.3**, in the event that groundwater is encountered during redevelopment works that will require dewatering, a dewatering license shall be obtained in accordance with the *Water Management Act 2000*. The license must be obtained prior to the installation of the dewatering system. The license application must be submitted to the WaterNSW, and a Dewatering Management Plan should be included as part of the submitted licence application.

It is noted that excavation dewater may require treatment prior to disposal, potentially including pH correction, sediment concentrations and potentially chemical contaminants. Procedures for treatment and validation of water will be documented in the Dewatering Management Plan.

In accordance with the Council development controls, no wastewater, chemicals or other substances harmful to the environment shall be permitted to discharge to Council's stormwater system. Only clean, unpolluted water is permitted for discharge. Wastewaters not suitable for discharge to stormwater must be the subject of on-site treatment to address contaminant concentrations prior to stormwater disposal, disposed of using a licensed liquid waste contractor or alternatively directed to the sewer of the Sydney Water Corporation (SWC) under a Trade Waste Agreement (TWA). The pretreatment of wastewater may be a requirement of SWC prior to discharge.

8.5.6 Excavation Validation Failure

In the unforeseen event that the proposed remediation works do not meet the validation criteria, or if the selected remedial strategy is unsuccessful, the following actions will be considered to ensure firstly the safety and health of people and the environment and secondly that the overall project objectives are achieved:

- Continued controlled excavation and off-site disposal or treatment until validation is achieved; and
- Reassessment of remedial options for excavated materials, including:
- Alternate on-site treatment options; and/or
- Onsite containment.

8.6 Unexpected Finds Protocol (UFP)

It is acknowledged that previous investigations of the site have been undertaken to assess the identified contaminants of potential concern. However, ground conditions between sampling points may vary, and further hazards may arise from unexpected sources and / or in unexpected locations during remediation. The nature of any residual hazards which may be present at the site are generally detectable through visual or olfactory means, for example:

- The presence of significant aggregates of friable asbestos materials (visible) as ACM and or AF/FA impacted material;
- Bottles / containers of chemicals (visible);
- Ash and/or slag and/or tar contaminated soils / fill materials (visible);
- Drums, waste pits, former pipework or unrecorded USTs (visible); and
- Volatile organic compound (VOC) contaminated soils (odorous) and vapours.

As a precautionary measure to ensure the protection of the workforce and surrounding community, should any of the abovementioned substances be identified (or any other unexpected potentially hazardous substance), the procedure summarised in **Flowchart 8.1** is to be followed.



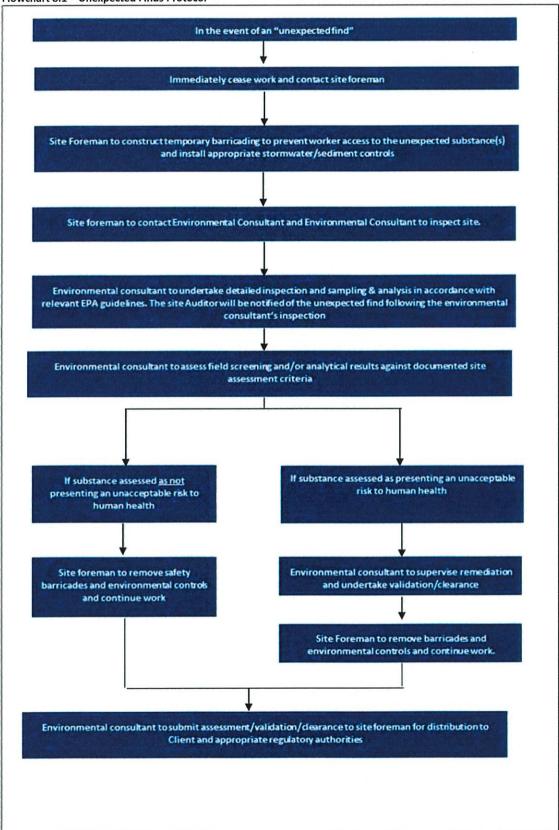
An enlarged version of the unexpected finds protocol, suitable for use on-site, should be posted in the site office and referred to during the site specific induction by the remedial / principal contractor.

The sampling strategy for each "unexpected find" shall be designed by a suitably qualified environmental consultant. The strategy will, however, be aimed at determining the nature of the substance – that is, is it hazardous and, if so, is it at concentrations which pose an unacceptable risk to human health or the environment.

The sampling frequency of the identified substance/materials shall meet the minimum requirements outlined in EPA (1995) in addition to those outlined in **Section 8.2**. In the event of an Unexpected Find, it is anticipated that the suitability of the implemented characterisation assessment and the proposed validation strategy be discussed with the site auditor prior to finalisation of the Unexpected Find works.



Flowchart 8.1 - Unexpected Finds Protocol





9. Site Management Plan

This section contains procedures and requirements that are to be implemented as a minimum requirement during the remedial works at the site.

9.1 Hours of Operation

It is understood that the hours of operation for remedial works will be conducted in accordance with the recommended site hours suggested by the EPA¹⁰, however hours may vary from typical hours of operation which will be subject to approval.

Typical hours of operation for remedial works are:

- Monday to Friday: 7am to 6pm.
- Saturday: 8 am to 1 pm.
- Sunday and public holidays: No work permitted.

9.2 Preparation of a Remediation Environmental Management Plan

Prior to commencement of any ground disturbance works, a site specific REMP shall be prepared by the early works Principal Contractor, which documents the environmental monitoring and management measures required to be implemented during the remediation and construction related activities associated with the construction of development. The Contractor is required to have the REMP reviewed and endorsed as acceptable by the Environmental Consultant and/or the Site Auditor prior to the commencement of remediation works.

The REMP shall address each of the nominated items in **Section 9.2.1** and shall include the Contingency Plan, referred to in **Section 8**, above.

9.2.1 Required Elements

An assessment of the proposed activities and the associated elements required to be incorporated into the REMP is provided in **Table 9.1**. The REMP is required to address each of the required elements and procedures in full detail and to include detailed monitoring processes and procedures, corrective actions and reporting requirements. **Table 9.1** below has been developed with consideration of City of Sydney (2004) 'Contaminated Land Development Control Plan'. Following receipt of the Development Consent, any additional terms and conditions not discussed below should be incorporated in the REMP.

Table 9.1 Required Elements of the REMP

Element	Specific Minimum Requirements to be included in REMP
1. Dust and Airborne Hazard Control	Asbestos air monitoring Provisions for dust control based on monitoring results In accordance with DA conditions
2. Flora and Fauna	As appropriate
3. Heritage/Archaeological	In accordance with relevant heritage/archaeological studies
4. Visual Impacts	Visual monitoring at site boundary Specific colour requirements for various controls/measures, including PPE
5. Emergency Response	As appropriate Procedures required for spill incident response including material storage breach
6. Noise Control	Hours of operation, consistent with the consent conditions Boundary monitoring at commencement of work site activities with potential for environmental noise emissions Potential noise monitoring at nearest receptors Procedures for control and management of noise emissions, as appropriate (e.g., restricted hours)

¹⁰ Interim Construction Noise Guideline. Department of Environment & Climate Change NSW. DECC 2009/265. July 2009.



Element	Specific Minimum Requirements to be included in REMP
	In accordance with DA conditions, all works must be carried out in accordance with the
	appropriate Demolition/Construction management plan documentation prepared at
	Consent Stage. Reference should be made to DA conditions with regards to control
	measures, noise criteria, hours during which noisy works can occur and Council/Community
	liaison requirements
	Controls on vehicle movements on public roads
7. Traffic	Reference should be made to Consent Condition requirements including loads covering and
	vehicle cleaning requirements
8. Protection of Adjoining Structures	As appropriate and in accordance with any DA conditions (where relevant)
	Enclosure of all potential odour generating activities (i.e., excavation of petroleum
	hydrocarbon contaminated soils) with appropriate odour controls incorporating safeguards
	and monitoring
	Daily monitoring of odour levels at boundary during handling of malodorous materials.
9. Odour Control	Procedures for addressing elevated odour monitoring results, including, but not limited to:
	reduction in earthworks activities within odorous material areas during adverse
	meteorological conditions; application of odour masking solutions at the odour source or
	between identified source(s) and receptor(s); review of stockpiling measures and covering
	identified potential odour sources by hydromulching or with less odorous materials
	Soil and water management (stockpiling, site access, excavation pump out, reinstatement).
10. Handling of	Reference should be made to DA conditions.
Contaminated Soil and	No wastewaters, chemicals or other substances harmful to the environment shall be
Sediment and Water	permitted to be discharged to Blackwattle Bay or the stormwater system. Only unpolluted
	water is permitted to discharge from the site
	Soil and water management (stockpiling, site access, excavation pump out, reinstatement)
	Bunding.
11 Cail Stanger / Diagons ant	Heavy vehicle/personnel decontamination
11. Soil Storage/Placement	Interim storage requirements for materials requiring later treatment
Areas	Site drainage requirements, incorporating clean/dirty areas and modifications to existing
	surface water and drainage controls beneath retained pavements
	Monitoring as required
	Bunding
12. Sediment Control	Collection/treatment/handling impacted sediments
	Reference should be made to DA conditions
13. Acid Sulfate	All site activities with the potential to disturb known or suspected ASS/PASS material will be
Soil/Sediments	required to comply with the procedures and management controls presented in the ASSMP.
14. Operation of Site Office	As appropriate
15. Decontamination of	As appropriate
Heavy Equipment	Reference should be made to DA conditions
	Monitoring of dusts, noise, odour and fibres
16. Environmental	Monitoring as required for vibration and water releases
Monitoring	Inspection checklists and field forms
C	Reference should be made to DA conditions
17. Environmental Criteria	Soil criteria as sourced from RAP
	As detailed in this RAP which have included NSW EPA and Consent authority requirements
18. Material Classification	Materials tracking, including QA/QC inspection and sampling
	Refer to project specific communication commitments, incorporating nomination of specific
19. Community Relations	contact persons & details and requirements for communications/response register
Plan	Reference should be made to DA requirements
20. Incident Reporting	As appropriate, including standard form/checklist
	Secure site perimeter
21. Security and Signage	Site boundary signage
22. EMP Review	As appropriate
23. Training	As appropriate As appropriate
23. Hanning	Company/personnel details, including names/phone numbers for:
	- Principal Contractor
24 Contact D-t-!!-	- Site Auditor Remadiation Consultant
24. Contact Details	- Remediation Consultant
	- Remediation Contractor
	- OH&S Compliance
	- Environmental Compliance



9.3 Health and Safety

9.3.1 Work Health and Safety Management Plan

A WHSP shall be prepared by the early works Principal Contractor prior to commencement of any ground disturbance works. The Plan shall contain procedures and requirements that are to be implemented as a minimum during the works, in addition to the Contingency Plan, referred to in **Section 8**.

The objectives of the WHSP are:

- To apply standard procedures that minimises risks resulting from the works;
- To ensure all employees are provided with appropriate training, equipment and support to consistently perform their duties in a safe manner; and
- To have procedures to protect other site workers and the general public.

These objectives will be achieved by:

- Assignment of responsibilities;
- An evaluation of hazards;
- Establishment of personal protection standards, mandatory safety practices and procedures;
- Monitoring of potential hazards and implementation of corrective measures; and
- Provision for contingencies that may arise while operations are being conducted at the Site.

9.3.2 Additional Site-Specific Elements/Procedures

In addition to the normal construction-related matters, the WHSP shall address the following site-specific specific hazards associated with the works relating to the management of contaminated soil and groundwater:

- Use of plant and machinery within confined spaces (i.e. remedial excavations);
- Potential for contact to asbestos contaminated soils and/or airborne fibres;
- Contact with contaminated soil (incl. dust), groundwater and vapours, including requirements for specific Personal Protective Equipment (PPE);
- Potential for under/aboveground services, specifically former petroleum infrastructure (if encountered); and
- Heat/cold stress.

9.4 Air Quality

During remedial works, dust emissions and any odours will be confined within the site boundary. This will be assessed by a program of air monitoring undertaken during remediation works (if asbestos impacts are identified) and implemented by air emission controls as required by the Contractor. Air monitoring requirements are summarised in this section.

9.4.1 Air Monitoring

Where asbestos and/or contaminated soil is being disturbed during the proposed works, applicable air monitoring activities will be employed on a daily basis at relevant locations to demonstrate the suitable application of contaminant migration control measures. Monitoring activities as may be employed are discussed following.

During the remedial works, perimeter asbestos in air monitoring will be conducted at each applicable remedial works area boundary when soils impacted with asbestos are being disturbed.



Air monitoring will be conducted on a daily basis at relevant locations during any ground disturbance activities within impacted soil within the Site to verify that implementation of appropriate control measures have been successful at managing the risk of air borne fibre generation.

Air monitoring will be undertaken in accordance with the requirements of the National Occupational Health and Safety Commission (NOHSC) Asbestos Code of Practice and Guidance Notes, in particular the Guidance note for the estimation of airborne asbestos dust [NOHSC 3002:2005]. Air filters shall be analysed by a NATA accredited laboratory and results shall be required to be below 0.01 fibres/mL. All detections of fibres shall be further analysed by scanning electron microscope (SEM) to confirm the fibres are asbestos.

Should friable asbestos be identified, air monitoring will be conducted by Licensed Asbestos Assessor (LAA, as per Safe Work NSW requirements).

In establishing site trigger levels for evaluation of the monitoring results, reference is made to the appropriate TWA (NOHSC) levels:

- Amosite 0.1 fibre/mL;
- Chrysotile 0.1 fibre/mL;
- Crocidolite 0.1 fibre/mL;
- Other forms of asbestos 0.1 fibre/mL; and
- Any mixture of these, or where the composition is unknown 0.1 fibre/mL.

With consideration to these levels the following trigger levels have been developed:

- If airborne fibre levels reach 0.01 fibres/mL the source of fibre release is to be found and rectified. Work in the affected area does not have to stop; and
- If airborne fibre levels reach 0.02 fibres/mL work in the work area should stop and additional controls measures employed. This will involve additional water spraying during excavations.

Air monitoring results will be obtained within 24 hours of sample collection on week days. While this precludes "real time" monitoring, inspections will be made during all excavation works and, if there are any visible dusts, light water sprays will be used to wet the excavation and prevent the release of any airborne asbestos fibres.

If respirable asbestos fibres are confirmed and present between 0.01 and 0.02 fibres/mL, the following controls must be implemented by the licensed asbestos removalist, in accordance with SWA 2016;

- Review control measures;
- Investigate the cause; and
- Implement controls to eliminate or minimise exposure and prevent further release.

If respirable asbestos fibres are confirmed and present above 0.02 fibres/mL, the following controls must be implemented by the licensed asbestos removalist, in accordance with SWA 2011;

- Stop removal work;
- Notify Safe Work NSW by phone, then by fax or written statement that work has ceased;
- Investigate the cause;
- Implement controls to eliminate or minimise exposure and prevent further release; and
- Do not recommence removal work until further air monitoring is conducted and fibre levels are detected below 0.01 fibres/mL.



A daily report air monitoring report will be prepared documenting the previous/same days airborne asbestos fibre air monitoring results. This report will be made available to all relevant stakeholders, upon request, including but not limited to:

- Site workers;
- Council and, WorkSafe NSW and/or EPA officers;
- Neighbouring facilities; and
- Unions.

9.4.2 Additional Consideration of Chemical Contaminants

In addition to general assessment of the potential for exposure to chemical contaminants, the WHSP should also include specific consideration of additional contaminants such as PAHs and heavy metal distributed throughout fill materials.

As a precautionary measure, the WHSP should include the requirement for the plan to be revised in the event of an unexpected find of contaminated material during remediation and/or construction.

When working with contaminated materials in general, care needs to be taken to ensure that the contamination is not introduced to the worker via ingestion, inhalation or absorption. The WHSP must detail the PPE and decontamination requirements to be followed to control the risks posed by potential exposure to chemical contaminants at the site.

9.5 Materials Tracking

It is anticipated that disturbed materials will require removal from the site or placement in other areas of the site. A Materials Compliance Management System (MCM) shall be developed for the documentation of material movement and reuse of materials at the site to ensure that it can be demonstrated all material has been appropriately managed. The MCM is required to consider both the quality and quantity of material for each element.

The MCM will include the following specific details:

- Definition of responsibilities, including the early works Principal Contractor(s), other contractor(s) e.g. Remediation Consultant (JBS&G) and the Site Auditor;
- Procedures for confirming material quality, summarising existing analytical (in-situ) data, additional analytical (ex-situ) data, additional observations to satisfy other acceptance criteria (e.g., occurrence of asbestos containing materials) and alignment of any environmental data to enable beneficial re-use of the material at the point of placement (where appropriate) and/or provide a waste classification for off-site removal of the material;
- Procedures for confirming where the materials have originated and what classification have they been given, noting that source depths are not critical if tied to material type, while placement depths are critical since tied to potential future exposures on the site;
- Procedures for recording where the materials have been placed (lateral & vertical limits) and inspections during placement and/or where the material has been disposed of;
- Identification of hold points where materials are proposed to be temporarily stockpiled;
- Procedures for recording the quantity of placed materials;
- Site grid squares or sub zones/site survey data (GPS/GIS), noting size of grid and elevations;
- Frequency of data collection, with consideration to both program (time) and area/material type;



- Material Tracking Records;
- Standard forms/documentation;
- Non-conformances/Unexpected Finds; and
- QA/QC.

The MCMS may also need to include or make reference to additional material placement requirements to meet design elements such as those relating to subsurface drainage or compatibility with service corridors, and engineering properties of materials to be placed, which are outside the scope of this RAP.

9.6 Disposal of Waste Material

All waste materials including soil, sediment and liquids to be removed from the site will classified, managed and disposed in accordance with the requirements of the NSW Protection of the Environment Operations Act 1997 (POEO Act), the NSW POEO Waste Regulation (2015) and/or exemptions issued under these regulations. Waste materials will be classified in accordance with the requirements of the Waste Classification Guidelines (EPA 2014) prior to off-site disposal. In addition, given the probability of encountering acid sulfate soils at the site, all materials requiring off-site disposal will require to be managed and classified in accordance with Part 4 of this guideline.

Consideration will also be required of the potential for the waste to contain organotins, in which case, liaison will be required with the NSW EPA waste unit and potential receiving facilities to ensure appropriate disposal of the material.

For discharge of collected surface water, appropriate monitoring and validation of conditions will be required such that it can be demonstrated water quality is suitable for discharge to the environment in accordance with the POEO Act provisions on water pollution. Where water does not meet the appropriate standards, consideration will be required to either on-site treatment opportunities, or alternatively off-site disposal as liquid waste to an appropriately licensed facility.

Documentary evidence for all waste disposal shall be kept for inclusion in the Validation Report/s.



10. Environmental and Health and Safety Management

10.1 Environmental Management

10.1.1 Environmental Management Plan

Prior to commencement of remediation works on the site, a Construction Environmental Management Plan (EMP) or similar shall be prepared by the remedial contractor, which documents the environmental monitoring and management measures required to be implemented during remediation of the site.

The EMP shall address each of the nominated items in **Section 10.1.2** and shall include the contingency plan, referred to in **Section 8.5** above.

10.1.2 Required Elements/Procedures

An assessment of the proposed activities and the associated elements required to be incorporated into the EMP is provided in **Table 10.1**. The EMP is required to address each of the required elements and procedures in full detail and to include detailed monitoring processes and procedures, corrective actions and reporting requirements.

Table 10.1: Required Elements of the EMP

Element	Specific Minimum Requirements to be included in EMP
1. Dust and Airborne Hazard Control (for	Asbestos air monitoring (if conducted).
asbestos materials disturbance and/or	Provisions for dust control based on monitoring results.
removal – if required)	
2. Flora and Fauna	Consider requirements as drafted in Marine Ecology Assessment (MEA
	2018 ¹¹) and subsequent plans
3. Heritage/Archaeological	Consider requirements as drafted in Maritime Heritage Impact Statement
	(MHIS 2018 ¹²) and subsequent reports/plans as may be developed specific
	to the project
4. Visual Impacts	Potential surface water impacts in Blackwattle Bay from site based run-
	off.
5. Emergency Response	As appropriate.
	Procedures required for spill incident response including material storage
	breach.
6. Noise Control	Hours of operation.
	Boundary monitoring at commencement of work site activities that have
	the potential for excessive environmental noise emissions.
	Potential noise monitoring at nearest receptors if required.
	Procedures for control and management of noise emissions, as
	appropriate (e.g., restricted hours).
7. Traffic	Site access to be restricted to authorised personnel only
8. Protection of Adjoining Structures	As appropriate after consideration to the required remediation works and
	potential effects (if any) to neighbouring properties.
9. Odour Control	Procedures for management of potentially odorous works.
10. Handling of Contaminated Soil and	Soil and water (if encountered) management (stockpiling, site access,
Groundwater	excavation pump out, reinstatement).
11. Soil Storage/Placement Areas	Soil and water management (stockpiling, site access, excavation pump
	out, reinstatement).
	Bunding.
	Heavy vehicle/personnel decontamination.
	Interim storage requirements for materials requiring later treatment.
	Site drainage requirements, incorporating clean/dirty areas and
	modifications to existing surface water and drainage controls beneath
	retained pavements.
	Monitoring as required.

¹¹ Marine Ecology Assessment – Stage 1 Concept and Demolition, Sydney Fish Market, Eco Logical Australia Pty Ltd, 20 February 2018 (MEA 2018)

¹² Maritime Heritage Impact Statement, Sydney Fish Market Redevelopment, Comber Consultants Pty Ltd, February 2018 (MHIS 2018)



Element	Specific Minimum Requirements to be included in EMP
12. Sediment Control	Bunding and silt curtains within land and surface water areas respectively.
	Collection/treatment/handling impacted sediments.
	All site activities with the potential to disturb known or suspected
13. Acid Sulfate Soil/Sediments	ASS/PASS material will be required to comply with the procedures and
	management controls presented in the ASSMP.
14. Operation of Site Office	As appropriate.
15. Asbestos Works (if any)	Required notifications, permits, signage and exclusion zones.
	Required personal (e.g. Class A removalist).
	PPE and decontamination.
	Staging of asbestos and non-asbestos works.
16. Environmental Monitoring	Monitoring of dusts, noise, odour and fibres (if required).
	Monitoring as required for vibration and water releases. Surface water
	quality monitoring in Blackwattle Bay as required.
	Inspection checklists and field forms.
17. Environmental Criteria	Soil criteria as sourced from RAP.
18. Material Classification	As detailed in this RAP.
19. Waste Management	All waste materials classified in accordance with the RAP are required to
	be disposed of at a licensed waste facility that are lawfully able to accept
	such materials. Material tracking in the form of disposal dockets will be
	required for the purposes of satisfying the validation report.
20. Community Relations Plan	Client to provide project specific communication protocols, incorporating
	nomination of specific contact persons & details and requirements for
	communications/response register.
21. Incident Reporting	As appropriate, including standard form/checklist.
22. Security and Signage	Secure site perimeter.
	Site boundary signage.
	Remediation exclusion zone signage where required.
23. EMP Review	As appropriate.
24. Training	As appropriate.
	Contamination awareness training for all workers.
25. Contact Details	Company/personnel details, including names/phone numbers for:
	- Principal Contractor
	- Site Auditor (if involved)
	- Environmental Consultant
	- Contractor
	- OH&S Compliance
	- Environmental Compliance

10.2 Health and Safety Management

A Work Health & Safety Management Plan (WHSP) shall be prepared by the contractor prior to commencement of remediation works on the site. The Plan shall contain procedures and requirements that are to be implemented as a minimum during the works.

The objectives of the WHSP are:

- Ensure all regulatory requirements for the proposed works are satisfied;
- To apply standard procedures that minimises risks resulting from the works;
- To ensure all employees are provided with appropriate training, equipment and support to consistently perform their duties in a safe manner; and
- To have procedures to protect other site workers and the general public.

These objectives will be achieved by:

- · Assignment of responsibilities;
- An evaluation of hazards;
- Establishment of personal protection standards, mandatory safety practices and procedures;



- Monitoring of potential hazards and implementation of corrective measures; and
- Provision for contingencies that may arise while activities are being conducted at the site.



11. Conclusions

Overall, it is considered that the proposed actions outlined in this RAP conform to the requirements of the *Contaminated Sites Guidelines for the NSW Site Auditor Scheme (3rd Edition)* (EPA 2017) because they are: technically feasible; environmentally justifiable; and consistent with relevant laws policies and guidelines endorsed by NSW EPA.

Subject to the successful implementation of the measures described in this RAP and with consideration to the Limitations presented in **Section 12**, it is considered that the Site can be made suitable for the intended uses and that the risks posed by contamination can be managed in such a way as to be adequately protective of human health and the environment.



12. Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquires.

Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

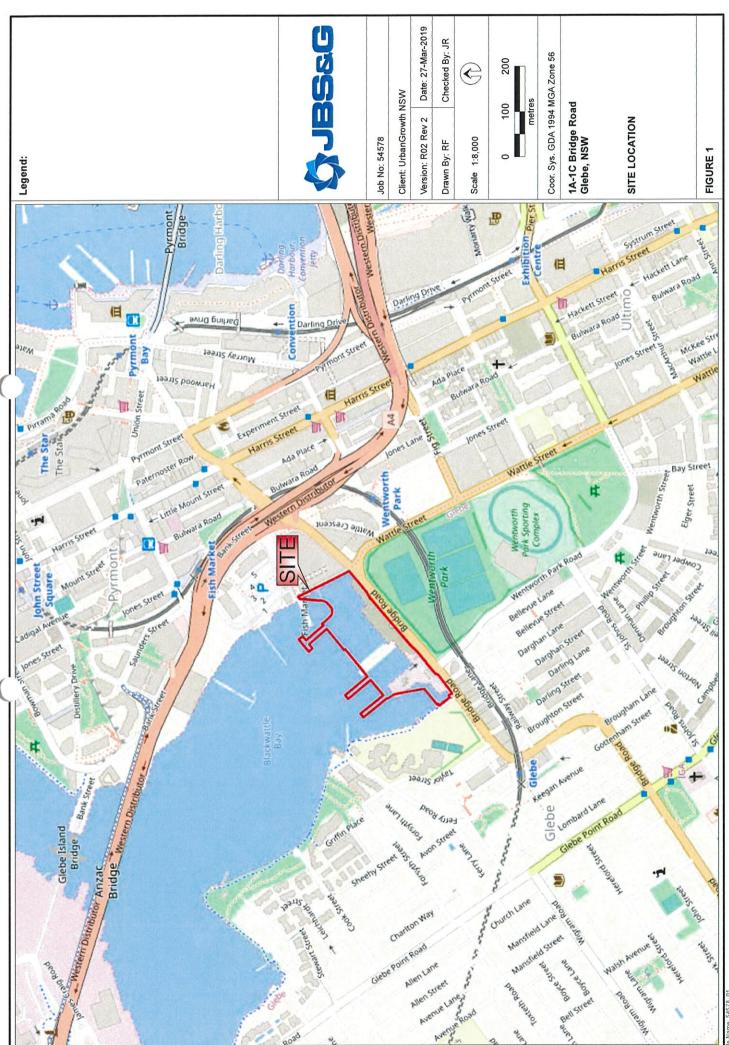
Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

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

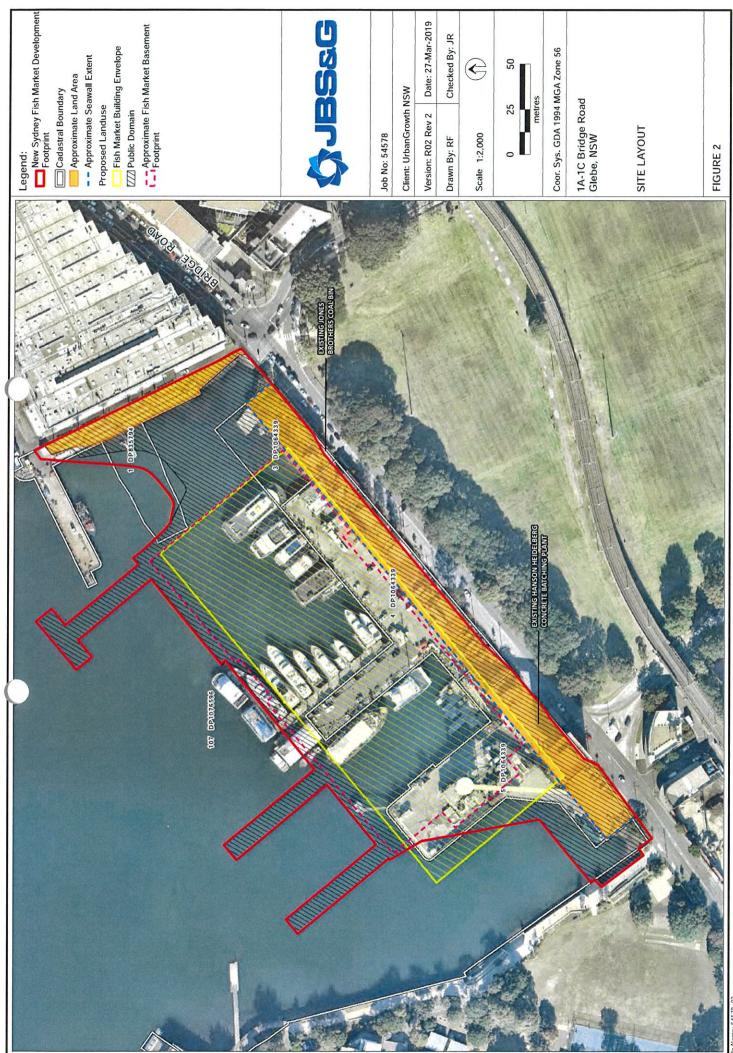
This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.



Figures



ile Name: 54578_01 Service Layer Credits: @ OpenStreetMap (and) contributors, CC-BY-SA



rie name: 343 / 0_22 Reference: Near Map - http://www.nearmap.com.au/. Imagery - 18-01-2018.



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le Name: 54578_04 eference: Near Map - http://www.nearmap.com.au/. Imagery - 18-01-2018.



Appendix A – Proposed Development Plans

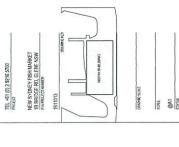
MARKE F S H SYDNEY

≫ Ш Z STATE SIGNIFICANT DEVELOPMENT APPLICATION STAGE 1



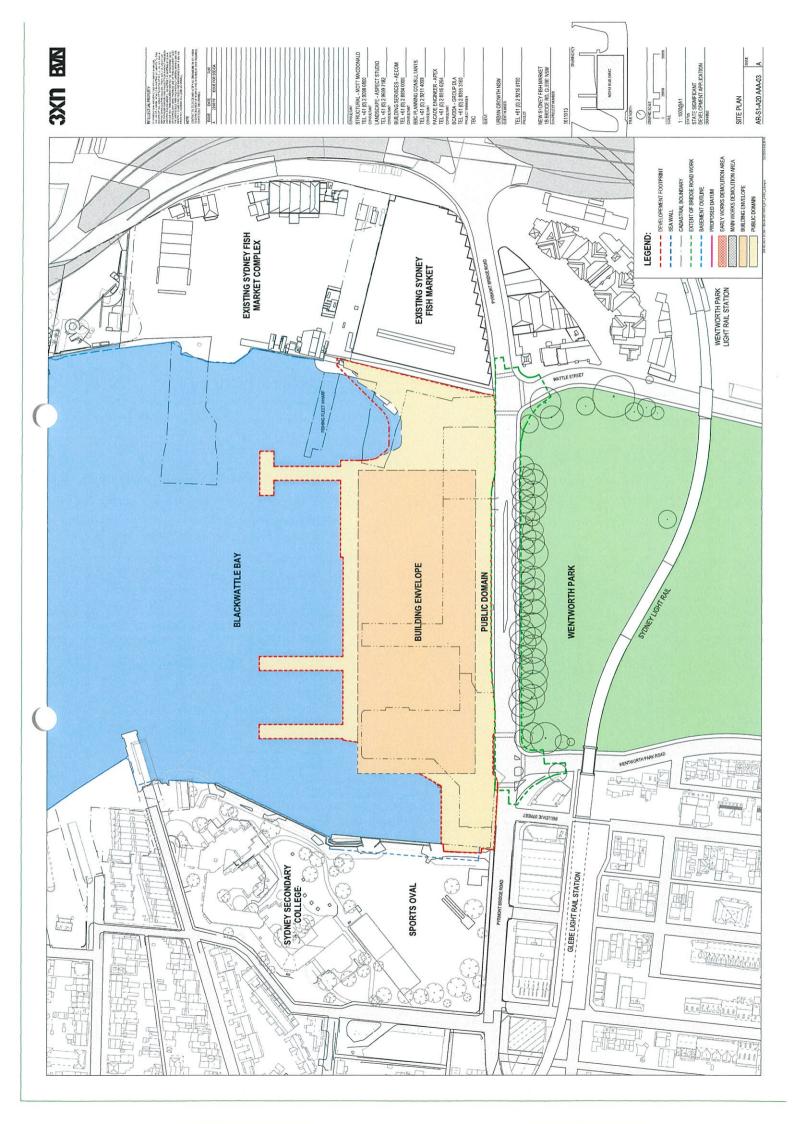
DSCAPE - ASPECT STUDIO
161 (0) 2 9699 7182
DING SERVICES - AECOM
161 (0) 2 8834 6000
28.17MT
161 (0) 2 9214 4099
161 (0) 2 9211 4099

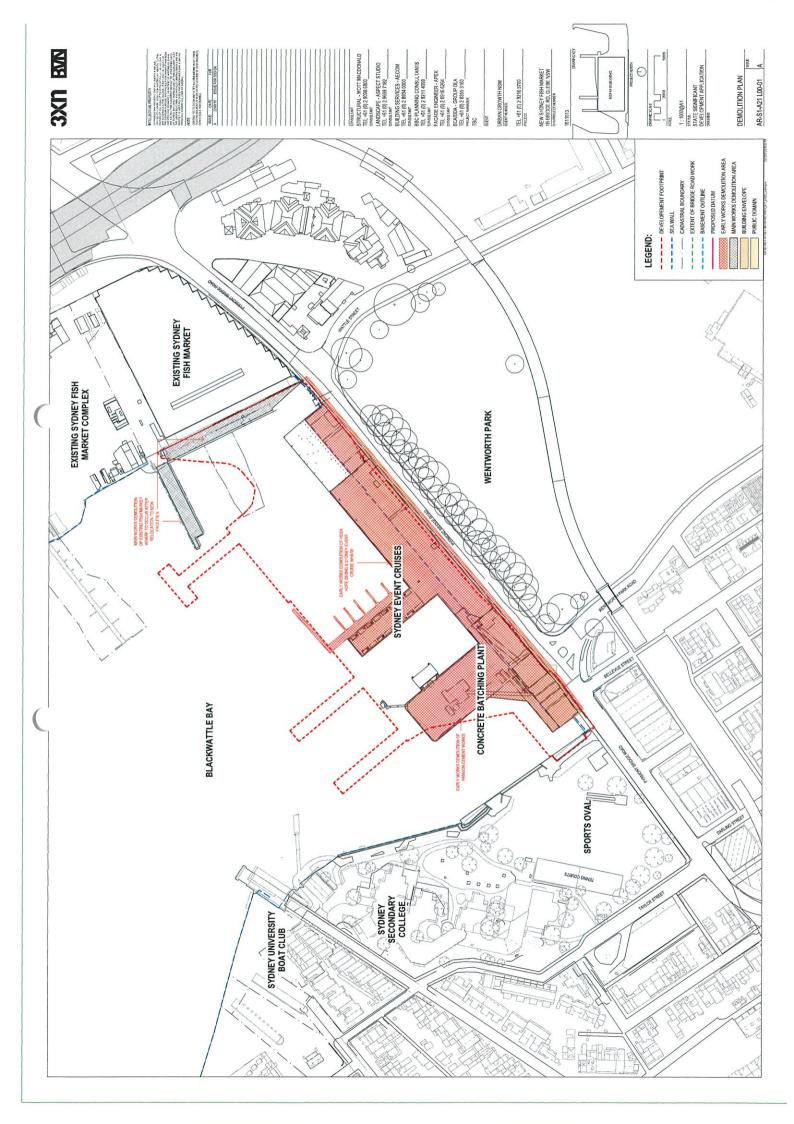
ACADE ENGINEER - APEX EL +61 (0) 2 8916 6264

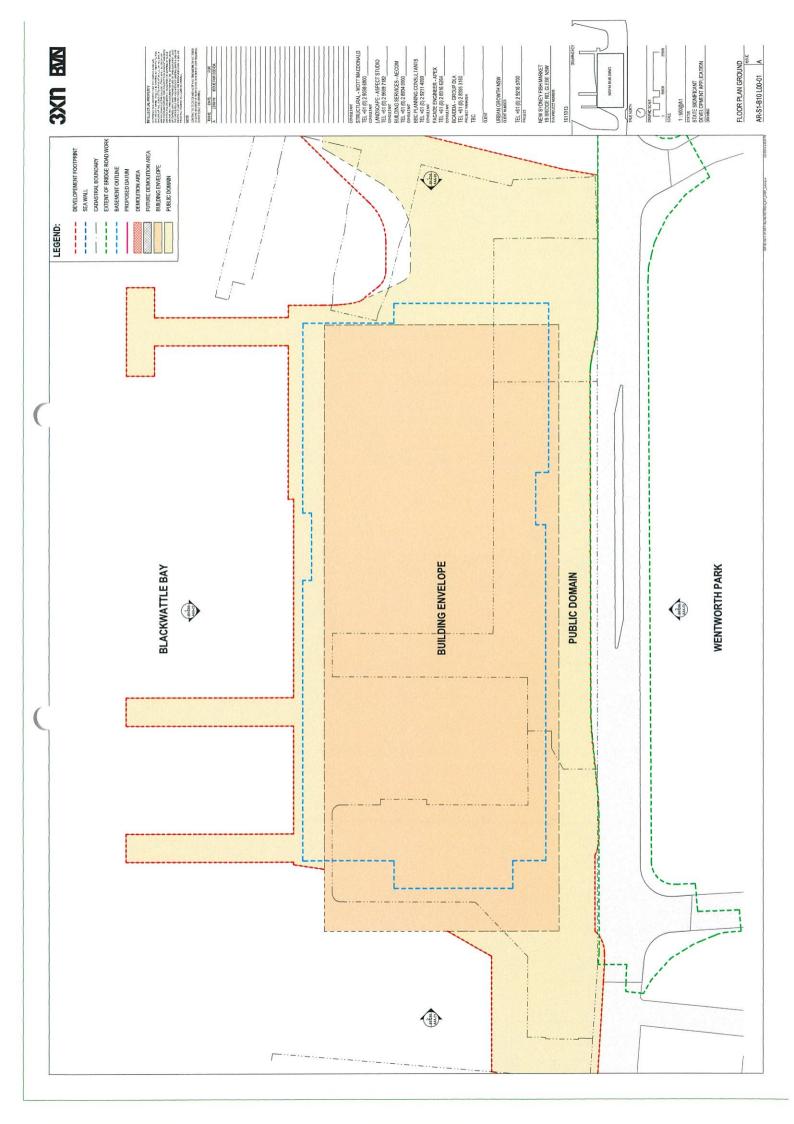


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COVER SHEET





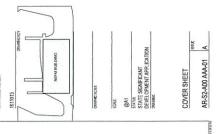


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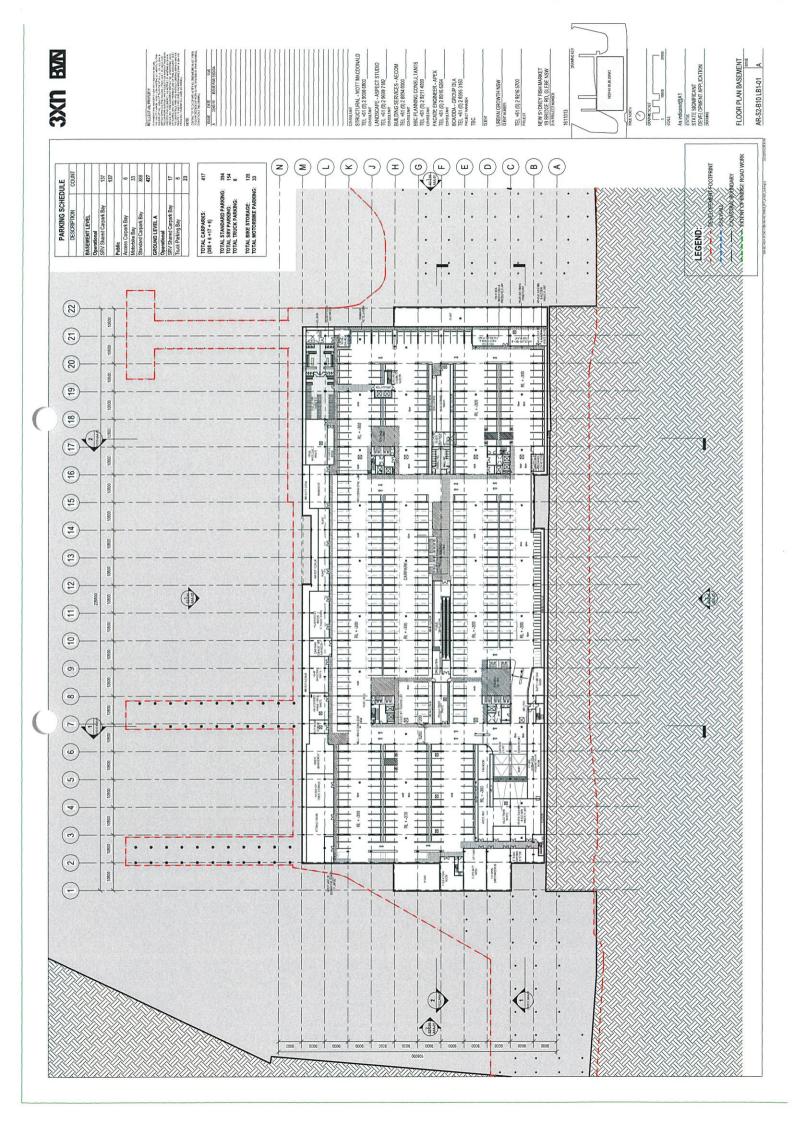
STATE SIGNIFICANT DEVELOPMENT APPLICATION STAGE 2



			SHEET	SHEET LIST_STAGE 2	GE 2
SHEET NUMBER	SHEET NAME	REVISION	REVISION	A1 SCALE	REVISION DESCRIPTION
S2-A00 AAA-01	COVER SHEET	٧	2203719		ISSUE FOR SSD-DA
S2-A20 AAA-01	SITE SURVEY	A	22/03/19	1500	ISSUE FOR SSD-DA
S2-A20 AAA-02	LOCALITY / CONTEXT PLAN	A	22003/19	12500	ISSUE FOR SSD-DA
S2-A20 AAA-03	STEPLAN	4	22/03/19	1:1000	ISSUE FOR SSD-DA
S2-A20 L01-01	PUBLIC DOMAIN GROUND	A	22/03/19	1:1000	ISSUE FOR SSD-DA
S2-A20 L02-01	PUBLIC DOMAIN UPPER GROUND	A	22003/19	1:1000	ISSUE FOR SSD-DA
52-810 (.00-01	FLOOR PLAN GROUND	V	22/03/19	1500	ISSUE FOR SSD-DA
52-810 101-01	FLOOR PLAN UPPER GROUND	A	22/03/19	1.500	ISSUE FOR SSD-DA
52-810 L02-01	FLOOR PLAN MEZZANINE	V	22/03/19	1.500	ISSUE FOR SSD-DA
52-810 (03-01	MEZZANINE ROOF PLAN	A	2203/19	1.500	ISSUE FOR SSD-DA
52-810 (10-01	ROOF PLAN	A	22/03/19	1500	ISSUE FOR SSD-DA
S2-810 LB1-01	FLOOR PLAN BASEMENT	¥	2203719	1.500	ISSUE FOR SSD-DA
S2-C10 AAA-01	EAST AND WEST ELEVATION	V	2203/19	1:500	ISSUE FOR SSD.DA
52-C10 AAA-02	NORTH AND SOUTH ELEVATION	A	2203/19	1.500	ISSUE FOR SSD-DA
S2-D10 AAA-01	CROSS SECTIONS	¥	22/03/19	1:500	ISSUE FOR SSD-DA
S2-D10 AAA-02	LONG SECTIONS	A	22/03/19	1:500	ISSUE FOR SSD-DA
S2-E43 AAA-01	AUCTION & OFFICE SECTION	A	2203/19	150	ISSUE FOR SSD-DA
S2-E43 AAA-02	FOOD & BEVERAGE SECTION	Y	22/03/19	150	ISSUE FOR SSD-DA
S2-E43 AM-03	STACING & OFFICE SECTION	Y	22/03/19	150	ISSUE FOR SSD-DA
S2-E43 AAA-04	WHOLESALE & CATERING SECTION	V	22/03/19	150	ISSUE FOR SSD.DA
S2-L10 AAA-01	GFA MEASUREMENT SREP 28	A	22003/19	1:1000	ISSUE FOR SSD-DA
S2-L10 AAA-02	GFA STANDARD INSTRUMENT	×	2203/19	1:1000	ISSUE FOR SSD-DA
52-L10 AAA-03	OPERATIONAL AREAS	4	22/03/19	1:1000	ISSUE FOR SSD-DA
\$24.10 AAA.04	RETAIL AREAS	A	22/03/19	1:1000	ISSUE FOR SSD-DA



TEL +61 (0) 2 9216 5700



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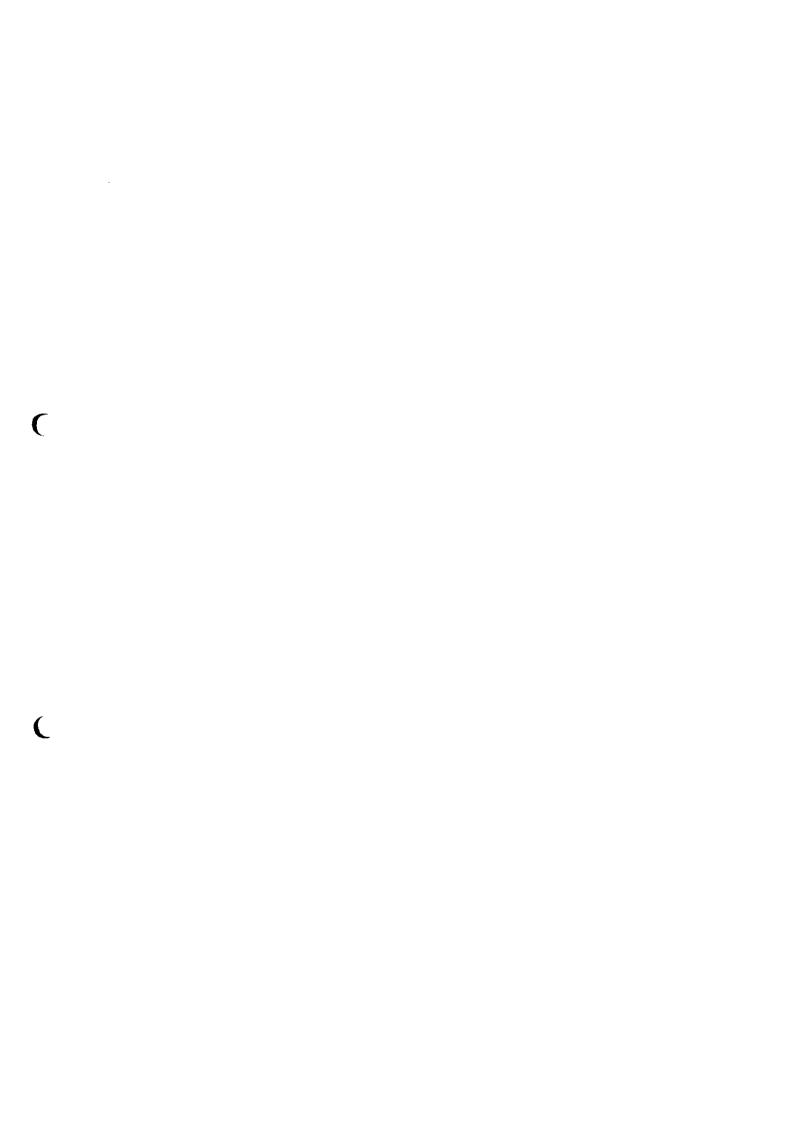
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1	1 x electronic	Nick Bouziotis – UrbanGrowth NSW	02/11/2018
2	1 x electronic	Jennifer Chang – UrbanGrowth NSW Tom Onus – Ramboll Australia Pty Ltd	29/03/2019
3	1 x electronic	Jennifer Chang – UrbanGrowth NSW Tom Onus – Ramboll Australia Pty Ltd	04/04/2019

Document Status

Rev No. Author		Reviewer	Approved for Issue			
	Author	Name	Name	Signature	Date	
A			Draft for UrbanGrowth N review	ISW	01/03/2018	
0					03/09/2018	
1					02/11/2018	
2					29/03/2019	
3					04/04/2019	



Schedule 23 - Certificates

Refer to clauses 37F, 39, 65 and 67A of the GC21 General Conditions of Contract.

Part A - Consultant's Design Certificate

To: Infrastructure New South Wales (ABN 85 031 302 516)

From: [Insert Consultant's name]

(ABN [Insert Consultant's ABN])

("Consultant")

In accordance with the terms of clause 39.11 of the contract between the Principal and Multiplex Constructions Pty Limited (ABN 70 107 007 527) ("Contractor") dated [insert date] with respect to the Works, we certify that the attached *Design Documentation* prepared by or on behalf of the Contractor:

- (a) complies with all the requirements of the Consultant's agreement with the Contractor, including the *Project Brief* (including the *Key Architectural Details*) and *Functional Requirements* (where applicable to the Consultant's scope of Services) (those terms as defined in the Consultant's agreement); and
- (b) is documented to enable construction of the Works in compliance with the Contract.

Unless otherwise defined in this notice,	capitalised terms	have the n	neaning g	given to
them in the Contract.				

Signed for and on behalf of [Insert Consultant's name]

Part B - Certificate of Completion

[ON INDEPENDENT CERTIFIER'S LETTERHEAD]

r				
[In	se	rt	ď٤	ıte]

CERTIFICATE OF COMPLETION

Dear David

Contract for New Sydney Fish Market Main Works between Infrastructure New South Wales (ABN 85 031 302 516) and Multiplex Constructions Pty Limited ABN 70 107 007 527 (dated [insert] (reference RFT-10031871) (the "Contract")

Unless otherwise defined in this notice, capitalised terms have the meaning given to them in the Contract.

We refer to clause 65.5.1 of the Contract. We advise you that on [insert date] Completion was achieved. The Actual Completion is [insert date].

Yours sine	cerely					
[]					
Indepen	dent Certi	ifier's Key	Individua	I] (as that te	rm is defined	in the
Independe	ent Certific	er Deed)				

Part C - Certificate of Final Completion

[ON PRINCIPAL'S LETTERHEAD]

[Insert date]

CERTIFICATE OF FINAL COMPLETION

Dear David

Contract for New Sydney Fish Market Main Works between Infrastructure New South Wales (ABN 85 031 302 516) and Multiplex Constructions Pty Limited (ABN 70 107 007 527) dated [insert] (reference RFT-10031871) (the "Contract")

Unless otherwise defined in this notice, capitalised terms have the meaning given to them in the Contract.

We refer to clause 67A.3 of the Contract. We advise you that on [insert date] Final Completion was achieved.

Yours sincerely	
Greg Lin	
Principal's Authorised Person	

Part D - Property Owner's Certificate

(clause 37F)

This D	eed Po	ll is in favour of:
Infras (ABN	tructur 85 031	re New South Wales of Level 27, 201 Kent St, Sydney NSW 2000 302 516) and its successors and permitted assigns ("Principal")
PROP	ERTY A	ADDRESS:("Property")
1	I/We of Proper	confirm that we are the registered owner/occupier/lessee of the ty.
2		confirm that the following works have been carried out and completed our property to my/our satisfaction:
	(a)	[Insert description of works] ("Works")
3	I/We o	confirm that:
	(a)	the Works have been carried out to my/our satisfaction;
	(b)	the Property has been rehabilitated and all damage and degradation on it repaired to my/our satisfaction.
4	or oth	release the Principal from all claims and actions (whether for damages erwise and howsoever arising) which I/we may have arising out of or in ction with the works referred to in section 2 above.
SIGN	ED as a	Deed Poll
DELI [inser	VERE	in the presence of: Signature
Name	of witn	ess in full

(

Schedule 24 - Deed of Release

Refer to clause 67A of the GC21 General Conditions of Contract.

This Deed Poll is in favour of:

Infrastructure New South Wales of Level 27, 201 Kent St, Sydney NSW 2000 (ABN 85 031 302 516) ("Principal")

THIS DEED OF RELEASE IS EXECUTED on [Insert date]

BY: MULTIPLEX CONSTRUCTIONS PTY LIMITED ABN 70 107 007 527

RECITALS

- A. By contract dated [insert date] between the Contractor and the Principal, ("Contract"), the Contractor agreed to perform the Works.
- B. Pursuant to clause 67A.2 of the Contract, the Contractor must execute and deliver to the Principal a deed of release once it considers the Works have achieved *Final Completion*.

THE CONTRACTOR AGREES

- The Contractor warrants to the Principal that it has lodged with the Principal all *Claims* that it has which arise out of or in connection with the Contract, the execution of the work in connection with the Contract or associated with the Works and those *Claims* have been satisfied in full by the Principal.
- The Contractor releases and forever discharges the Principal from all causes of action, proceedings, claims or demands which it has or may in the future have against the Principal arising out of or in connection with the Contract, the execution of the work in connection with the Contract or associated with the Works (Claims).
- The Contractor acknowledges that the Principal will issue a *Certificate of Final Completion* pursuant to clause 67A.3 in reliance on the warranties and releases contained in this deed.
- This deed may be pleaded by the Principal as a bar to any Claims.
- The release under this deed does not apply to:
 - (a) claims the Contractor has already made in writing against the Principal as at the date of this deed;
 - (b) claims in relation to the Contractor's entitlement to the return of the *Undertakings* pursuant to the Contract;
 - (c) the extent that the grant of the release would prevent the Contractor from enforcing its rights under any policy of insurance required to be effected under the Contract; or
 - (d) prevent the Contractor from:

- (i) raising a defence, or any cross-claim or counter-claim by way of a defence, to any claim brought against the Contractor by the Principal; or
- (ii) making any claim against the Principal arising solely from a third party claim first brought against or communicated to the Contractor after the date of this deed.
- 6 Unless the context otherwise requires, defined terms used but not defined in this deed have the same meaning as defined in the Contract.

EXECUTED as a deed.

EXECUTED by MULTIPLEX)
CONSTRUCTIONS PTY)
LIMITED (ACN 107 007 527) in)
accordance with section 127(1) of)
the Corporations Act 2001 (Cth) by)
authority of its directors:)
Signature of director) Signature of director/company) secretary*) *delete whichever is not applicable)
	Name of director/company
Name of director (block letters)	secretary* (block letters) *delete whichever is not applicable

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Schedule 25 - Consultant's Deed of Covenant

Refer to clause 31 of the GC21 General Conditions of Contract.

This Deed Poll is in favour of:

Infrastructure New South Wales of Level 27, 201 Kent St, Sydney NSW 2000 (ABN 85 031 302 516) ("Principal")

Recitals

- A The Principal has engaged Multiplex Constructions Pty Limited (ABN 70 107 007 527) ("Contractor") to carry out certain works for the Principal by contract dated [insert date] ("Contract").
- The Contractor has engaged [Insert Consultant's name] ("Consultant") to carry out the design work specified in the Schedule ("Design Work") for the purposes of its obligations under the Contract("Professional Services Contract").
- C Under the Contract the Contractor is required to procure the Consultant to execute this deed poll in favour of the Principal.

Operative

1 Duty of care

The Consultant warrants to the Principal that in performing the Design Work and in providing any certificate under clause 39.11 of the Contract and clause [insert] of the Professional Services Contract:

- (a) it will owe a duty of care to the Principal;
- (b) it will exercise reasonable skill and care; and
- (c) it is aware that the Principal will be relying upon the skill and judgement of the Consultant in performing the Design Work.

2 Governing law and jurisdiction

This deed poll will be construed in accordance with the law of New South Wales and the Consultant irrevocably submits to the jurisdiction of the Courts of New South Wales.

3 Consultant's limited liability

The aggregate of the Consultant's liability to the Principal under this Deed Poll and the Consultant's liability to the Contractor under the Professional Services Agreement:

- (a) will not exceed the liability which the Consultant would have had under the Professional Services Agreement if the Professional Services Agreement had named, in place of the Contractor, the Principal and the Contractor jointly and severally; and
- (b) is subject to the same limitations of liability, and qualifications on such limitations of liability, as are specified in the Professional Services Agreement.

Executed as a deed poll

EXECUTED by [Insert Consultant's details] in accordance with section 127(1) of the Corporations Act 2001 (Cth) by authority of its directors:))))
Signature of director) Signature of director/company) secretary*) *delete whichever is not applicable
Name of director (block letters)	Name of director/company secretary* (block letters) *delete whichever is not applicable
SCHEDULE	
[insert description of design work]	

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	V		

Schedule 26 – Information Documents

Refer to clauses 11B and 37 of the GC21 General Conditions of Contract.

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Schedule 27 - Preliminaries

Refer to clauses 6, 15, 16, 22, 26A and 32A of the GC21 General Conditions of Contract.

1 General

Nothing in this Schedule 27 is intended to reduce any entitlements (including time and cost relief) that the Contractor would otherwise have under the General Conditions of Contract.

Capitalised terms in this Schedule 27 have the meaning given to those terms in clause 79 of the General Conditions of Contract unless otherwise specified.

Terms used in this document and defined elsewhere in the Contract will have the same meaning given to them by the Contract and vice-a-versa, unless the context requires otherwise.

1.1 Electronic communications

The parties agree and consent that notices and communications may be delivered by electronic communication in accordance with the *Electronic Transactions Act 2000* (NSW).

1.2 Use of Qualified Designers

Use persons professionally qualified in the relevant disciplines when completing the Design Documentation. The use of such persons shall not relieve the Contractor of its obligation to ensure that the Works are Fit for Purpose and otherwise comply with the requirements of the Contract.

1.3 Use of Qualified Tradepersons

Use qualified tradepersons when completing the Works. The use of such persons shall not relieve the Contractor of its obligation to ensure that the Works are Fit for Purpose and otherwise comply with the requirements of the Contract.

1.4 Certification of compliance with building and fire regulations

Contractor to provide a 'Construction Certificate' and a 'Section 6.28 and Compliance (Completion) Certificate' (as those terms are defined under the Environmental Planning and Assessment Act 1979 (NSW)), which have been obtained from an Accredited Certifier, stating that the Works fully comply with all applicable Statutory Requirements, including building and fire regulations.

The Contractor and its Principal Certifying Authority must work closely with the Principal and the Principal's representatives and stakeholders, to ensure that all Statutory Requirements are complied with.

1.5 Contractor performance reporting

The Contractor's performance of work in connection with the Contract may be monitored and assessed by the Principal in accordance with the *Performance management system guidelines* which are available on the ProcurePoint website.

1.6 Exchange of information between government agencies

The Contractor authorises the Principal and its employees and agents to make information concerning the Contractor and its performance available to other government agencies and local government authorities, which may take such information into account in considering whether to offer the Contractor future opportunities for work.

The Principal regards the provision of information about the Contractor to any government agency or local government authority as privileged under the *Defamation Act 2005* (NSW). The Contractor agrees that it will have no entitlement to make any claim against the Principal in respect of any matter arising out of the provision or receipt of such information.

2 Documents

2.1 Not used

2.2 Work as executed drawings

Progressively produce work as executed drawings. Submit work as executed drawings showing work which has been completed within 28 days of completion of that work. Endorse each drawing certifying accuracy and correctness.

Submit two (2) copies of the drawings on electronic media using identical and portable Solid State Drive/s of sufficient capacity and with at least 30% spare capacity in each. Ensure the included data is complete and identical. Label each of them with:

- (a) "Confidential"; and
- (b) respectively:
 - (i) "NSFM WAE ORIGINAL COPY 1" and
 - (ii) "NSFM WAE ORIGINAL COPY 2".

Maintain all as executed information, including access for the Principal, on the selected electronic document management system for 12 months following Final Completion (ex post-completion/maintenance) for this contract.

Any CAD files submitted must be in DGN, DWG, or DXF format with an identical .pdf version. The Contractor must ensure that any CAD files submitted will correctly display and print in Microstation.

The drawings must, as a minimum, include:

- (a) heights based on AHD;
- (b) boundary details;
- (c) details of structures, improvements, notations, including height and dimensions;
- (d) asset identification for all new, salvaged and re-used equipment;
- (e) contour interval at 0.5m;
- (f) standard topography details and RL's throughout the site;

- (g) details of any trees/plants;
- (h) details of all services, including man-holes, services and services pits/covers;
- (i) service inspection outlets;
- (i) disconnected and services left in-situ; and
- (k) valves and meter locations.

Submit the drawings electronically on formatted standard sized sheets acceptable to the Principal. Endorse each drawing certifying its accuracy, completeness and correctness.

Re-submit revised and corrected drawings within 7 days after receiving any comments from the Principal.

Submit relevant and completed work-as-executed service drawings to the regulatory authorities, as required and in consultation with Principal.

2.3 Restricted documents

All documents marked "Restricted", and any other documents the Principal notifies as "Restricted" are classified maximum security documents. No copies are to be made or retained by the Contractor, subcontractors, suppliers, agents or anyone else other than for the performance of the Contract.

All originals and copies of restricted classification documents are to be returned to the Principal on Completion.

2.4 NATSPEC subscription

If any of the Contractor's Documents are based on NATSPEC, then the Contractor must provide to the Principal proof of the Contractor's current NATSPEC subscription.

3 Project Reporting and Meetings

3.1 Monthly reporting

The Contractor shall:

- (a) meet monthly for the project control group meeting contemplated by clause 6.5.1 of the General Conditions of Contract (or at such other times as the Principal may require (including for the weekly site meeting contemplated by clause 6.5.2 of the General Conditions of Contract)) with the Principal and any other persons whom the Principal requires or nominates;
- (b) discuss the reports it has prepared under clause 6 of the General Conditions of Contract and such other matters as the Principal may from time to time require;

- (c) the weekly progress report prepared in accordance with clause 6.1.1 of the General Conditions of Contract must address the following matters:
 - (i) progress of the Works including a minimum of six digital photographs of the Works; and
 - (ii) details of any matters which currently have a positive or adverse effect on the Works:
- (d) the monthly progress report prepared in accordance with clause 6.1.2 of the General Conditions of Contract must address the following matters:
 - (i) all work health, safety and rehabilitation matters (particularly matters arising out of or in connection with clause 16 of the General Conditions of Contract and clause 5.3 of the Preliminaries), including a summary of the Contractor's compliance with WHS Legislation;
 - (ii) providing an update on APIC Policy compliance;
 - (iii) the Contractor's forecasted anticipated Completion date of the Works;
 - (iv) progress of the Works including a minimum of six digital photographs of the Works;
 - (v) particulars of status of the Works against the current approved Contract Program;
 - (vi) particulars of construction status of the Works against the current approved Contract Program;
 - (vii) particulars of status of any deviations from the current approved Contract Program;
 - (viii) details of any matters which currently have a positive or adverse effect on the Works;
 - (ix) details of any matters which in the Contractor's opinion have the potential to affect or delay the Works;
 - (x) particulars of preventative and remedial action which has been, is being, or may be taken in respect of potential delays in relation to the Works;
 - (xi) cashflow progress;
 - (xii) a report on the status of all Variations, including Variations for which a Variation Order has been issued, or any proposed Variations:

- (xiii) summary of claims made by the Contractor under the Contract, and the status of those claims;
- (xiv) details of any other matters affecting or likely to affect the progress and cost of the Works; and
- (xv) a programme showing the projected status of the Works three weeks from the date of the written report;
- (e) promptly and fully respond to any questions which the Principal asks in relation to any report; and
- (f) if it requires instructions from the Principal, make all necessary recommendations as to the action required.

The Principal shall:

- (g) before each meeting, prepare an agenda for that meeting; and
- (h) after each meeting, prepare minutes of the meeting and distribute them to all attendees of the meeting.

3.2 Site Diary

The Contractor shall maintain a daily site diary to record general progress and any significant events, the number of personnel and the list of Subcontractors on the Site, temperature and weather conditions, meetings, visits and inspections, delays, unusual events and accidents. The original copy must be available for inspection by the Principal at any time without notice.

3.3 Site Co-ordination Meetings

The Contractor must coordinate, minute and attend weekly/fortnightly Site co-ordination meetings, to be attended by the Principal, Contractor and other stakeholders as required.

The agenda for the meetings will be agreed between the Principal and Contractor, acting reasonably.

The Contractor must prepare and issue minutes with 48 hours of each site meeting to the Principal for its review and comment. The Principal must provide its comments to the Contractor within 5 Business Days of receiving the minutes (or such other time the parties agree), after which the Contractor must issue the minutes in final incorporating any comments received. If the Principal does not provide its comments within this timeframe, the minutes as issued by the Contractor will be final.

4 Administration

4.1 Quality management requirements

Quality Management System

Maintain the Contractor's Quality Management System. Obtain evidence from proposed Subcontractors and certify that Subcontractors' quality management systems meet the requirements of the Contractor's Quality Management System.

Project Quality Management Plan

Develop and implement a Project Quality Management Plan that complies with the current NSW Government Quality Management Systems Guidelines (QMS Guidelines) The QMS Guidelines are available on the ProcurePoint website.

Design Management Plan

Prior to commencing design work, prepare and submit a Design Management Plan to the Principal's Authorised Representative in accordance with clause 32A of the General Conditions of Contract.

Managing work quality

Prepare and submit Inspection and Test Plans to the Principal's Authorised Representative in accordance with clause 32A of the General Conditions of Contract. The Inspection and Test Plans must comply with the QMS Guidelines.

Submit copies of Inspection and Test Plans and checklists not less than 20 Business Days before commencing the work to which they apply. Also submit certification that the relevant quality management plans and Inspection and Test Plans of Subcontractors and Consultants meet the requirements of the QMS Guidelines. Do not start any work before this documentation is submitted.

Give at least 24 hours' notice prior to reaching a Hold or Witness Point.

The Contractor must not proceed beyond a Hold Point without endorsement by the Principal or its authorised representative.

The Principal, at its discretion, may inspect the work at a Witness Point, but work may proceed without endorsement.

Endorsement by the Principal at a Hold or Witness Point does not release the Contractor from its obligations to achieve the specified requirements of the Contract.

Surveillance (monitoring) by the Principal will apply to all work associated with the Contract.

Conformance records

Submit copies of conformance records as specified, including:

Conformance records	Time when records are required
Verified and completed Inspection & Test Plans and associated checklists	With each Payment Claim
Requirements detailed in the Project Brief (architectural, electrical, mechanical, fire, hydraulic, structural, etc.)	Refer to the Project Brief
Heritage related works including impact statements, certification and approvals	Progressively
Dilapidation surveys and related documents and records	Before commencing any physical works on Site
Noise, movement, vibration and air monitoring results, including any clearance certificates	With each Payment Claim, unless required sooner due to a breach or notifiable concern.
Approvals from regulatory authorities including road opening and closure permits, and payment of fees	5 Business Days before the related work is due to commence
Set-out and survey records:	Progressively
Services rough-in records	Progressively
As-built performance testing records	Prior to Completion and with the as-executed information, including correct integration into the relevant operation and maintenance manuals
All quality, test and compliance records of materials to be incorporated into the Works (including from manufacturers).	2 Business Days before being incorporated into the Works
Records associated for the disposal of contaminated fill	With each Payment Claim
Register of product conformity records	At Completion and with the as- executed information, including correct integration into the relevant operation and maintenance manuals
Temporary services metered consumption	With each Payment Claim
Environmental clearance certificate/s	Within 3 Business Days following receipt
Geotechnical compliance certificates	Within 3 Business Days following receipt
Operation and maintenance manuals	Within 3 Business Days following receipt

4.2 Aboriginal participation

The Contractor must comply with the NSW Government *Policy on Aboriginal Participation in Construction*, which is available from the *Policy framework for construction* page in the ProcurePoint website:

https://www.procurepoint.nsw.gov.au/policy-and-reform/nsw-procurement-reform/construction/policy-framework-construction

A minimum amount of 1.5% of the Contract Price (as at the Date of Contract) must be spent on employment and education activities for Aboriginal people. At least 50% of this expenditure must be allocated to activities directly related to the Contract.

An Aboriginal Participation Plan must be submitted to the Principal within 60 days after the Date of Contract and a Participation Report must be submitted when the Contract is 90% complete. Templates for the Aboriginal Participation Plan and Participation Report are available on the web page referenced above. Click on the Information for contractors link.

The Aboriginal Participation Plan and Participation Report must also be submitted to the NSW Procurement Board.

Failure to comply

If at any time the Contractor has not complied with its obligations under this clause 4.2 – Aboriginal participation, then notwithstanding any other provision of the Contract, the Principal may, in its absolute discretion, withhold (in determining the Scheduled Amount in relation to a Payment Claim) up to 5% of the Contract Price until such time as the Contractor has complied with these obligations.

4.3 Skills development and training

The NSW Government is committed to the Infrastructure Skills Legacy Programme which focusses on training and participation opportunities for disadvantaged and under-represented members of the community to improve outcomes. The programme includes two parts:

- · mandatory minimum targets which need to be met; and
- aspirational goals which are the actual position that the Contractor shall work to achieving.

The mandatory minimum targets as provided by the Contractor in the Request for Tender, will form a requirement under the Contract. The project team will continue to assess the Contractor in their achievement of the aspirational goals.

The Contractor must make commitments that meet or exceed the specified targets and must demonstrate its capacity to meet those commitments. From the Date of Contract until Completion, at monthly intervals, the Contractor must provide reports to the Principal, giving details of its compliance under the Contract and demonstrating that the Contractor is meeting (or will meet at Completion) its commitments to skills development.

4.4 Not Used

4.5 Audit and review

Make available, on request, all records, including those of or relating to subcontractors or suppliers, relevant to compliance with requirements of the Contract, for the purposes of audit, review or surveillance. Provide all reasonable assistance during the audits or reviews including attendance by the Contractor.

Promptly implement effective corrective action on matters disclosed by audit or review.

4.6 Dilapidation Report

Carry out and submit a completed dilapidation report for the Site and its surroundings and each property or asset adjacent to which the work is to be carried out (**Dilapidation Report**). No works are to be started prior to the Dilapidation Report being submitted to the Principal.

Arrange for an inspection of any neighbouring and/or existing property and assets at a time that suits the owner (may be outside normal working hours). In the course of a single visit, recover all the information required to prepare the Dilapidation Report. The condition of the adjacent items prior to commencement of physical works on the Site is to be recorded.

The Dilapidation Report will take the form of a report with digital photographs and a video recording (on a USB) of all the items within and adjacent to the work and also including both exterior and interior of neighbouring facilities, including tunnels and basements; all pits (including interiors). All photos in the report must be suitably labelled with a statement of the extent and severity of the defect, its exact location, street name, direction faced, and any other relevant comments annotated.

The Dilapidation Report must clearly state the exact location of the Defects so that the records can be used efficiently on a later date by anyone. Video and still photography may be required is to be of sufficient high quality to show all defects clearly and must be provided to the Principal in a format compatible with USB or generic media player.

4.7 Scope of Dilapidation Report

The Dilapidation Report must cover the following items as a minimum:

- (a) the complete external facades at the ground and first storeys of all buildings immediately adjacent to and opposite the Site;
- (b) trees, shrubs and grasses;
- (c) all existing street furniture and signage including seats, public telephones, post boxes, parking meters, and the like;
- (d) all existing lighting poles, traffic poles and signs;
- (e) all existing footpaths and kerbstones;

- (f) all existing services and utilities where recording is possible;
- (g) all existing pit covers that are to be reused;
- (h) interiors of all existing service pits;
- (i) traffic facilities, e.g. thresholds, speed humps etc.;
- (j) reference to any infrastructure, which during the execution of the works the Contractor will be required to temporarily remove and reinstall or replace at a later date; and
- (k) a record of the outcome of an inspection of the interior of all existing services and utility pits with the relevant utility authority representative.

The Dilapidation Report must also include details of the following:

- (a) materials of construction;
- (b) general condition of materials;
- (c) location and description of any Defects including structural Defects; and
- (d) location, sizes, and description of any cracking.

4.8 Record of Damage

The Contractor is required to create a 'Record of Damage' for the Site. This is required to determine who is responsible for damage to any assets should matters be raised in the future. The Record of Damage must document any damage to property or assets within the extent of area occupied by the Contractor whilst carrying out the work in connection with the Contract or affected by the work in connection with the Contract, including areas proposed for storage and floating of plant.

5 Site

5.1 Site access and limitations

5.2 Existing services

Preventing Unplanned Contact with Live Services

The Contractor is responsible for locating existing services, including underground essential services, and isolating them where necessary to prevent unplanned contact with live services. In doing so, the Contractor must comply with the NSW Government Construction Work Code of Practice.

Locating Existing Services

Before commencing physical works at the Site:

(a) appoint a site manager to be responsible for locating and preventing unplanned contact with existing services; and

(b) establish and verify the precise locations of all underground and other existing services at the Site, and in areas adjacent to the Site that may be affected by the work in connection with the Contract.

To locate existing services:

- (a) obtain advice from Dial Before You Dig and the owners of the services;
- (b) engage a services locator;
- (c) examine the Site and surrounding areas for indications of services;
- (d) where any service is underground, use pot-holing (or equivalent non-destructive techniques) to locate the service.

Mark prominently on the Site the locations of all existing services. Document the locations of services on a site plan and provide a copy of the plan to each Subcontractor before the Subcontractor starts work on the Site.

Provide written confirmation to the Principal that these actions have been completed.

Isolation of Existing Services

Before undertaking any work involving cutting into, penetrating, or otherwise breaking into building fabric (floor, walls or ceiling), ensure the services are isolated in the relevant work area.

Wherever reasonably practical and with the prior approval of the Principal's Authorised Person, isolate electrical and gas services for the whole building where work is being carried out, before starting work on existing building services.

Notify the Principal's Authorised Person and the appropriate persons within the facility of any proposed disruption of services in sufficient time to enable affected personnel to be informed and any changes to operations to be made. Wherever possible, consult with the Principal's Authorised Person prior to issuing the notification.

Include in the notification:

- (a) details of the service to be disrupted;
- (b) the date and time that the disruption will commence;
- (c) the estimated duration of the disruption and when the service will resume operation;
- (d) the possible impact of the disruption (eg loss of power, loss of gas); and
- (e) any other relevant information.

On completion of the work and the resumption of the services, check all penetrations for live or damaged services and give the following to the Principal's Authorised Person:

- (a) a clearance certificate that affected utilities and equipment (e.g. heaters, boilers) have been tested and are functioning appropriately;
 and
- (b) the name and phone number of a responsible person who can be contacted if problems are experienced with any of the affected utilities or equipment.

Cost and Delay

Where an existing service obstructs the Works and requires diversion or relocation, the Contractor must bear all resulting costs and delays except to the extent that the Contractor is entitled to an adjustment of the Contract Price in accordance with clause 37.6 of the General Conditions of Contract. Where an existing service is damaged by the Contractor for any reason whatsoever, the Contractor shall bear all costs and any delays for repairing or disconnecting the service.

Notification

Notify the Principal immediately upon discovering services that obstruct the Works and are not shown in the Principal's Documents.

5.3 Work health and safety management

Design

The Contractor must consult with the Principal's Authorised Person to identify any risks to health and safety arising from the Design Documentation.

The Contractor must ensure, in preparing the Design Documentation that, so far as is reasonably practicable, the structure and plant are designed to be without risks to anyone who constructs, uses, maintains, or demolishes the structure and plant.

When preparing the Design Documentation, the Contractor must carry out any calculations, analysis, testing or examination that may be necessary to eliminate or minimise risks. The Contractor must provide current relevant information on any risks arising from the Design Documentation to anyone who constructs the structure or plant.

The Contractor must provide a 'Safe Design Report' for the designed structure and plant to record any hazards not eliminated in the design that may impose a risk to those constructing, using, maintaining or demolishing the structure and plant.

An up to date copy of the Safe Design Report must be provided to the Principal with each design submission under clause 39.8 of the General Conditions of Contract and at Completion.

WHS Management Monthly Report

Submit, no later than the seventh (7th) day of each month, a 'WHS Management Monthly Report' detailing:

- (a) inspection, testing and servicing activities;
- (b) internal reviews; and
- (c) incident management and corrective action,

together with the information listed below as evidence of the implementation of the Project WHS Management Plan during the previous month.

As a minimum, the WHS Management Monthly Report must include the following information:

Contract Details

- (a) Contract
- (b) Contractor
- (c) Contractor's representative
- (d) Signature and Date
- (e) Period Covered

Implementation of Inspection, testing and servicing procedures

Summary of WHS inspections and tests carried out for:

- (a) plant and equipment;
- (b) incoming products;
- (c) work site conditions;
- (d) adherence to and completeness of Risk Assessments, Safe Work Method Statements and Site Safety Rules;
- (e) work site access and exits; and
- (f) personal protective equipment.

Implementation of Incident management and corrective action procedures

Details of:

- (a) any WHS incidents or WHS issues, including non-compliance with WHS processes and procedures and near misses;
- (b) implementation of incident management;
- (c) implementation of corrective action; and

(d) WHS statistics for entire the Contract including:

	This Month	Total Cumulative
Number of Lost Time Injuries		
Number of Hours Worked		
Number of Hours Lost Due to Injury		
Lost Time Injury Frequency Rate		
LTIFR		
Number of WHS Management		
Audits		
Number of WHS Inspections		

Implementation of Internal Reviews

Details of internal reviews, including audits and inspections, undertaken to verify that on-Site WHS processes and practices conform with the Project WHS Management Plan including:

- (a) system element(s) and activities audited and/or reviewed;
- (b) non-conformance(s), improvement(s) identified and corrective action(s) taken;
- (c) details of auditors and reviewers and dates and durations of audits and reviews; and
- (d) copies of third party audit reports and details of the Contractor's responses to the reports.

Prohibition, Improvement, Non-disturbance and Penalty Notices

Immediately notify the Principal of any Prohibition, Improvement, Non-disturbance or Penalty Notice issued by WorkCover for any work under the Contract. Provide the Principal with a copy of the Notice and written details of the corrective action taken by the Contractor and/or the applicable subcontractor to rectify the breach and to prevent recurrence.

Electrical work

In compliance with clauses 154-156 of the WHS Regulation 2017, ensure that electrical work is not carried out on electrical equipment while the equipment is energised, except when, in accordance with clauses 157–162 of the WHS Regulation 2017, it is necessary in the interests of health and safety that the

electrical work be carried out on the equipment while the equipment is energised.

At the completion of electrical work, provide a Certificate of Compliance – Electrical Work (CCEW) signed by a licensed electrician, setting out details of the installation work that has been carried out and confirming that the work complies with AS/NZS 3000 and is suitable for its intended use.

Independent Certification of Formwork

Ensure that formwork complies with AS 3610-1995 Formwork for Concrete and is designed, constructed and maintained so as to support safely all loads that are to be placed on it.

The Contractor must ensure that, for both horizontal and vertical formwork, before a concrete pour where:

- (a) the formwork surface is 3 metres or higher above the lowest surrounding; or
- (b) the area of the formwork surface is 16 square metres or greater,

an independent qualified engineer inspects and certifies that the formwork complies with AS 3610–1995 Formwork for Concrete.

'qualified engineer' means a person qualified for member grade of the Australian Institution of Engineers, having not less than 4 years postqualification professional engineering experience in formwork.

The qualified engineer must not be a proprietor, director, officer, or employee either of the entity carrying out the formwork erection or a related entity. If the Contractor carries out the design of the formwork, then the qualified engineer must not be a proprietor, director, officer or employee either of the Contractor or a related entity to the Contractor.

The Contractor and any subcontractors involved must include the inspection and certification as actions in Safe Work Method Statements for the erection and use of formwork, and they must be hold points in the Contractor's and subcontractors' Inspection and Test Plans.

Submit formwork certification before commencing the use of the formwork. Do not use the formwork before this certification is submitted.

Scaffolding

To the extent that scaffolding is required for the purposes of the Works, the Contractor shall (within 7 days of the scaffolding being installed, whether in stages or whole) provide the Principal with certification from an independent and reputable engineer as to the following:

- the scaffolding design (including hoarding design) satisfies the requirements of the Contract for this particular project, including relevant Statutory Requirements, the BCA and Australian Standards;
- that the scaffold designer / certifier has adopted the appropriate wind region and terrain category, and this has been validated by the project's structural engineer; and

• the scaffolding as installed complies with this design, with the installation complying with the relevant Statutory Requirements, BCA and Australian Standards.

Failure to Comply

If at any time the Contractor has not carried out its obligations under the Contract in relation to work health and safety management, then notwithstanding any other provisions of the Contract, no payment will be due to the Contractor until the 7th day after the required action has been carried out

5.4 Hazardous substances discovered unexpectedly on the Site

Working Hours

When the Contractor is required to decontaminate areas of the Site containing Contamination, all such decontamination must be carried out outside normal hours of occupation unless otherwise approved in writing by the Principal.

5.5 Asbestos removal

Requirement

Comply with the relevant Statutory Requirements, standards, codes and guidelines in respect of any asbestos removal work, including:

- (a) WorkCover Authority of NSW requirements
- (b) Safe Work Australia Model Code of Practice How to manage and control asbestos in the workplace
- (c) Safe Work Australia Model Code of Practice How to safely remove asbestos
- (d) Environmentally Hazardous Chemicals Act 1985 (NSW)
- (e) Waste Avoidance and Resource Recovery Act 2001 (NSW)
- (f) WorkCover Guide Managing Asbestos in or on Soil

Comply with the requirements of any Asbestos Management Plan that applies to the Site or the building where removal is taking place.

Notification and Permit

Not less than 7 days prior to starting any asbestos removal work, notify the local office of WorkCover and the Principal of the intention to carry out that work.

If a licence is required for the asbestos removal work, then before the work starts, submit a copy of the current licence held by the entity that will undertake the work and a copy of any WorkCover permit required for the work.

Monitoring

During demolition of structures or excavation of ground containing asbestos, or likely to contain asbestos, provide air monitoring by an independent asbestos assessor licensed by NSW WorkCover:

- (a) on each day during asbestos removal, immediately before asbestos removal work starts; and
- (b) on completion of each area where removal has been undertaken.

Clearance Certificate

Submit to the Principal a clearance certificate from an independent licensed asbestos assessor at the completion of the asbestos removal work.

5.6 Hoarding

Requirement

Before commencing any work on the Site, install secure hoarding around the entire perimeter of the Site. The Contractor may elect to take over the responsibility and costs of the Early Works Contractor's hoardings for the purposes of meeting the requirements of this clause. Use of the Early Works Contractor's hoardings will not otherwise limit the Contractor's obligations under this clause 5.6.

Complete the design of the hoarding and certify the hoarding for structural adequacy at both the design stages and post-installation, including for stud arrangements, counterweights, timber structures, concrete structures, steel structures, wind and imposed loads, in accordance with AS4687.

Confirm the final location of the hoarding with the Principal. Coordinate access / egress points to enable the safe and efficient operation of the Site and to eliminate dismantling and re-erection as far as possible. When the Site compound areas change, modify and reinstate the hoarding including between the different phases of the work.

The Contractor shall develop a draft scheme incorporating any project information before finalising any graphic layouts.

HOARDING TYPE: A Class generally to the perimeter, and B Class to areas required by the Contractor's work methodology.

Ensure the hoarding is properly supported with appropriately engineered counterweights, including around excavations and that it effectively restricts access to the Site for non-authorised personnel.

Incorporate suitable vehicular access points

The Contractor must:

- (a) keep the hoarding free of graffiti and damage;
- (b) manage, develop, and produce the schematic design for the Principal's consideration;
- (c) confirm the hoarding and graphics specification;

- (d) install the Project Information Board(s) including artwork; and
- (e) implement the graphic design, supply and install hoarding banners digitally colour printed using UV (and outdoor) resistant inks which adhere to the hoarding substrate.

The Principal will:

- (a) finalise images and text for the Graphic and Content Boards and provide it to the Contractor for incorporation into the schematic design;
- (b) supply the Contractor with logos, Project Information Board image and text.

5.7 Principal's Site Office

General Requirements

Provide an office for the use of the Principal and nominees, in a position agreed with the Principal. Make the office ready for occupation before any major site operations are started. If during the progress of the Works it becomes necessary to move the office, do so without charge and with the minimum of inconvenience. Service, clean and maintain the office until Completion. Secure access to the office at all times. Remove the office on Completion, but not until the Principal's permission is obtained.

The Contractor may elect to take over the responsibility and costs of the Early Works Contractor's Principal's site office for the purposes of meeting the requirements of this clause. Use of the Early Works Contractor's site office will not otherwise limit the Contractor's obligations under this clause 5.7.

Type

A pre-fabricated modular building system 2 modules (6m x 3m each) may be used subject to the approval of the Principal.

5.8 Contract Program

- (a) The Contract Program required under clause 22 of the General Conditions of Contract must demonstrate how the Contractor will achieve Completion by the Contractual Completion Date.
- (b) The Contract Program must:
 - (i) be prepared as a computerised critical path method network using a precedence diagram method. The networks must not be constrained in a manner which prevents it reacting dynamically to change;
 - (ii) identify all activities associated with the design and construction process together with the planned and actual progress of activities based on the physical work completed;

- (iii) be organised in a logical work breakdown structure which represents all activities to achieve Completion. The activities, structure and coding must follow a consistent and logical protocol;
- (iv) be detailed sufficiently to enable the Principal to plan, program and co-ordinate its obligations. The program must show the dates when the Contractor will require information, documents, materials or instructions from the Principal and the dates when the Contractor will provide information or documents to, or request information from, the Principal, taking account of the processes contemplated by the Contract. No provision, date, activity or reference contained in the Contract Program and associated documents shall constitute a notice for the purpose of any provision of the Contract nor shall it impose or imply any obligation on the Principal;
- (v) be based on a time scaled calendar in units of one week and identify working days, non-working days, shifts, statutory holidays, rostered days off, Christmas shutdown and any other shutdowns;
- (vi) identify labour, equipment and other resources on a resource chart linked to the programs;
- (vii) identify planned and actual progress by graphical representation where percentage of completion is calculated using the physical percent complete and not remaining or elapsed activity duration;
- (viii) break down all activities into periods of no greater than 4 weeks with sufficient details to allow accurate monitoring of the progress of the design and construction activities;
- (ix) identify the early start, late start, duration, Contractual Completion Date, inter-relationship and sequence of activities, identifying all activities which form part of the design and construction activities, the critical path and the float relating to activities not on the critical path;
- (x) include details on the derivation of activity durations from work method design and construction methodology, resources availability and allocation, activity sequencing and/or cycle times and any other inputs affecting activity durations;
- (xi) identify the work to be undertaken by the Contractor and its Subcontractors;
- (xii) identify the production of all Design Documentation including the time for supply of documentation and information to the Principal;

- (xiii) identify all consents required to be obtained from Authorities, including those required in relation to Design Documentation and construction documentation;
- (xiv) identify all activities associated with taking possession of the Site and decommissioning of existing plant, fixtures, fittings and equipment and necessary disposal;
- (xv) identify off Site and on-Site activities associated with the procurement, testing and commissioning of all plant, equipment or materials, including order dates, supply lead times and Site delivery dates;
- (xvi) identify the award of all subcontracts related to the design and construction activities;
- (xvii) identify all activities and events that have a significant bearing on the time required to complete the Design Documentation and construction activities;
- (xviii) include details on programming contingencies;
- (xix) identify all staging and phases of the design and construction activities and all external interfaces that impact on the design and construction activities;
- (xx) include details of all certifications required for the Contractor to comply with its obligations under the Contract; and
- (xxi) be in hard copy form and in electronic form, include any other detail that the Principal reasonably requires and be accurate, comprehensive and complete in all respects.
- (c) The electronic form of the updated Contract Program must
 - (i) be identical to the version that produced the hard copy submission;
 - (ii) include all activities, events, logic links and associated data to demonstrate overall completion logic;
 - (iii) incorporate working day calendars based upon expected hours of work for various groups of activities and be in accordance with the conditions of the Planning Approval; and
 - (iv) be in native format that permits 100% data and format transfer with Primavera Works Management Planner (Engineering and Construction) Version 6 or later and allow interrogation by the Principal.
- (d) Each update of the Contract Program required under clause 22 of the General Conditions of Contract must be accompanied by a program

narrative that explains how the program has been developed and includes an explanation of;

- (i) the strategy behind the updated Contract Program;
- (ii) fundamental assumptions and key assumptions that determine the logic used;
- (iii) cycle times and work sequences;
- (iv) the deployment of equipment and labour;
- (v) the production rates used in determining durations;
- (vi) the project calendars, resource calendars and shifts assumed in determining durations;
- (vii) the schedules of quantities used in developing the updated Contract Program;
- (viii) critical path and other major constraints;
- (ix) major long lead delivery items;
- (x) internal and external constraints;
- (xi) mitigation measures that have been incorporated into the updated Contract Program; and
- (xii) mitigation measures that could be implemented in the case of delay.
- (e) The program narrative must be in sufficient detail to enable the durations, leads and lags in the logic diagram to be reconciled, substantiated and to justify any constraints that may exist within the logic diagram.

6 Operational Continuity

The existing Sydney Fish Market will operate continuously throughout the period of the Works. The Contractor must not affect the operations of the existing Sydney Fish Market at any stage of the Works.

Nuisance

The Contractor must avoid or minimise any nuisance to the owners or occupiers of surrounding or adjacent properties, buildings and to the public generally.

7 Environmental protection

7.1 Environmental management

Environmental Management Plan

Submit an Environmental Management Plan in accordance with clause 26A of the General Conditions of Contract that complies with the current NSW Government *Environmental Management Systems Guidelines (EMS Guidelines)* The *EMS Guidelines* are available on the ProcurePoint website.

Environmental Management Monthly Report

Submit an Environmental Management Monthly Report with each claim for payment, signed by the Contractor's representative and including the information specified below, as evidence of implementation of the Environmental Management Plan.

Contract details - the names of the Contract, Contractor and Contractor's representative, the report date and the period covered.

Implementation of environmental management - details of:

- (a) the environmental risks and opportunities, and significant environmental impacts associated with the work;
- (b) environmental objectives, targets and measures of performance (where practical); and
- (c) management actions, including environmental controls, training, inspections and testing.

Implementation of incident management, including emergency response - details of all environmental incidents or emergencies, including non-compliance with environmental procedures and near misses, implementation of incident and emergency response management, and implementation of corrective action.

Implementation of reviews - details of internal reviews, audits and inspections undertaken to verify that on-site environmental processes and practices conform with the Environmental Management Plan, including:

- (a) monitoring, measurement, evaluation and review of activities;
- (b) the consequences of non-conformances;
- (c) investigation, analysis, evaluation and follow-up verification; and
- (d) corrective and preventive action taken.

Incident reports

Ensure compliance with the notification and other requirements of the Protection of the Environment Operations Act 1997 (NSW) (POEO Act).

Immediately notify the Principal of any pollution incident that may cause material harm to the environment, providing evidence that notification requirements of the POEO Act have been met, where applicable.

Report immediately the details of any waste removed from the Site and not disposed of at a lawful facility.

When requested, provide an incident investigation report, including identification of the cause of the incident and corrective actions taken, in the form directed.

7.2 Ecologically sustainable development

Requirement

Apply strategies to maximise the achievement of ecologically sustainable development in the design, construction and operation of the Works, including reducing pollutants, greenhouse gas emissions and demand on non-renewable resources such as energy sources and water.

Incorporate applicable strategies and objectives in the Environmental Management Plan.

Restricted timbers

Do not use the following timbers or their products for work under the Contract:

- (a) rainforest timbers, unless certification is provided that they are plantation grown;
- (b) timber from Australian high conservation forests.

7.3 Waste management

Requirement

Implement waste minimisation and management measures, including:

- (a) recycling and diverting from landfill surplus soil, rock, and other excavated or demolition materials, wherever practical;
- (b) separately collecting and streaming quantities of waste concrete, bricks, blocks, timber, metals, plasterboard, paper and packaging, glass and plastics, and offering them for recycling where practical.

Ensure that no waste from the Site is conveyed to or deposited at any place that cannot lawfully be used as a waste facility for that waste.

Monitoring

Monitor and record the volumes of waste and the methods and locations of disposal.

Submit a progress report every two months, and a summary report before Completion, on the implementation of waste management measures, including the total quantity of material purchased, the quantity purchased with recycled content, the total quantity of waste generated, the total quantity recycled, the total quantity disposed of and the method and location of disposal in the form of a Waste Recycling and Purchasing Report available on the ProcurePoint website.

With the Waste Recycling and Purchasing Report, submit waste disposal certificates and/or company certification confirming appropriate, lawful disposal of waste.

7.4 Pest control

Do not use any chemical pesticides or termiticides for new construction work. Use preventive treatment by physical means to minimise the risk of pest infestations.

Chemical treatments may be used in existing buildings only as a last resort for the eradication of pest and termite infestations. Chemical pesticides used for this purpose must be registered by the National Registration Authority for Agricultural and Veterinary Chemicals and applied by a Pest Control Operator licensed by WorkCover.

Pest preventive methods must comply with AS 3660.1-2000 Protection of Buildings from Subterranean Termites (except for references to chemical soil barriers), as well as supplementary standards for existing buildings.

8 Materials and workmanship

8.1 Standards

Where the Contract requires compliance with a standard or Code, unless otherwise specified that Standard or Code shall be the one current at the Date of Completion.

Where the Contract refers to an Australian Standard it does not preclude the adoption of a relevant international standard unless such international standard is inconsistent with the relevant Australian Standard.

8.2 Cleaning up

All visible external and internal surfaces, including fittings, fixtures and equipment, must be free of marks, dirt, dust, vermin and unwanted materials, at Completion.

8.3 Samples

Match any approved samples throughout the Works. Give notice before commencing work affected by samples unless the samples have been approved. Keep approved samples in good condition on the Site until Completion.

Provide a sample register in a format agreed with the Principal.

Samples required for approval are detailed in the specifications in the Preliminary Design.

8.4 Testing

Independent Testing Authority

Any testing required to be by an independent authority shall be carried out by an authority registered with the National Association of Testing Authorities Australia (NATA) to perform the specified testing.

8.5 Proprietary items

Identification by the Principal of a proprietary item does not necessarily imply exclusive preference for that item but indicates the required properties of the item.

The Contractor may apply in writing for approval to use an alternative to any proprietary item. The request must be accompanied by all available technical information and describe how, if at all, the alternative differs from the proprietary item and how it will affect other parts of the Works and performance of work in connection with the Contract.

Except to the extent that the approval (if any) of the Principal includes a contrary provision, the approval is deemed to include the conditions that:

- (a) use of the alternative must not directly or indirectly result in any increase in the cost to the Principal of the Works;
- (b) the Contractor must indemnify the Principal against any increase in costs as a debt due and immediately payable; and
- (c) use of the alternative must not directly or indirectly cause any delay to the Works and if it does, the Contractor will compensate the Principal for any loss which the delay causes.

8.6 Plant and equipment details

Not used

9 Electronic Document & Contract Management System

9.1 Communications and Document Management system

To ensure efficient information management on the project, the web-based electronic document management system Aconex ("the System") will be used for, and will be the recognised method of, transmitting formal project correspondence, documents and information. Where it is necessary to transmit original signed documents, these shall be acceptable forms of correspondence only when they have been issued via the System first.

An existing license for the System has been procured and is currently in use on the nSFM. The Contractor is required to take over this licence at Contract award, including running costs and administration. It is the Contractor's responsibility to ensure the System is used by all subcontractors and suppliers engaged by the Contractor on this project, including contractors, subcontractors, suppliers and their subsequent legal successors in title.

At Completion, provide the Principal with a full electronic version of the electronic records on a separate Solid State Hard-Disk Drive (SSD).

10 Contractor's Project Plans

The Contractor must submit updated drafts of the Contractor's Project Plans in accordance with the Contract in accordance with the following schedule. In addition to the plans detailed below, the Contractor will also be required to

prepare and update other Contractor's Project Plans as required by legislation, regulation, and the Contract:

Description	Full Plan submission
Work Health and Safety	30 Days after
Management Plan	Contract Award
Community Engagement Plan	30 Days after
	Contract Award
Stakeholder Management Plan	30 Days after
	Contract Award
Environmental Management Plan	30 Days after
	Contract Award
Construction Management Plan	30 Days prior to commencement of any activities on the Site
Design Management Plan	30 Days after
	Contract Award
Demolition Management Plan	30 Days prior to commencement of any activities on the Site
Construction Traffic Management Plan	30 Days after
	Contract Award
Risk Management Plan	30 Days after
	Contract Award
Quality Management Plan	30 Days after
	Contract Award
Industrial Relations management Plan	30 Days after
	Contract Award
Remediation Action Plan	30 Days prior to commencement of any activities on the Site
Building Commissioning Plan Framework	4 months after Contract Award
Completion Plan including Draft Contents Pages for Operation and Maintenance Manuals	12 months prior to Practical Completion

10.1 Work Health and Safety Management Plan

(a) The Contractor must develop, implement and maintain a Work Health and Safety (WHS) Management Plan, which identifies how the Contractor will pro-actively manage safety in all the Contractor's

activities and comply with the requirements of the Contract and the NSW Government WHS Management System Guidelines.

- (b) WHS Management Plan must, as a minimum, address and detail:
 - (i) a WHS policy statement;
 - (ii) the WHS team organisation including:
 - (A) WHS personnel including Key Personnel;
 - (B) authorities and roles of WHS personnel including Key Personnel;
 - (C) lines of responsibility and communication; and
 - (D) interfaces with the overall project organisational structure.
 - (iii) notifications and registration requirements;
 - (iv) process of safety risk management and mitigation, or references to other documents that address safety, risk management and mitigation;
 - (v) emergency planning;
 - (vi) consultative processes;
 - (vii) prescribed and restricted occupations;
 - (viii) hazard identification and risk analysis processes;
 - (ix) hazardous substance management;
 - (x) WHS training;
 - (xi) induction procedures for all workers before they commence on site;
 - (xii) safe work method processes and statements;
 - (xiii) Subcontractor controls;
 - (xiv) accident and incident recording, reporting, investigation and analysis including corrective action;
 - (xv) periodic team meetings to identify occupational health, safety and rehabilitation issues;
 - (xvi) site vehicle, equipment and plant movement plans and processes; and

(xvii) safety audits.

- (c) The WHS Management Plan must, as a minimum:
 - (i) address safety in the design, documentation and specification of the Works and the Contractor's activities;
 - (ii) establish systems that ensure that health and safety issues will be identified, recorded and responded to throughout the performance of the Contractor's activities;
 - (iii) demonstrate the orderly management of health and safety throughout the performance of the Contractor's activities, and provide evidence that the Contractor has met its legal health and safety responsibilities;
 - (iv) establish procedures that ensure continuing involvement of the designers in the construction stages of the Works and must include, when applicable;
 - (A) health and safety implications of design elements of the Works;
 - (B) unforeseen risk eventualities resulting in substantial design change which might affect health and safety and resources; and
 - (C) health and safety implications of design where design work is carried out in stages.
 - (v) ensure that health and safety issues that are a function of or result from the Design Documentation form part of and are included in the health and safety assessment process for construction. These health and safety issues must be included in construction documentation and procedures to ensure that they are effectively managed during construction activities.
- (d) The WHS Management Plan must be further developed and updated:
 - (i) to take into account changes in Site Conditions and work, generally accepted occupational health and safety and rehabilitation practices and changes in Statutory Requirements;
 - (ii) where reasonably requested or required by the Principal or any Authority;
- (e) The following risks are covered:
 - (i) demolition;
 - (ii) removal of Contaminated material;

- (iii) public/ Contractor interface including park users;
- (iv) traffic and vehicles management and work close to transport corridors;
- (v) noise, dust and vibration;
- (vi) underground services;
- (vii) formwork;
- (viii) heavy and overhead lifting;
- (ix) moving plant and machinery; and
- (x) deep excavation and working at heights.

This list of risks is not exhaustive and must not be relied upon by the Contractor. The Contractor must undertake its own detailed analysis of all work health and safety risks relating to the performance of the work in connection with the Contract.

- (f) Include a program indicating the timetable and resources allocated for Inspection, testing and servicing and Internal review (WHSMS Guidelines, elements 7 and 11); and
- (g) Nominate the resources allocated for Incident management and corrective action (WHSMS Guidelines, element 8).

10.2 Community Engagement Plan

- (a) The Contractor must develop, implement and maintain a Community Engagement Plan.
- (b) The Community Engagement Plan must:
 - (i) be informed by and sit within the State's Overarching Stakeholder and Community Engagement Strategy;
 - (ii) ensure alignment with the Contract Program;
 - (iii) describe ways that community interests and issues will be addressed; and
 - (iv) describe ways the community will be informed of design and project impacts.
- (c) The Contractor must ensure the communications and engagement process is robust and will:
 - (i) demonstrate a willingness to listen and consider community concerns;

- (ii) provide high-quality information;
- (iii) create opportunities for community feedback, where possible;
- (iv) ensure participants are aware of what they can and cannot influence; and
- (v) respond to emergent issues and correct erroneous information in a timely fashion.
- (d) The Community Engagement Plan must, as a minimum, address and detail:
 - (i) the stakeholder and community engagement management team structure including:
 - (A) Key Personnel and other significant appointees;
 - (B) authority and roles of Key Personnel and other significant appointees;
 - (C) lines of responsibility and communication;
 - (D) minimum skill levels of each role; and
 - (E) interfaces with the overall project organisation structure including INSW;
 - (ii) principles and methodologies for proactive community engagement;
 - (iii) strategies for responding to and accommodating the reasonable expectations of the community;
 - (iv) community engagement and communication activities;
 - (v) in a schedule, the key issues which are likely to be of concern/interest to the community and how these issues will be managed proactively;
 - (vi) key messages to be used in the preparation of information materials and responding to enquiries and complaints;
 - (vii) communication and consultation tools to be used for keeping the stakeholders and community informed and to seek input on specific issues;
 - (viii) communication protocols and procedures, including those associated with approvals and handling enquiries from media and political representatives;

- (ix) a strategy for communicating traffic and access changes and ensuring integration across the communications and traffic and transport management functions;
- (x) processes for monitoring, evaluation and reporting;
- (xi) community engagement site induction information to be provided to the Contractor's personnel and the Subcontractor's personnel; and
- (xii) stakeholders who may be affected, messages that should be communicated and when they should be communicated.
- (e) When preparing the Community Engagement Plan, the Contractor may wish to consider, but not limit itself to, the following:
 - (i) the deployment of a Stakeholder and Community Relations Manager;
 - (ii) ongoing community liaison;
 - (iii) community meetings;
 - (iv) public displays, local events and activities;
 - (v) website and social media;
 - (vi) complaints management;
 - (vii) incident and crises management;
 - (viii) media relations and events; and
 - (ix) response to community representations.

10.3 Stakeholder Management Plan

- (a) The Contractor must develop, implement and maintain a Stakeholder Management Plan.
- (b) The Stakeholder Management Plan must:
 - (i) be informed by and sit within the Principal's Stakeholder and Community Engagement Strategy;
 - (ii) ensure alignment with the Contract Program;
 - (iii) describe ways that stakeholder issues will be addressed; and
 - (iv) describe ways stakeholders will be informed of design and project impacts.

- (c) The Contractor must ensure the communications and engagement is robust and will:
 - (i) demonstrate a willingness to listen and consider concerns;
 - (ii) provide high-quality information;
 - (iii) create opportunities for feedback, where possible;
 - (iv) ensure participants are aware of what they can and cannot influence; and
 - (v) respond to emergent issues and correct erroneous information in a timely fashion.
- (d) The Stakeholder Management Plan must, as a minimum, address and detail:
 - (i) the stakeholder management team structure including:
 - (A) Key Personnel and other significant appointees;
 - (B) authority and roles of Key Personnel and other significant appointees;
 - (C) lines of responsibility and communication;
 - (D) minimum skill levels of each role; and
 - (E) interfaces with the overall project organisation structure including INSW;
 - (ii) principles and methodologies for proactive stakeholder involvement;
 - (iii) strategies for responding to and accommodating the reasonable expectations of stakeholders;
 - (iv) stakeholder communication activities;
 - (v) all stakeholders with an interest in, or directly affected by, the Project;
 - (vi) in a schedule, the key issues which are likely to be of concern/interest to stakeholders and how these issues will be managed proactively;
 - (vii) key messages to be used in the preparation of information materials and responding to enquiries and complaints;
 - (viii) communication and consultation tools to be used for keeping the stakeholders informed and to seek input on specific issues;

- (ix) communication protocols and procedures, including those associated with approvals and handling enquiries from media and political representatives;
- (x) processes for monitoring, evaluation and reporting; and
- (xi) stakeholder site induction information to be provided to the Contractor's personnel and the Subcontractor's personnel.
- (e) When preparing the Stakeholder Management Plan, the Contractor may wish to consider, but not limit itself to, the following:
 - (i) the deployment of a Stakeholder and Community Relations Manager;
 - (ii) stakeholder meetings;
 - (iii) Site visits by external personnel;
 - (iv) incident and crisis management; and
 - (v) response to stakeholder representations.

10.4 Environmental Management Plan

- (a) The Contractor must develop, implement and maintain an Environmental Management Plan that must include, as a minimum:
 - (i) identification of the statutory and other obligations which the Contractor is required to fulfil, including all licences, approvals, consultations and agreements required from Authorities and other stakeholders, and the key legislation and policies applying to the Project;
 - (ii) monitoring, inspection and test plans for all activities and environmental qualities which are important to the environmental performance of the Works and any other development activities, including a description of potential site impacts, performance criteria, specific tests and monitoring requirements, protocols and procedures;
 - (iii) steps to ensure compliance with all plans and procedures;
 - (iv) strategies for the management of carbon and energy, water resources, noise, water quality, access and traffic, groundwater, settlement, waste, removal and disposal, hydrology including flooding, visual screening, landscaping and rehabilitation, hazards and risks, and energy use, resource use and recycling; and

- (v) how the Contractor will comply with the environmental management requirements of the Contract and the Project Brief, at a standard that satisfies all relevant Authorities.
- (b) The Environmental Management Plan must, as a minimum:
 - (i) identify and assess the risk, provide protection from and mitigate any adverse environmental effect which may result from the performance of any component of the Contractor's activities;
 - (ii) define the environmental responsibilities of the Contractor and each position within the Contractor's management team;
 - (iii) include schedules of available resources, including personnel to deal with environmental incidents at all stages of the Project; and
 - (iv) address the need for environmental safeguards and the adoption of environmentally sensitive work practices during any of the Contractor's activities including, but not limited to, procedures for:
 - (A) on-going noise, water, air quality, vibration and groundwater monitoring and control;
 - (B) management measures to reduce noise levels;
 - (C) management measures to avoid, reduce, reuse and recycle waste;
 - (D) dust control including monitoring, mitigation and remedial actions;
 - (E) detection, treatment and disposal of contaminated materials and water;
 - (F) water quality control measures and facilities; and
 - (G) erosion and sediment control plans.
- (c) The Environmental Management Plan must be further developed and updated:
 - (i) to take into account changes to the environment or generally accepted environmental management practices, new risks to the environment, any pollution, contamination or changes in Statutory Requirements; and
 - (ii) where requested or required by the Department of Planning and Environment or any other Authority.

10.5 Construction Management Plan

- (a) The Contractor must develop, implement and maintain a Construction Management Plan, which identifies how the Contractor will comply with the requirements of the Contract.
- (b) The Construction Management Plan must, as a minimum, address and detail:
 - (i) the construction team organisational structure including:
 - (A) construction personnel including Key Personnel;
 - (B) authority and roles of construction personnel including Key Personnel;
 - (C) roles and lines of responsibility and communication;
 - (D) the minimum skill levels of each role; and
 - (E) interfaces with overall project organisational structure.
 - (ii) how design performance and durability requirements are to be addressed and satisfied during construction;
 - (iii) construction methods and planned resource levels;
 - (iv) detailed staging diagrams to show visually how the Works will be built;
 - (v) technical specifications and construction standards applicable to each construction element and package;
 - (vi) construction program development, monitoring, review and management;
 - (vii) construction documentation applicable to each construction package;
 - (viii) processes for the development and management of work method statements;
 - (ix) processes for construction risk mitigation and management;
 - (x) access to the Site and to affected properties;
 - (xi) in a schedule, the necessary property works and utility service works:
 - (xii) processes for the development and storage of "As-Built" information and document requirements;

- (xiii) provision of up-to-date information to the Principal's Authorised Person as required by the Contract;
- (xiv) management of safety and incidents during construction, including reporting of incidents and near-misses;
- (xv) interfaces with other Contractor's Project Plans;
- (xvi) procurement and subcontractor management strategies;
- (xvii) in a schedule, the required Approvals and certifications and a process and program for obtaining those Approvals and certification;
- (xviii) safe processes for each element of work, and how outcomes in the Design Management Plan are to be incorporated into construction to ensure these outcomes are achieved; and
- (xix) maintenance methods for temporary facilities and equipment to be used during construction.
- (c) The Construction Management Plan must be further developed and updated:
 - (i) for changes in design or construction sequence, staging, methodology or resourcing;
 - (ii) to take into account progress of the Contractor's activities;
 - (iii) for changes in access to the Site; and
 - (iv) to take into account changes directed by the Principal under the Contract.

10.6 Design Management Plan

- (a) The Contractor must develop, implement and maintain a Design Management Plan that complies with the QMS Guidelines and which identifies how the Contractor will comply with the design requirements of the Contract.
- (b) The Design Management Plan must include a CADD Manual, which sets out the drawing standards, and protocols, which must be used by all designers preparing Design Documentation and Construction Documentation.
- (c) The Design Management Plan must, as a minimum, address and detail:
 - (i) the Contractor's design team organisational structure including:
 - (A) lead design personnel including Key Personnel;

- (B) authority and roles of lead design personnel including Key Personnel;
- (C) lines of responsibility and communication;
- (D) the minimum skill and competency levels of each role; and
- relationships and interfaces with the overall project organisational structure.
- design management processes including processes for the integration of relevant design disciplines into each area or element of work and communication between design teams;
- (iii) design standards to be adopted for each design component and design package;
- (iv) in a schedule, the design packages including the scope and package numbering;
- (v) Design Development program giving details of, the design review process, including the timing and Design Documentation to be provided for each design package;
- (vi) the strategy for achieving compliance with all relevant codes and standards for accessibility;
- (vii) design strategies for ensuring functionality, performance, durability, design life and fitness for purpose, survey and other requirements are met;
- (viii) processes for design optimisation and value engineering having regard to innovation and whole of life cost;
- (ix) processes for design risk assessment and design risk mitigation;
- (x) processes for addressing the safe construction of the works through the design stage (safety in design principles within the design);
- (xi) processes for identifying and incorporating utility services requirements and adjustments;
- (xii) processes for the development of specifications for the construction of all elements of the Works;
- (xiii) processes for design development presentations including timing, level of documentation to be presented, presentation methods and feedback procedures;

- (xiv) design management processes for the internal verification and certification of each design package and how integrated verification and certification will occur;
- (xv) processes for the management of requests for information, modifications and updating of Design Documentation;
- (xvi) processes for submission, certification, verification and storing of samples, prototypes, models and other similar submissions;
- (xvii) design management processes for the review of proposed design changes and adjustments during construction to ensure the requirements of the Contract are met;
- (xviii) processes for ensuring that maintainability requirements have been addressed;
- (xix) process for review and certification of Design Documentation;
- (xx) processes for the development of as built information; and
- (xxi) interfaces with other Contractor's Project Plans.
- (d) The Design Management Plan must include the establishment of design packages. The design packaging selection must take into account:
 - (i) the Project Brief;
 - (ii) the Preliminary Design;
 - (iii) the requirements of the Contract Program (including the Design Milestones);
 - (iv) the design and construction processes and activities;
 - (v) the logical sequence of design definition;
 - (vi) the interfaces and inter-relationships between packages;
 - (vii) the identification and resolution of interfaces with the relevant Authorities;
 - (viii) the processes for managing the interface between design teams and between different design disciplines within the packages; and
 - (ix) the roles, skills and competencies of the personnel proposed to undertake design work and the resources to be applied.

(e) The Design Management Plan must be further developed and updated as necessary to address the design of new elements not covered by the existing Design Management Plan.

10.7 Demolition Management Plan (if required)

- (a) The Contractor must develop, implement and maintain a Demolition Management Plan which identifies how the Contractor will comply with the requirements of the Contract.
- (b) The Demolition Management Plan must, as a minimum, address and detail:
 - (i) the demolition team organisational structure including:
 - (A) construction personnel including Key Personnel;
 - (B) authority and roles of construction personnel including Key Personnel;
 - (C) roles and lines of responsibility and communication;
 - (D) the minimum skill levels of each role; and
 - (E) interfaces with overall project organisational structure;
 - (ii) demolition methods and planned resources;
 - (iii) demolition program;
 - (iv) processes for the development and management of work method statements;
 - (v) processes for risk mitigation and management;
 - (vi) access to the Site and to affected properties;
 - (vii) management of safety and incidents, including reporting of incidents and near-misses;
 - (viii) procurement and subcontractor management strategies; and
 - (ix) in a schedule, the required Approvals and certifications and a process and program for obtaining those Approvals and certification.
- (c) The Demolition Management Plan must be further developed and updated:
 - (i) for changes in design or construction sequence, staging, methodology or resourcing;
 - (ii) to take into account progress of the Contractor's activities;

- (iii) for changes in access to the Site; and
- (iv) to take into account Variations directed by the Principal under the Contract.

10.8 Construction Traffic and Management Plan

- (a) The Contractor must develop, implement and maintain a Construction Traffic Management Plan which identifies how the Contractor will comply with the traffic management and traffic safety requirements of the Contract.
- (b) The Construction Traffic Management Plan must contain a draft of all traffic control plans to be submitted for review.
- (c) Controlled copies of the Construction Traffic Management Plan must be issued to Principal's Authorised Representative and the relevant construction, operation and maintenance staff of the Contractor.
- (d) The Construction Traffic Management Plan must be further developed and updated:
 - (i) to address changes in the design and construction processes;
 - (ii) for design and construction processes which the existing Construction Traffic Management Plan does not address;
 - (iii) to respond to any incidents or traffic disruptions arising from the Contractor's activities; and
 - (iv) to avoid recurrence of any identified risks to the safety of road users and the public.
- (e) The Construction Traffic Management Plan must provide for constant monitoring and review of the Contractor's activities to ensure continued compliance with the Traffic and Pedestrian Management Plan.
- (f) The Construction Traffic Management Plan must comply with the requirements of the Contract and the Project Brief and address the following key issues as a minimum:
 - (i) safety and amenity of road users and the public;
 - (ii) temporary lane or road closures, detours and other disruptions to public transport services and traffic flows including identification of additional traffic generated as a consequence of these disruptions;
 - (iii) access for people using the Precinct;
 - (iv) access for disabled persons, pedestrians, cyclists and public transport passengers;

- (v) Site security and access;
- (vi) signage, including:
 - (A) Project identification including signs to acknowledge Government initiatives;
 - (B) traffic (or road user) delay management;
 - (C) information signage, distance information and advance warning signs;
 - (D) speed limit signage; and
 - (E) changes to existing signage locations and provisions for emergency and incident response; and
- (vii) frequency of inspections.

10.9 Risk Management Plan

- (a) The Contractor must develop, implement and maintain a Risk Management Plan which identifies how the Contractor will comply with the Risk Management Plan requirements of the Contract.
- (b) For the purposes of the Risk Management Plan, a risk is defined as any event or uncertainty that has the potential to impact the achievement of either the Principal's or the Contractor's objectives with regard to the Project.
- (c) The Risk Management Plan must be consistent with the requirements of Australian/New Zealand Standard AS/NZS ISO 31000:2009, Risk management Principles and guidelines.
- (d) Risk identification and assessment by the Contractor must be a continuous process throughout the Project. The Contractor must report on identified risks and associated risk management matters as follows:
 - (i) in respect of monthly reporting associated with the status and progress of the design, construction and commissioning, include a summary of key risks (threats and opportunities) and corresponding current and planned risk treatments. Key risk reporting areas include but are not limited to:
 - (A) timely completion of the design (including intermediate milestones);
 - (B) status of risk management implementation; and
 - (C) achievement of project objectives including those associated with:

- 1. operational outcomes;
- 2. key stakeholders including the community;
- 3. key interfaces; and
- 4. environment and cultural heritage.
- (ii) Where information is to be provided to the Principal for the purposes of decision making, justification or information, the Contractor must include all associated and relevant risk-related information pertaining to the particular matter.

10.10 Quality Management Plan

- (a) The Contractor must develop, implement and maintain a Quality Management Plan (Development Phase) in accordance with ISO 9001, which identifies how the Contractor will comply with the quality requirements of the Contract.
- (b) The Quality Management Plan must, as a minimum, address and detail:
 - (i) the Contractor's quality team organisational structure including:
 - (A) quality management personnel;
 - (B) authority and roles of quality management personnel;
 - (C) lines of responsibility and communication;
 - (D) the minimum skill levels of each role; and
 - (E) interfaces with the overall project organisational structure;
 - (ii) quality risk management and mitigation processes;
 - (iii) how inspection, witnessing, monitoring and reporting will be undertaken;
 - (iv) procedures for the production, management and control of quality records;
 - (v) the Contractor's proposed design methodology and scope for the review and witnessing of the carrying out of the construction of the Works;
 - (vi) procedures in respect of non-conformances, improvement opportunities and the taking of corrective action, including reporting procedures;

- (vii) auditing procedures for the Quality Management Plan; and
- (viii) interfaces with other Contractor's Project Plans.
- (c) The Quality Management Plan must be further developed and updated to address:
 - (i) changes in the design and construction process including the use of and development of new designs and materials; and
 - (ii) design and construction processes requiring documentation which the existing Quality Management Plan does not address.

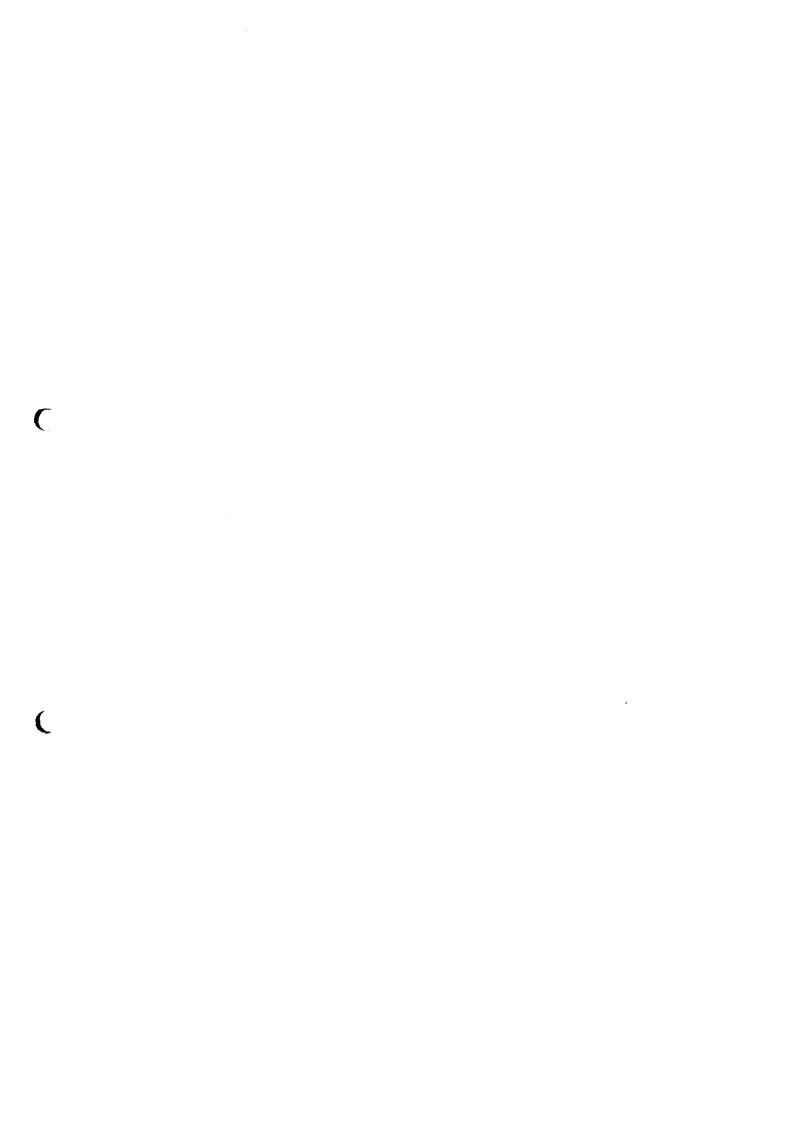
10.11 Industrial Relations Management Plan

- (a) The Contractor must develop, implement, and maintain an Industrial Relations and Management Plan which identifies how the Contractor will comply with the Industrial Relations requirements of the Contract.
- (b) The Industrial Relations Management Plan must include arrangements for the Contractor's employees and the Contractor's Subcontractors' employees, including permanent, contract and casual staff.
- (c) The Industrial Relations Management Plan must cover, on an individual or collective basis as appropriate, selection, recruitment, termination, consultation, negotiation, discipline, grievance and welfare arrangements.

10.12 Remediation Action Plan

- (a) The Contractor must comply with the Remediation Action Plan which identifies how the Contractor will comply with the contamination management requirements of the Contract and the Project Brief, at a standard that satisfies all relevant Authorities.
- (b) The Remediation Action Plan must be complied with in accordance with the requirements of the following:
 - (i) Authorities:
 - (A) NSW Department of Planning and Environment; and
 - (B) NSW Environment Protection Authority;
 - (ii) Guidelines:
 - (A) DUAP Managing Land Contamination: Planning Guidelines SEPP 55 Remediation of Land.

END OF SECTION - PRELIMINARIES



Schedule 28 – Not used