

Pre-Construction Minor Works Approval Form

Minor Works are defined as any low impact activities that are undertaken prior to the commencement of ‘construction’ as defined in the project’s applicable planning approval. However if Minor Works affect or potentially affect heritage items, threatened species, populations or endangered ecological communities, these works are defined as ‘construction’ unless otherwise determined by the applicable planning authority.

Minor Works approvals do not remove any obligation to comply with the project’s applicable planning approval conditions (including requirements prior to ‘any works’ commencing) or obtain any other applicable permits, licenses or approvals as necessary.

This application and all supporting information must be submitted to Sydney Metro/the Environmental Representative as one (1) PDF file at least 10 business days prior to the commencement of the proposed Minor Works.

Part 1: Application	
Contractor:	BESIX Watpac
Project:	Sydney Metro City & South West Barangaroo Station Development
Application Title: (e.g. Smith St trenching works)	Site Establishment
Application Number:	BR-PCMW-002 (SMCSWSBR-BWC-SBR-EM-FOR-000060)
Application Date:	Revision A - 20/7/2021 Revision 00 – 2/08/21
Planning Approval:	CSSI 7400 MOD 8 – Sydney Metro City & Southwest Chatswood to Sydenham Conditions of Approval
Minor Works Categories: <ul style="list-style-type: none"> Highlight as applicable. If Items 4, 8 or 11 are applicable, this form must be endorsed by an Environmental Representative. 	<ol style="list-style-type: none"> Survey, survey facilitation and investigations works (including road and building dilapidation survey works, drilling and excavation). Treatment of contaminated sites. Establishment of ancillary facilities (excluding demolition), including construction of ancillary facility access roads and providing facility utilities. Operation of ancillary facilities that have minimal impact on the environment and community. Minor clearing and relocation of vegetation (including native). Installation of mitigation measures, including erosion and sediment controls, temporary exclusion fencing for sensitive areas and acoustic treatments. Property acquisition adjustment works, including installation of property fencing and utility relocation and adjustments to properties. Utility relocation and connections. Maintenance of existing buildings and structures. Archaeological testing under the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010) or archaeological monitoring undertaken in association with other Minor Works to ensure there is no impact on heritage items. Any other activities that have minimal environmental impact, including construction of minor access roads, temporary relocation of pedestrian and cycle paths and the provision of property access.
Planning Authority Determination: Will the proposed works affect or have the potential to affect heritage items, threatened species, populations or endangered ecological communities?	<ul style="list-style-type: none"> There are no trees or vegetation located within the immediate area or surrounds, and no vegetation trimming, or clearing is required. There are no ecological communities on the site area. The works are not located within the curtilage of any local or state heritage items The works are not located within archaeological management zones (i.e., areas of med-high risk of archaeological impact)

Part 2: Details

Describe the proposed Minor Works:

Including work methodologies, site location(s) and site description(s) (e.g. landscape type, waterways, etc.).

Overview

The site for the Barangaroo Metro station is currently established by the TSE Contractor (JHCBPG) who have been engaged to under-take the Tunnel and Excavation works along with the construction of the station primary structure. With their contract works coming to an end, BESIX Watpac will be undertaking establishment of this site using the existing sheds, fencing, and hoarding that have been established by the TSE Contractor. BESIX Watpac's establishment under this MWA will be limited to Area shown on the BR-COP Site Establishment Plan in Appendix 2

Description of the Works

The site establishment works are required to prepare for the site with workers amenities in preparation for construction activities to commence once the full site is handed over to BESIX Watpac.

The site establishment works will include the below;

Relocate the existing TSE site compound and crib facilities to the adjacent site area as shown on the BR-COP Site Establishment Plan in Appendix A. The location on which BESIX Watpac will place the sheds has an existing hard stand that will be used. The existing internal chain-wire fences between the BESIX Watpac site compound area and the and the existing TSE compound will be amended to ensure fencing is maintained between both sites. A new entry gate will be installed in the southern fence off the internal road between Block 6 /7 to provide a dedicated access to our site establishment area.

Methodology

Shed Establishment

- A Safety, Health & Environment and Safe Work Method Statement will be issued prior to undertaking works
- Check existing erosion and sediment controls, maintain or re-install (refer erosion & sediment controls below)
- Survey and setup block piers to level and sit the sheds on
- Existing sheds will be lifted by a 25t Franna crane and shifted o their new locations
- The relocation of the TSE compound will accommodate BESIX Watpac's workforce, therefore no additional sheds will be delivered negating the need for oversized truck deliveries
- Decking and covered walkway material that surround the sheds will be reused to construct decks and covered wa kways around the BESIX Watpac establishment
- Installation of a turnstile for BESIX Watpac workers into the existing A-class hoarding. The turnstile will be installed adjacent to the turnstile being used by the TSE Contractor's workforce.
- Establish southern entry gate access in the existing fence to enable a dedicated BESIX Watpac access to the site area where the sheds will be established. Located off road between Block 6 and Block 7

Erosion & Sediment Controls

BESIX Watpac will take over the part of the site that we will be establishing the sheds. There are environmental controls in place already and BESIX Watpac will be checking and re-establishing the existing erosion and sediment controls. The controls are shown on the Site Establishment ESCP (refer Appendix 2). The erosion and sediment controls will include;

- Sandbags and sediment bags at the base of the perimeter hoarding to prevent any surface water run off (refer attached photos)
- Install sediment control (coir logs) at the base of the perimeter hoardings to filtrate any surface water that may breach the sandbags
- A surface level drainage system with falls away from the perimeter hoarding to a series of swales and temporary pits that drain the surface water to a sump pit. The surface water is then pumped to the Water Treatment Plant.

	<ul style="list-style-type: none"> All surface water will continue to be captured from this area and treated by the WTP under TSE's control until BESIX Watpac take full possession of the entire site, including the Water Treatment Plant. Establish bins in locations shown on the attached site establishment plan Establish spill kits on the site <p><u>Services Connections to Sheds</u></p> <p>The relocation of the sheds will keep the ablution block and the showers to the eastern end of the site compound, adjacent to the existing ablution block. The relocation of the ablutions and showers will require a fall of 200mm in the new sanitary drainage line to the new sanitary drainage points. This fall may be achievable above ground, however if excavation is required to achieve the fall, then a shallow trench of 300mm to lay the pipe will be required. This will involve identifying inground services that TSE may have installed in the surrounding area, breaking the existing bitumen, and digging the services trench using 5t excavator. The trench will then be backfilled using the excavated base course materials (if suitable) and compacted with a plate compactor. The surface hardstand will be reinstated to match the surrounding hardstand. Temporary electrical and water connections will run above ground to the sheds and therefore do not require excavation.</p> <p><u>Decking and Covered Wa kway</u></p> <p>Following the relocation of the sheds, surrounding decking and covered walkways will be erected using materials from the TSE amenities establishment. These carpentry works will be carried out using hand tools, nail guns and power saws. The covered wa kway will be constructed over existing concrete hardstand that has been left by the TSE Contractor. Excavating to install the posts for the covered walkway will be avoided by using the vertical posts of the perimeter A-class hoarding (external side) and bolting posts to the top of concrete jersey barriers (internal side). The continuous concrete barriers provide both protection to the workers from plant and equipment and provide a base to bolt the posts and roof to. Should posts need to be fixed to the ground, then they will be bolted to the existing concrete hardstand.</p> <p><u>Dilapidation Reports and Investigations</u></p> <p>A dilapidation survey will be undertaken of the site area of the shed establishment to capture the existing condition before BESIX Watpac commence the establishment of the sheds.</p> <p>Plant</p> <ul style="list-style-type: none"> 20t Franna EWPs 5t excavator (if required) Hand digging equipment (e.g. shovel, crow bar & trowel) Survey equipment & hand tools Plate compactor Tipper truck (if required) Supporting vehicles <p>Working Hours</p> <p>All works under this Minor Works Application will be undertaken during standard construction hours in accordance with CoA E36 of CSSI 7400 MOD 8, being between 7am – 6pm Monday to Friday and 8am – 1pm on Saturdays.</p>
<p>Planned Commencement Date:</p>	<p>16th August 2021</p>
<p>Local Sensitivities: Describe the presence (if any) of local sensitive environmental areas and community receptors</p>	<p><u>Heritage</u></p> <p>The works being undertaken under this Minor Works Application will not include ground works except for a possible in ground sewer connection, which will be limited to a 300mm deep trench excavation 10-15m long. Furthermore, the works are being undertaken in areas of fill (reclaimed land) so there is nil likelihood off heritage being encountered. AMBS Ecology & Heritage have confirmed that there is nil risk of encountering archaeology in this area as shown on their Archaeological Potential Zones diagrams and their attached email</p>

in Appendix 2. In the unlikely event that there is an unexpected find then it will be managed using the *Sydney Metro Unexpected Find Procedure* [SM-18-00105232].

Contaminated Soil

A previous Detailed Site Investigation (DSI) Report 85608.08 dated January 2018 was carried out by Douglas Partners for the TSE Contractor. This DSI Report investigated the soil and ground water conditions of the Barangaroo Metro site and summarises the potential sources of contamination across the site as below;

- *Imported (extensive) filling used to form/level the site. There appears to be multiple stages of historical filling at the site including prior to the construction of Hickson Road and during the 1970s at the western part of the site. It is unknown if any filling material originated from nearby contaminating sources (e.g. the former gasworks). Potential contaminants include: metals, TPH, BTEX, VOC, PCB, OCP, cyanide, phenols (including cresols), asbestos and ammonia;*
- *Historical spills or leaks of fuels or chemicals used at the site (such as during previous shipping operations). Potential contaminants include: TPH, BTEX, VOC, metals and phenols;*
- *Demolition of previous structures containing hazardous building materials (at the western part of site). Potential contaminants include: PCB (from electrical fixtures), asbestos and lead (from lead-based paint); and*
- *Contaminated groundwater from off-site areas impacted by historical filling, historical spills or leaks of fuels or chemicals (such as during previous shipping operations) or from previous nearby wash bay. Potential contaminants include: metals, TPH, BTEX, VOC, cyanide, phenols (including cresols) and ammonia.*

The findings of the DSI Report for the Barangaroo Station are assumed to be a representation of the profile of contamination that could extend to the west of the station box (the area the sheds are being established). However, as excavation works to connect the sanitary drainage will be limited to 300mm deep being made up of the depth of the concrete hardstand (100mm) and the base course layers (200mm), then it is unlikely contaminated fill will be excavated. As it is unlikely that fill layers will be excavated and potential contamination encountered, then BESIX Watpac will use the following checklists and procedures in Appendix 2 to manage the contamination

- Asbestos Identification & Management Procedure S08-04-70
- Unexpected finds checklist S08-04-70.02
- Asbestos Removal Checklist S08-04-70.01

Acid Sulfate Soil

The Acid Sulfate Soil Management Plan undertaken by ADE Consulting Group for the TSE Contractor JHCPB (SYM-01-14189 / ASSMP1 v1f 4th June 2018) consolidates previous investigations including those done by Douglas Partners, which recommends that all filling and natural soils below observed groundwater (1.45 m BGL) should be treated as though it potentially contains Acid Sulfate Soils until such time as analytical results confirm otherwise. It is noted that the excavation works to connect the sewer to the ablation block will be limited to 300mm below ground level and therefore it is not anticipated that acid sulfate soils will be encountered. In the unlikely event that they are encountered then BESIX Watpac will follow our Acid Sulfate Soil Standard Environmental Protocol F.20 shown in Appendix 2.

Erosion, Sediment & Water Quality

The portion of the site that BESIX Watpac will take possession of has an existing surface water management system where surface water is drained to a sump and pumped to the Water Treatment Plant. The water treatment plant will remain under the control of the TSE Contractor until BESIX Watpac take possession of the entire site. BESIX Watpac will inspect existing erosion and sediment controls and re-establish any controls that need renewal, along with establishing further erosion and sediment controls that are required during the establishment of this portion of the site. All erosion and sediment controls will be installed to meet CoA E65 of the CSSI 7400 and REMM SWC2. Refer to the erosion and sediment control plan (Site Establishment ESCP) in Appendix 2.

Biodiversity

The site area contains no flora or trees to be protected or removed. The entire site area is an existing hardstand, therefore there is no impact on flora. The only impact on ecological communities could be through surface water run off into the adjacent Sydney Harbour, which is being managed by the existing WTP and the erosion and sediment controls.

Noise & Vibration

The site area where the amenity relocation works are being undertake is located;

- 180m to the closest residential sensitive receiver on Hickson Rd
- 430m to the closest residential sensitive receivers in Balmain East.
- 190m to the closest commercial receiver
- 30m to the closest passive recreational area (adjacent pedestrian walkway)

The use of noise producing plant and equipment will be transient in nature and only used for short periods of time. The below table summarises the noisiest plant and the durations for which they will be used during the works.

Plant & Equipment	No. of Items (Operating Noise)	LAeq	LAmx	Duration and usage
25t Franna	1	98	102	2 days / used when lifts required
Hand tools - power	2	108	118	10 days / used in 10-15 second bursts to cut timbers
Excavator 5t	1	101	114	1 day / 2 hours to excavate + 2 hours to back fill

As part of developing the Construction Noise & Vibration Impact Statement BESIX Watpac’s acoustic consultant Renzo Tonin has produced a construction noise assessment, which includes predicted noise levels from site establishment on local receivers during standard construction hours (daytime hours). The predicted construction noise levels confirms that the noise produced from the site establishment zone (Zone8-T) will be below the noise management levels required and comply with CoA E37 and E38. The relevant sections of the CNVIS are included in Appendix 2.

With the distance of the works from the local receivers, limited equipment use, transient use of equipment and the noise producing activities having limited durations, then the risks around exceeding prescribed noise levels in the Conditions of Approval are shown to be mitigated.

Construction Traffic and Pedestrian Movements

Pedestrian movements are currently being diverted from Hickson Road via the High Street Steps and High Street or the Barangaroo foreshore. This pedestrian diversion will be in place when BESIX Watpac undertake the works and therefore there will be no impact from pedestrians on the works under this Minor Works Application.

The proposed works will have negligible impact with regards to construction traffic. A dedicated site access is being established and the existing sheds are being relocated so no sheds will be delivered, eliminating oversized loads. Construction traffic for the works will include;

- Delivery and removal of a 25t franna crane
- Delivery and removal of skip bins (2 off)
- Delivery of materials and tools with small trucks (5 off)
- Delivery of tools with small utes and support vehicles (10 off)

Part 3: Environmental Risk Assessment and Management

Prepare an Environmental Risk Assessment (in accordance with the [Sydney Metro Risk Management Standard](#)) and an Environmental Control Map for the proposed Minor Works and attach as Appendix 1.

If an Environmental Risk Assessment and/or an Environmental Control Map for the proposed Minor Works is/are already contained in existing documentation, attach the relevant section(s) as Appendix 1.

<p>Documentation: List any existing documents (including those referenced above) that the proposed Minor Works will be undertaken in accordance with and attach as Appendix 2 (e.g. plans, procedures, procedures, etc.).</p>	<p><i>See below Itemised list of Inclusions and Appendix References.</i></p>
	<p><i>Appendix 1 – Environmental Risk Assessment & Environmental Control Map</i></p>
	<p><i>Appendix 2</i></p> <ul style="list-style-type: none"> • Archaeological Potential Zones and Letter from AMBS Heritage • BR COP - Site Establishment Plan (SE-002 Rev A) • Erosion & Sediment Control Plan - Site Establishment ESCP (BR-ESCP-0001) • Construction Noise & Vibration Impact Statement TM031-02F01 CNVIS (R1) <ul style="list-style-type: none"> » Section 5 Construction Noise Assessment » Appendix B - Nearest sensitive receivers and noise management levels » Appendix D – Detailed predicted noise levels • Asbestos Identification & Management Procedure • Asbestos Removal Checklist • Unexpected Finds Checklist • Acid Sulfate Soil Procedure SEP F.20 • Sydney Metro unexpected Heritage Finds Procedure V2.0

Part 4: Workforce Notification

<p>How will the environmental and community risks and associated mitigation measures of the proposed Minor Works be communicated to the contractor's workforce?</p>	<p>Prior to any minor works a site induction will be provided to all personnel working on the project site. The induction will include relevant environmental aspects and risks associated with works on the project site, specifically those related to the context of this application to facilitate site establishment.</p> <p>Daily prestart meetings will be conducted by the supervisors of the subcontractors, which will include discussion points for the supervisors to raise with their workforce. A site wide Toolbox Talk will be chaired by BESIX Watpac where environmental risks and controls along with changing site conditions will be communicated with the work group.</p> <p>SWMS will be developed for high risks works and JSA's developed for non-high risk works. These method statements will include environmental risks.</p>
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Part 5: Community Consultation

<p>What community consultation has been undertaken already?</p>	<p>Meeting with the Millers Point Community Action Group was held on the 13th July 2021 to discuss the commencement of the Barangaroo Station works. Advice was provided that BESIX Watpac was targeting to commence with a presence on site in August.</p>
<p>What community consultation is planned to be undertaken?</p>	<p>The Community and Consultation Strategy has been developed for the project to provide mechanisms to facilitate communication between BESIX Watpac, Sydney Metro, Sydney City Council, government stakeholders and the local community on the construction-related and environmental matters.</p> <p>The Stakeholder & Community Relations Manager will advise neighbours of the nature and scope of works. This shall be done via letter box drops and or community meetings. In some instances, Sydney Metro shall take responsibility for advising neighbours.</p> <p>Notifications will be distributed to the local community affected by the works to inform them of the project's activities, provide information and offer them an opportunity to make enquires about the project. Specific notification may also be required for some activities e.g., noise intensive works, out of hours work.</p> <p>Written notifications will be made 7 days in advance of works commencing and during construction for specific construction elements. This will include contact details of the BESIX Watpac Site Manager and Sydney Metro Project Manager (where applicable).</p> <p>A Notification will be developed and issued 7 calendar days before works begin.</p> <p>The proposed method of community consultation/notification will be executed via letter box drop to all residents and businesses within a 50m radius of the site perimeter.</p> <p>A digital mail campaign in the form of an EDM (Electronic Direct Mail) will be issued to the Barangaroo project updates subscriber database prior to 7 calendar days before works commence.</p> <p>This will give residents a brief overview of the project and how residents may be impacted. In addition to letter box drops, BESIX Watpac will provide a community enquiries hotline which will be detailed on site safety notice boards.</p> <p>Ongoing consultation will occur through Community Notices with the addition of the installation of signage to advise the community of any impacts to surrounding roads and footpaths. The use / type of signage shall be confirmed with Sydney Metro within the specified timeframes prior to any occupancy.</p>
<p>If drafted already, attach applicable Community Notification as Appendix 3.6</p>	

Part 6: Contact Details

<p>Nominate contractor's project manager, environmental and communications contact(s).</p>					
<p>Name:</p>	<p>██████████</p>	<p>Position:</p>	<p>Senior Construction Manager BESIX Watpac</p>	<p>Phone:</p>	<p>██████████</p>



[Redacted]	[Redacted]	[Redacted]	Engineering Manager BESIX Watpac	[Redacted]	[Redacted]
	[Redacted]		Planning & Environment Manager BESIX Watpac		[Redacted]
	[Redacted]		Stakeholder & Community Engagement Manager KJA Associates		[Redacted]

Part 7: Signature

This signature acknowledges that the proposed Minor Works will be undertaken in accordance with this application, have minimal environmental impact and are not defined as 'construction' in accordance with the applicable planning approval.

Name:	[Redacted]		
Signature:	[Redacted]	Date:	2.08.21

Determination Page

(Sydney Metro/Environmental Representative Use Only)

12. Endorsement/Approval			
These signatures represent formal endorsement/approval for the proposed Minor Works to commence in accordance with this application and the applicable planning approval requirements (subject to any determination from the applicable planning authority as may be required by the planning approval conditions).			
	Director Project Communications – Endorsement (required for all applications)	Director Environment, Sustainability & Planning – Approval (required for all applications)	Environmental Representative – Endorsement (required as necessary in accordance with the applicable planning approval, optional for all other circumstances)
Signature:			
Name:			
Date:	3/8/2021	10 August 2021	3/8/2021
Comments:	Note only: Community notification has been combined with TSE monthly update for Aug/Sept.		Supporting letter attached as Appendix 4 if necessary. N/A
Conditions:			Ensure compliance with E90 in relation to road dilapidation for heavy vehicle use on local roads
<input checked="" type="checkbox"/>	Approved (by Sydney Metro)		
<input type="checkbox"/>	Endorsed (by Environmental Representative)		
<input type="checkbox"/>	Rejected		

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Appendix 1: Environmental Risk Assessment and ECM

Environmental Risk Assessment and Environmental Control Map.

Aspect	Potential Environmental Impact	Risk Rating before any Control Measures are Implemented			Control Measures Incorporated into Activity (Consider Hierarchy of Control - Avoidance, Reduction, Transfer, Retention)	Residual Risk Rating after Existing Control Measures were implemented		
		C	L	Risk		C	L	Risk
Erosion & Sediment Control	Sediment run off from site area into adjacent Sydney Harbour	C4	L4	Med	<ul style="list-style-type: none"> • Site induction to cover erosion & sediment control measures • Establishment of ESC measures shown in ESCP • Weekly inspections and update as required ESC measures 	C4	L5	Low
Air Quality	Dust from site hardstands or stockpiled material becoming air borne in windy conditions and blowing on residential receivers, commercial receivers and public using Foreshore Walk	C4	L3	Med	<ul style="list-style-type: none"> • Induction to include air quality management practices. • Utilise and maintain the existing hardstand on the site • Wash down hardstand regularly • stockpile spoil once excavated and cover with geotextile mesh • Monitor conditions and modify works where dusty conditions are observed. • Minimise the emission of dust from the premises to the greatest extent practicable 	C5	L5	Low



Aspect	Potential Environmental Impact	Risk Rating before any Control Measures are Implemented			Control Measures Incorporated into Activity (Consider Hierarchy of Control - Avoidance, Reduction, Transfer, Retention)	Residual Risk Rating after Existing Control Measures were implemented		
		C5	L4	Low		C6	L5	Low
Noise Emission from Site	Noise emission impacting on nearby sensitive receivers	C5	L4	Low	<ul style="list-style-type: none"> • Induction to include site rules, advice on sensitive receivers and noise mitigation requirements • Distance between noisy plant items and nearby Foreshore Walk would be maximised and equipment orientated where possible to reduce noise. • No works to be performed outside of Standard Construction hours • All power-driven work equipment used would have efficient muffler design and be well maintained. • Mitigation measures to be implemented in accordance with the Sydney Metro Construction Noise Strategy and ICNG (DECC 2009) • No Out of Hours works to be performed unless for emergency reasons 	C6	L5	Low
Contamination	Contamination encountered during excavation	C4	L4	Med	<ul style="list-style-type: none"> • Unexpected find procedure/ checklist to be enacted should contamination be encountered during the trenching works (Refer Appendix 2) • Asbestos removal works to be carried out in accordance with BESIX Watpac Asbestos Removal Checklist and Asbestos Identification and Management Procedure (Refer Appendix 2) • Occupational hygienist to be on call to provide advice on the management of any unexpected finds • Where asbestos is observed during excavation dust is to be appropriately controlled based on advice from hygienist • All contaminated spoil will be stockpiled and covered with geofabric once excavated 	C6	L5	Low

Aspect	Potential Environmental Impact	Risk Rating before any Control Measures are Implemented			Control Measures Incorporated into Activity (Consider Hierarchy of Control - Avoidance, Reduction, Transfer, Retention)	Residual Risk Rating after Existing Control Measures were implemented		
		C	L	R		C	L	R
				High	<ul style="list-style-type: none"> Where bonded asbestos is observed during excavation in areas less than 10m², it is to be picked by a competent person who has undergone Asbestos Awareness Training Asbestos of an area greater than 10m² or friable asbestos is to be moved by a qualified Asbestos Removalist under the supervision of an appropriately qualified occupational hygienist 			Low
Acid Sulfate Soils	Acid sulphate soils encountered	C5	L4	Low	<ul style="list-style-type: none"> If encountered Exposed Potential Acid Sulphate Soil within the excavations will be kept wet during the works. The excavations will be backfilled immediately to prevent any Potential Acid Sulphate Soils from oxidising. Acid sulphate soils that have been stockpiled are to be treated prior to disposal from site or reuse where appropriate. Spoil from excavations will remain moist before being replaced in situ or stockpiled for testing. 	C5	L5	Low
Water	Stormwater / construction water run-off into adjacent waterway (Sydney Harbour)	C4	3	Med	<ul style="list-style-type: none"> Site induction to include the surface water management strategy for the site Prior to handover of the portion of the site, BESIX Watpac to undertake inspection of the existing surface water management system and training in the use of system by the TSE Contractor Treatment of the surface water to continue to be treated by the existing Water Treatment Plant Temporary civil engineer to review of rainfall quantities and the existing temporary pumping system to confirm that the system and the site layout has the capacity and ability to handle the effects of flooding 	C4	L5	Low

Aspect	Potential Environmental Impact	Risk Rating before any Control Measures are Implemented			Control Measures Incorporated into Activity (Consider Hierarchy of Control - Avoidance, Reduction, Transfer, Retention)	Residual Risk Rating after Existing Control Measures were implemented		
		C	L	R		C	L	R
					from unprecedented heavy rain fall. <ul style="list-style-type: none"> Weekly inspections on the existing pumps and system to be carried out No refuelling will occur in the work area or adjacent to stormwater pits Fuel to be stored in a bunded area in a dedicated fuel storage cage in accordance with SWNSW requirements. Spill kits to be installed maintained and kept in locations adjacent to temporary surface water pits 			
Work in Heritage Areas	Impact to heritage or archaeology	C5	L5	Low	<ul style="list-style-type: none"> Induction to include heritage management requirements. No works to occur within the high-risk zones Archaeological potential (refer appendix 2) Implement Sydney Metro Unexpected Finds Procedure V2.0 during invasive investigation works. 	C5	L6	Low

Aspect	Potential Environmental Impact	Risk Rating before any Control Measures are Implemented			Control Measures Incorporated into Activity (Consider Hierarchy of Control - Avoidance, Reduction, Transfer, Retention)	Residual Risk Rating after Existing Control Measures were implemented		
		C	L	R		C	L	R
Biodiversity	Effect of work on flora and fauna	C4	L4	Med	<ul style="list-style-type: none"> No vegetation or tree removal is required for the works All works are to be undertaken within areas nominated in Appendix 2 (the site area). All ancillary machinery/equipment and spoil/stockpiles will not be kept in close proximity to ecologically sensitive areas (Harbour) or adjacent to temporary surface water pits Spill kits to be maintained adjacent to surface water pits Weekly environmental meeting to be held with TSE to confirm that the input and output water quality from the WTP remains unchanged 	C5	L5	Low
Services	Service strike leading to environmental discharges	C4	L4	Med	<ul style="list-style-type: none"> Pre-start meeting to be held with the TSE contractor to review any of their existing temporary services in ground and review their as-build documentation Engineers and workers to establish locations of any services by Dial Before You Dig, Survey and Non-Destructive Digging (if required). A Permit to Penetrate (Excavation Works) to be reviewed and signed off by management and workers prior to commencing any excavation works 	C5	L5	Low
Visual Amenity	Lighting from site impacting nearby properties	C5	L5	Low	<ul style="list-style-type: none"> Consultation with occupants of nearby properties where visual amenity impacts are minor or higher Temporary lighting to be positioned to not be intrusive to neighbours and minimise impacts to local sensitive receivers 	C5	L5	Low



Aspect	Potential Environmental Impact	Risk Rating before any Control Measures are Implemented			Control Measures Incorporated into Activity (Consider Hierarchy of Control - Avoidance, Reduction, Transfer, Retention)	Residual Risk Rating after Existing Control Measures were implemented		
		C5	L4	Low		C5	L5	Low
Traffic & Pedestrians	Disruption to road users and pedestrians	C5	L4	Low	<ul style="list-style-type: none"> • Induction to include traffic control requirements • Traffic Control Plans to be in place as required to redirect traffic and pedestrians. • No parking permitted on site • Dedicated construction access will be utilised off the road between Blocks 6 & 7 • Existing pedestrian diversion via Foreshore Walk and High Street to remain in place during the works 	C5	L5	Low
Waste	Improper management of waste	C4	L4	Low	<ul style="list-style-type: none"> • Induction to include waste management practices. • Where possible, waste spoil will be re-used. • The waste must be lawfully transported and disposed of to a licenced facility. • Wastes (e.g. food scrap, empty fuel canisters) will be lawfully transported and disposed of. • All liquid and/or non-liquid waste generated on site shall be assessed and classified in accordance with Waste Classification Guidelines and managed appropriately according to its classification. 	C5	L5	Low



Sydney Metro Risk Matrix



"D" Risks Little or No Risk Accepted	Low (1-10)	Risk Appetite Is the level of risk we are willing to take to achieve our Strategic Objectives
"C" Risks A Balanced and Informed Approach	Med (11-21)	
"B" Risks High Risks are accepted with Effective Controls	High (22-30)	
"A" Risks Very High Risks are accepted with Executive Approval	Very High (31-36)	
		Require Executive Ownership and approval

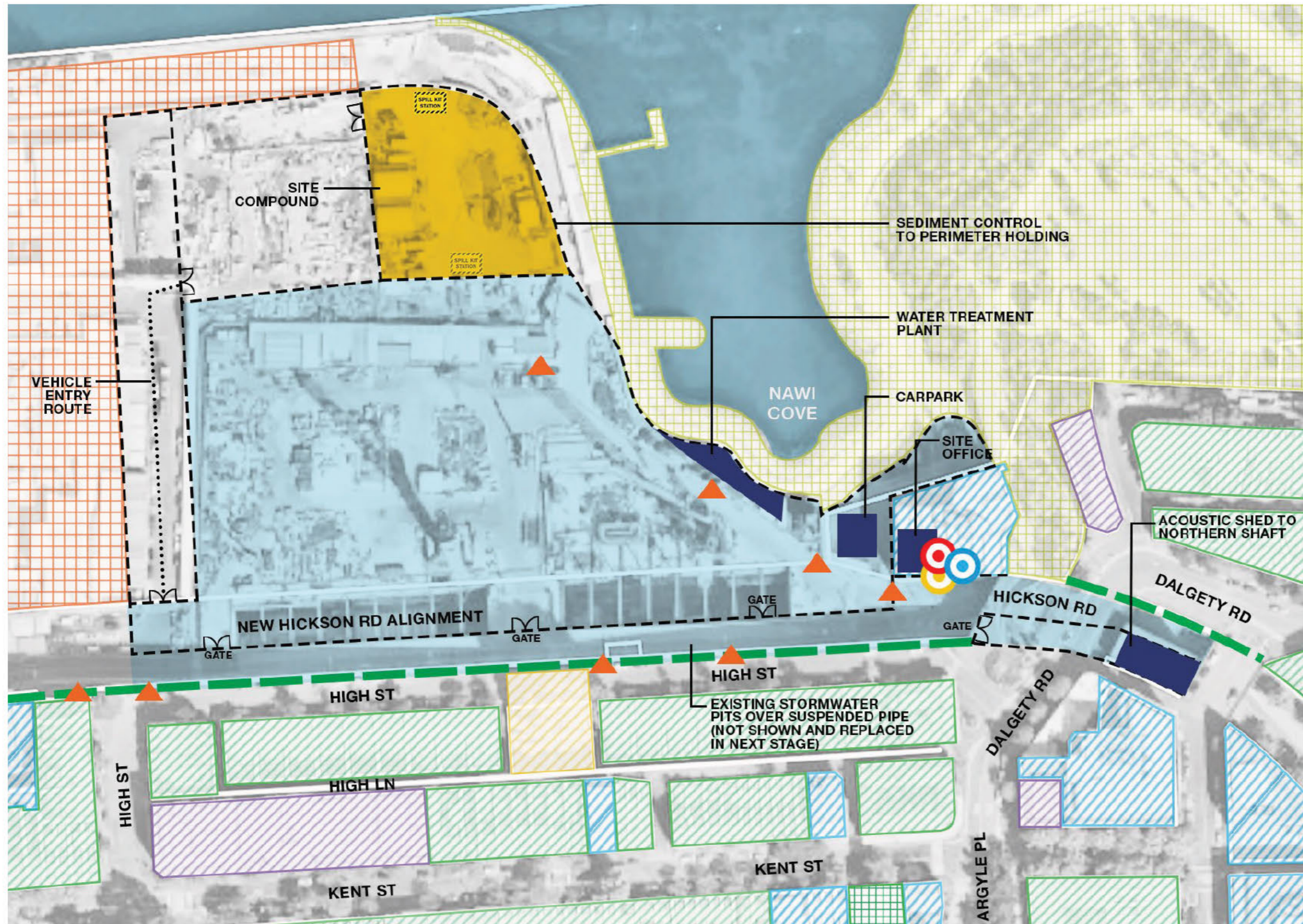
Health and Safety (Injury and Disease)	Illness, first aid or injury not requiring medical treatment	Illness or minor injuries requiring medical treatment	Single recoverable lost time injury or illness, alternate/restricted duties injury, or short-term occupational illness	1-10 major injuries requiring hospitalisation and numerous days lost, or medium-term occupational illness	Single fatality and/or 10-20 major (permanent) disabilities/chronic diseases	Multiple fatalities and/or >20 major injuries/permanent disabilities/chronic diseases
Environment	No appreciable changes to environment and/or highly localised event	Change from normal conditions within environmental regulatory limits and environmental effects are within site boundaries	Short-term and/or well-contained environmental effects. Minor remedial actions probably required	Impacts external ecosystem and considerable remediation is required	Long-term environmental impairment in neighbouring or valued ecosystems. Extensive remediation required	Irreversible large scale environmental impact with loss of valued ecosystems
Service Disruption	Short duration disruptions affecting part of one transport mode	Minor customer disruptions (Customer volume and time impacted) affecting one transport mode	Disruptions affecting operations of one transport mode, impacting out users with a delay of 30-60mins	Major disruptions affecting <50k customers and operations of one transport mode with network wide effects on one or more other modes of transport	Short duration shutdowns or substantial disruptions affecting more than 500k customers across multiple transport modes, with network-wide transport impacts	Extensive shutdowns or extended disruptions affecting 100k or more customers, business, with economic impacts
Government/ Stakeholder / Public Trust/ Confidence	Negative article in local media. No discernible reaction/perception. Goodwill, confidence and trust retained	Unease - Series of negative articles in local/state media. Confidence remains with some minor loss of goodwill or trust. Recoverable with site effort at cost. Some continuing scrutiny/attention	Disappointment - Extended negative local/state media coverage. Confidence and trust dented but are quickly recoverable at modest cost with existing budget and resources	Concern - Short-term negative state/national media coverage. Confidence and trust are diminished but are recoverable with time, staff effort and additional funding	Displeasure - Extended negative state/national media coverage. Confidence and trust are damaged but recoverable at considerable cost, time and staff effort	Outrage - Material change in the public perception of the organisation. Confidence and trust are severely damaged, possibly irreparably, and full recovery both questionable and costly
Regulatory or Legal Breach	Low level non-compliance with legal and/or regulatory requirement or duty by individuals or TRSW	Minor non-compliance with legal and/or regulatory requirement or duty (investigation and/or report to authority)	Moderate non-compliance. Subject to comment and monitoring from applicable regulator. Small fine and no disruption to services	Major breach resulting in enforcement action and/or prohibition notices. Substantial fine and no disruption to services	Substantial breach resulting in prosecution, fines and/or litigation. Licence or accreditation restricted or conditional affecting ability to operate	Prosecution leading to imprisonment of TRSW executive. Loss of operating licence
Management Effort/ Organisational Fatigue	An event, the impact of which can be absorbed as part of normal activity	An event, the impact of which can be absorbed but some additional management effort is required	An event, the impact of which can be absorbed but much broader management effort is required	Major event which can be absorbed, but substantial management effort is required	Severe event which requires extensive management effort but can be survived	Catastrophic event with the clear potential to lead to the collapse of the organisation
Benefit Realisation of Initiative, Program or Project	No time delay with initiative or project but it will incur a slight decrease in the benefits realised	Minor delay with the initiative and/or a minor decrease in the benefits realised, or minor delay on the project or another project, with no public implications	Several delays with the initiative and/or moderate decrease in benefits realised, or completion date missed for non-critical path project	Major delays with the initiative and/or major decrease in benefits realised, or publicly announced performance issues raised or final completion date missed with demonstrable mitigating external circumstances	Severe delays with initiative, which impacts across divisions and/or a significant decrease in benefits realised, or publicly announced performance issues raised or final completion date missed on critical path project	Failure to realise benefits of the initiative which adversely affects the enterprise-wide operations of TRSW, or publicly announced performance issues raised or final completion date significantly missed on critical path project
Budget, Costs or Revenue	< \$100k	\$100k - \$1m	\$1m to \$10m	\$10m - \$50m	\$50m - \$100m	> \$100m

Risk Rating: Very High - A - 31-36 High - B - 22-30 Medium - C - 11-21 Low - D - 1-10	CONSEQUENCE					
	Insignificant	Minor	Moderate	Major	Severe	Catastrophic
	C6	C5	C4	C3	C2	C1

Qualitative Expectation	Expected to occur frequently during time of activity or project	10 times or more every year	SMDO Probability Analysis	>90%	LIKELIHOOD	Almost Certain	L1	20	22	29	32	34	36
	Expected to occur occasionally during time of activity or project	1-10 times every year		75-90%		Very Likely	L2	14	18	23	28	31	35
	More likely to occur than not occur during time of activity or project	Once each year		50-75%		Likely	L3	9	12	16	24	27	33
	More likely not to occur than occur during time of activity or project	Once every 1 to 10 years		25-50%		Unlikely	L4	6	7	11	17	25	30
	Not expected to occur during time of activity or project	Once every 10 to 100 years		10-25%		Very Unlikely	L5	3	4	8	13	19	26
	Not expected to ever occur during time of activity or project	Less than once every 100 years		<10%		Almost Unlikely/Unfounded	L6	1	2	5	10	15	21



Environmental Control Map – Site Establishment



LEGEND

- TSE CONTRACTOR AREA
- STATION CONTRACTOR AREA
- A-CLASS HOARDING
- HAULAGE ROUTE
- WHEEL WASH FACILITIES
- KEY STORMWATER ENTRY POINT TO BE PROTECTED FROM SILT INGRESS

LAND USE -

- COMMERCIAL
- CHILDCARE
- RESIDENTIAL
- HOSPITALITY
- HERITAGE
- EDUCATIONAL
- PLACE OF WORSHIP
- CONSTRUCTION
- RECREATIONAL

MONITORING CATEGORY -

- NOISE MONITORING
- VIBRATION MONITORING
- DUST MONITORING

- NEAREST SENSITIVE RECEIVER TO THE WEST IS RESIDENTS IN BALMAIN EAST 430M AWAY
- HOURS OF WORK:
 - MONDAY TO FRIDAY - 7AM TO 6PM
 - SATURDAY - 8AM TO 1PM
- CONSTRUCTION RESPONSE LINE: 1800 171 386
- TRANSPORT PROJECTS DELIVERY OFFICE INFOLINE: SYDNEY METRO CITY & SOUTHWEST - 1800 171 386
- CONTACT DETAILS OF KEY STAFF:
 - PLANNING & ENVIRONMENT MANAGER - MIKE NEVIN - 0409 012 198
 - PROJECT MANAGER STATION - LUKE HUNTER - 0416 071 385

Sydney Metro City & South West
Barangaroo
Construct Only Package

NOT TO SCALE
 NOT FOR CONSTRUCTION

DRAWING NAME:
 ENVIRONMENTAL CONTROL MAP - SITE ESTABLISHMENT

DWG #: EC-0002
REV #: 05

DATE #: 26/07/2021



Appendix 2:

Environmental Management Documentation

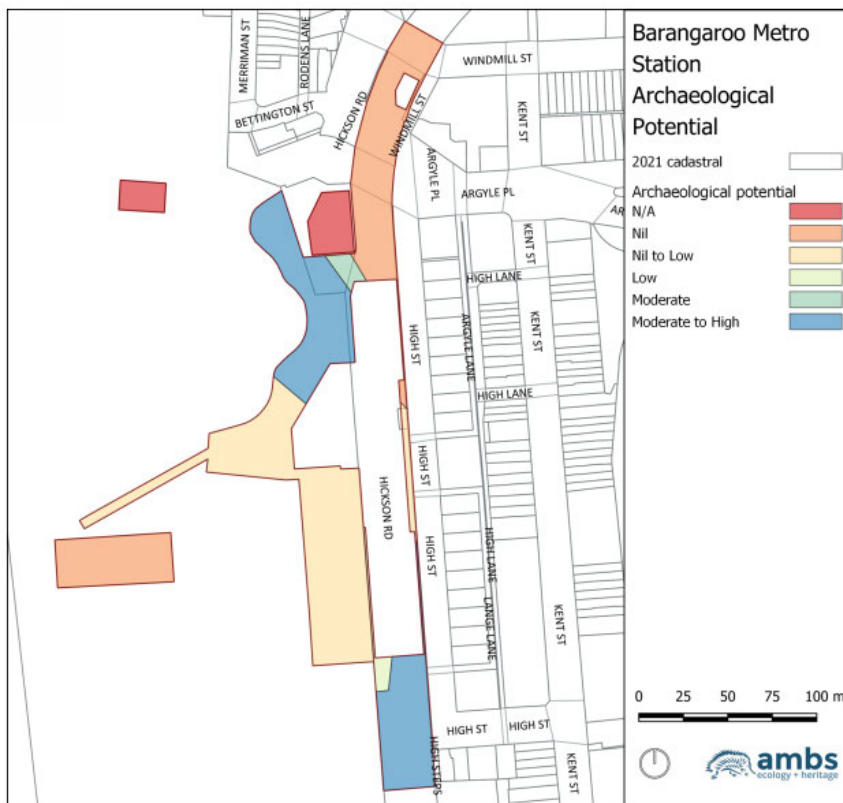


Figure 3.1: Archaeological potential at the site.

Archaeological Potential Zones

[REDACTED]

From: [REDACTED]
Sent: Friday, 30 July 2021 11:46 AM
To: [REDACTED]
Subject: FW: FW: MWA Site Establishment
Attachments: 1865 Sewer.png

[REDACTED]

Please see below from AMBS in relation to the MWA for site establishment. They have confirmed that the area where we are proposing to excavate for the connection of the toilets is in an area of NIL archaeological potential.

Regards,



[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]



From: [REDACTED]
Sent: Friday, 30 July 2021 11:43 AM
To: [REDACTED]
Subject: Re: FW: MWA Site Establishment

Hi [REDACTED]

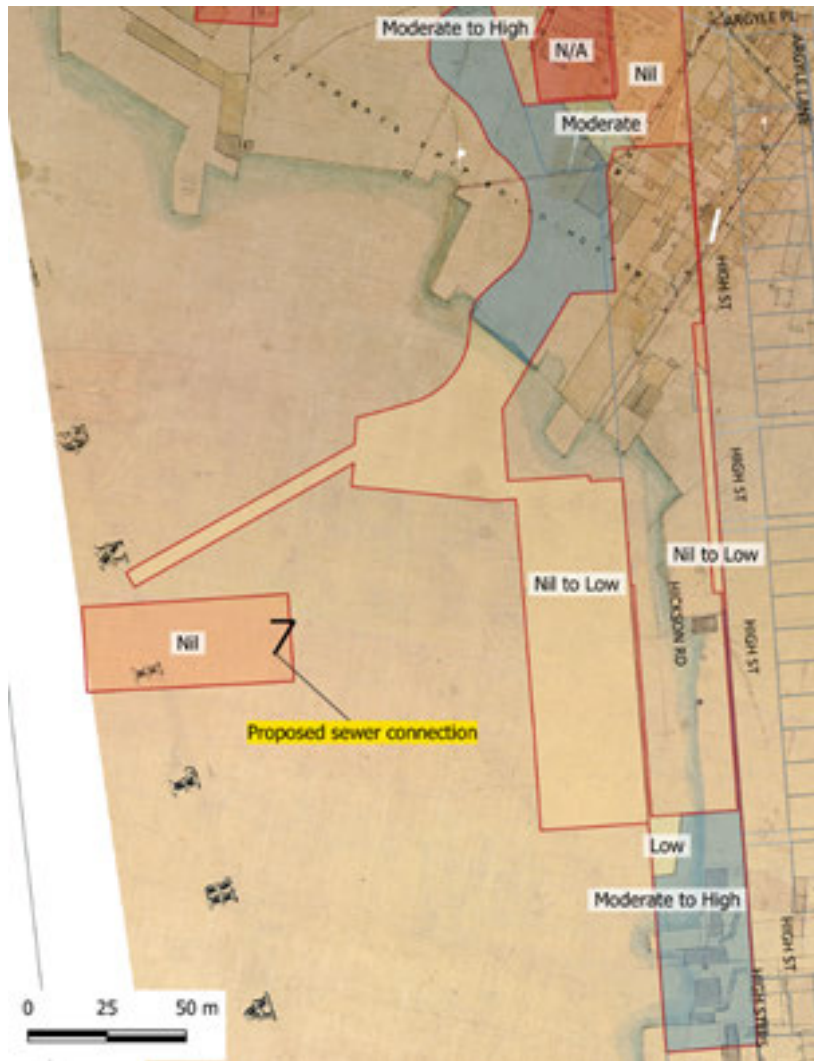
I can confirm that the proposed sewer connection is in an area of Nil archaeological potential (see attached image showing archaeological potential, the location of the works and the 1865 shoreline). The proposed works do not require archaeological investigation or monitoring. The *Sydney Metro Unexpected Heritage Finds Procedure* should be implemented if any suspected heritage finds are encountered during the works and AMBS should be notified to attend the site and assess the significance of the find.

Kind regards,

[REDACTED]
Senior Historic Heritage Consultant
ambs ecology & heritage
Unit 14, 1 Hordern Place Camperdown NSW 2050 - <http://ambs.com.au>
[REDACTED]

I acknowledge the tradition of custodianship and law of the Country on which I work and live, and pay my respects to those who have cared and continue to care for Country.

AMBS Ecology & Heritage (email attachment)



FROM AUGUST 2021

LEGEND:

STAGING ZONES:

- POSSSESSION UNTIL 1/01/22
- POSSSESSION UNTIL 1/02/23
- POSSSESSION UNTIL 23/12/23

PEDESTRIAN ACCESS:

- PEDESTRIAN ACCESS
- FENCE / HOARDING
- PERSONNEL SITE ENTRY
- UNDERCOVER PERSONNEL ACCESS
- OPEN PERSONNEL ACCESS
- STAIR ACCESS TO STATION BOX
- EMERGENCY ASSEMBLY POINT
- FIRST AID ROOM

CONSTRUCTION VEHICLE & MATERIAL:

- CONSTRUCTION VEHICLE ACCESS
- SITE GATE
- GATE NUMBER
- RUMBLE GRIDS / WASHDOWN BAYS
- SLAB OPENING AT SURFACE LEVEL
- SLAB OPENING BELOW SURFACE LEVEL
- VERTICAL MATERIAL HANDLING

EARLY SITE ACCESS:

- BESIX WATPAC CONSTRUCTION SITE
- TSE CONSTRUCTION SITE
- CONSTRUCTION WORKER ACCESS TO CROSSOVER CAVERN



Sydney Metro City & South West
Barangaroo
 Construct Only Package



DRAWING NAME:
 BR COP - SITE ESTABLISHMENT

DWG #: SE - 002
REV #: A

DATE #: 24/05/2021

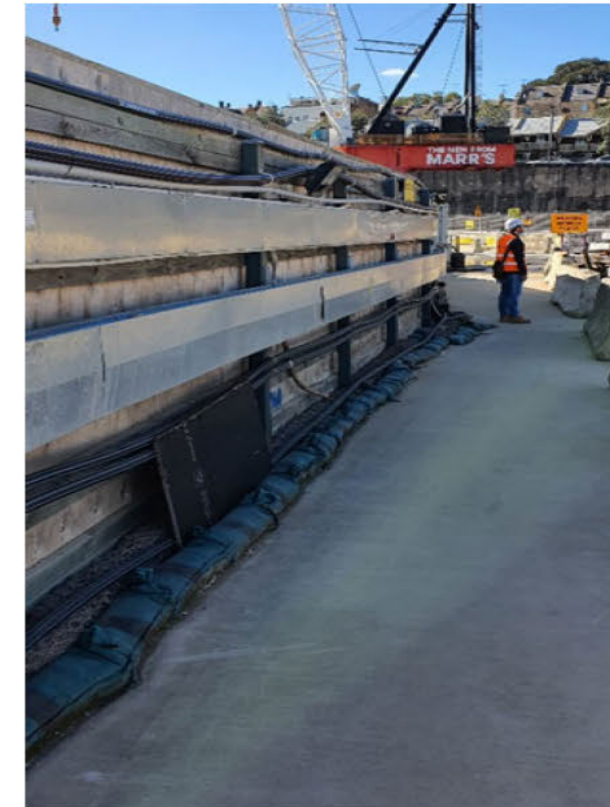




EROSION & SEDIMENT CONTROL PLAN – SITE ESTABLISHMENT

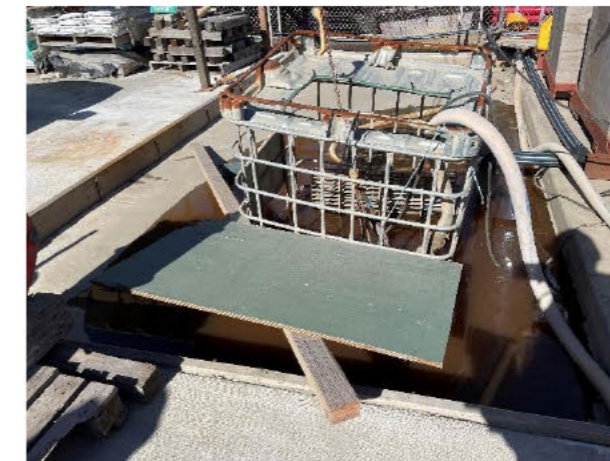
Key Control Legend

- Existing chain wire fence with modifications
- - - - - Sandbags at base of hoarding / fence
- Coir filled sediment protection socks
- ➔ Surface level falls for drainage
- Dewatering sump and pump
- Surface level temporary dewatering pit
- Protected stormwater pit covered and sealed
- Spill kits



SEDIMENT CONTROL

Photo showing existing environmental controls at the perimeter hoarding - sandbags and coir filled silt socks in front of the sandbags, will be maintained or renewed if required.



SUMP PUMP

Photo showing sump pit and dewatering pump that will be used to pump surface water to the water treatment plant for treatment and discharge

5 Construction noise assessment

5.1 Noise prediction methodology

Modelling and assessment of airborne noise impacts from activities associated with the construction works were determined by modelling the noise sources, receiver locations, topographical features, and possible noise mitigation measures using a Cadna-A computer noise model developed for this project. The model calculates the contribution of each noise source at identified sensitive receiver locations and allows for the prediction of the total noise from a site for the various stages of the construction works.

The noise prediction models take into account:

- Location of noise sources and sensitive receiver locations.
- Height of sources and receivers referenced to one metre digital ground contours for the site area and surrounding area.
- Sound Power Levels (L_w) of plant and equipment likely to be used during the various construction activities (see Table C1 in APPENDIX C). Table C1 also identifies the plant and equipment that will operate during each assessment period and the likely timing of each activity/aspect.
- Separation distances between sources and receivers.
- Ground type between sources and receivers.
- Attenuation from barriers (natural and purpose built).

Key details regarding the construction site layout, the likely plant and equipment (including truck movements), and hours of operation were informed by the Design and Construction Teams. This information is presented in APPENDIX C and formed the basis for all modelling assumptions used in this assessment.

5.2 Detailed design outcomes

The key noise mitigation measures that have been included in the noise modelling results presented in this CNVIS are:

- Acoustic shed (in Hickson Road) for materials and stabilised sand deliveries;
- Acoustic treatment of shed louvres to further reduce noise during underground tunnel and station fit-out works;
- Acoustic blankets closing off the shed louvres when delivering stabilised sand;
- Full enclosure of the station box with a concrete roof;

- Partial/total enclosures for pumps and other plant/equipment;
- Acoustic attenuators for ventilation fans required to support underground ventilation.

The above recommendations are all existing measures which have previously been implemented for past construction works. All hoardings and acoustic sheds developed for the TSE works will remain on site and will not be altered from the existing configuration until the end of the project.

5.3 Predicted noise levels

Predicted L_{Aeq} noise levels from the worksite are assessed against the NMLs and summarised in the following sections, with colour coding to denote the highest level of exceedance of the NML. Detailed results for each receiver are given in APPENDIX D.

The noise predictions presented in this CNVIS represent a realistic worst-case scenario when construction occurs at work locations close to residences and other sensitive receivers. At each receiver, noise levels will vary during the construction period based on the position of equipment within the worksite, the distance to the receiver, the construction activities being undertaken and the noise levels of particular plant items and equipment. Actual noise levels will often be less than the predicted levels presented in this CNVIS.

The construction activities included in this CNVIS are summarised in Table 5-1. Each construction activity has been grouped into the following two sub-categories:

- Typical activities (T), which will exclude high impact sources (e.g. rock hammer, concrete saw, jackhammers);
- High impact activities (H), which will include high impact sources (e.g. rock hammer, concrete saw, jackhammers).

Table 5-1: Summary of construction activities

Work Activity (APPENDIX C)	Work area	Typical activities (T)	High impact activities (H)	Scenario reference code (APPENDIX C)
Zone 1	See APPENDIX B	✓	✓	Zone1-T, Zone1-H
Zone 2	See APPENDIX B	✓	✓	Zone2-T, Zone2-H
Zone 3	See APPENDIX B	✓	✓	Zone3-T, Zone3-H
Zone 3.1	See APPENDIX B	✓	✓	Zone3.1-T, Zone3.1-H
Zone 4	See APPENDIX B	✓	✓	Zone4-T, Zone4-H
Zone 4.1	See APPENDIX B	✓	✓	Zone4.1-T, Zone4.1-H
Zone 5	See APPENDIX B	✓	✓	Zone5-T, Zone5-H
Zone 6	See APPENDIX B	✓	✓	Zone6-T, Zone6-H
Zone 8	See APPENDIX B	✓		Zone8-T
Zone 9	See APPENDIX B	✓	✓	Zone9-T, Zone9-H

Work Activity (APPENDIX C)	Work area	Typical activities (T)	High impact activities (H)	Scenario reference code (APPENDIX C)
Zone A	See APPENDIX B	✓	✓	ZoneA-T, ZoneA-H
Zone B	See APPENDIX B	✓	✓	ZoneB-T, ZoneB-H
Zone C	See APPENDIX B	✓	✓	ZoneC-T, ZoneC-H
All zones	See APPENDIX B	✓	✓	AllZones-T, AllZones-H
Northern shaft backfill	See APPENDIX B	✓		NSB

5.3.1 ICNG NMLs

5.3.1.1 ICNG Standard construction hours

Table 5-2 presents the predicted worst case construction noise levels for each of the construction work zones identified in Table 5-1 at the most noise affected receivers. The results are presented in terms of level above the ICNG standard daytime NMLs.

For **Standard Hours** construction noise impacts are presented as follows:

- ◆ Complies with NML
- < 10dB(A) above NML - construction noise clearly audible
- ◆ > 10dB(A) above NML - construction noise moderately intrusive
- > 75dB(A) - highly noise affected (for residential receivers)

Table 5-2: Summary of construction noise impacts – standard construction hours

NCA	Standard construction hours D(S)													
	Construction scenario (see APPENDIX C)													
	Zone1-T	Zone1-H	Zone2-T	Zone2-H	Zone3-T	Zone3-H	Zone3.1-T	Zone3.1-H	Zone4-T	Zone4-H	Zone4.1-T	Zone4.1-H	Zone5-T	Zone5-H
BN_01	●	○	●	●	●	●	●	○	●	○	●	○	●	●
BN_02	●	◆	●	◆	●	◆	●	○	●	◆	●	○	○	□
BN_03	○	□	○	□	○	□	○	□	○	□	○	□	○	□
BN_04	●	●	●	●	●	●	●	●	●	●	●	●	●	●
BN_05	●	●	●	●	●	●	●	●	●	●	●	●	●	●
BN_06	●	●	●	●	●	●	●	●	●	●	●	●	●	●
OSR	●	◆	●	◆	○	◆	●	◆	●	◆	●	◆	○	◆
	Zone6-T	Zone6-H	Zone8-T	Zone9-T	Zone9-H	ZoneA-T	ZoneA-H	ZoneB-T	ZoneB-H	ZoneC-T	ZoneC-H	AllZones-T	AllZones-H	NSB
BN_01	●	●	●	●	○	●	●	●	○	●	●	●	○	●
BN_02	○	□	●	●	○	●	◆	●	○	○	□	○	□	●
BN_03	○	□	●	○	□	○	□	○	□	●	◆	○	□	●
BN_04	●	●	●	●	●	●	●	●	●	●	●	●	●	-
BN_05	●	●	●	●	●	●	●	●	●	-	●	●	●	-
BN_06	●	●	●	●	●	●	●	●	●	-	●	●	●	-
OSR	○	◆	●	○	◆	○	◆	●	◆	○	◆	○	◆	●

Notes: Day D(S): 7am to 6pm Monday to Friday and 8am to 1pm on Saturdays

During the standard construction hours, residential receivers within the proximity of the construction zones in NCAs BN_03 and BN_02 are predicted to be highly noise affected when high impact activities are occurring. During typical activities, residential receivers within the proximity of the construction zones in NCA BN_01, BN_02 and BN_03 are predicted to be less than 10dB(A) above the corresponding NMLs. Other residential receivers in NCA BN_04, BN05, and BN06 are predicted to comply with the corresponding NMLs during typical activities.

Noise levels for nearby other sensitive receivers are predicted to be greater than 10dB(A) above the corresponding NMLs, during high impact activities. During typical activities, nearby other sensitive receivers are predicted to be complying or less than 10dB(A) above the corresponding NMLs.

5.3.1.2 ICNG OOHW

Table 5-3 and Table 5-4 presents the predicted worst-case construction noise levels for each of the construction work zones identified in Table 5-1 at the most noise affected receivers in each NCA. The results are presented in terms of level above the ICNG NMLs for the OOHW period.

- Below NML
- < 5dB(A) above NML - construction noise noticeable
- ◆ 5 to 15dB(A) above NML - construction noise clearly audible
- > 15 to 25dB(A) above NML - construction noise moderately intrusive
- >25dB(A) above NML - construction noise highly intrusive

During the OOHW daytime, noise levels are predicted to be greater than 25dB(A) above the ICNG NMLs at the most affected residences in NCA BN_03 for high impact activities. During typical activities, exceedances up to 15 dB(A) above the ICNG NMLs have been predicted at the most affected residences in NCA BN_02 and BN_03.

During the OOHW evening period, noise levels are predicted to be greater than 25dB(A) above the ICNG NMLs at the most affected residences in NCA BN_03 for high impact activities. Residences in NCA BN_02 adjacent to work zone 6 and work zone C are predicted to experience noise levels that are greater than 25dB(A) during high impact activities.

During the OOHW night-time period, noise levels are predicted to be greater than 25dB(A) above the ICNG NMLs at the most affected residences in NCA BN_02 and BN_03 for high impact activities.

Few non-residential sensitive receivers (i.e. OSR) have been predicted to be greater than 25dB(A) above the ICNG NMLs during Zone 6 high impact activities. During typical activities, exceedances up to 15 dB(A) above the ICNG NMLs have been predicted at the most affected other sensitive receivers. However, these receivers are not expected to be in operation outside standard construction hours.

During northern shaft backfill works, predicted levels are expected to be slightly above the relevant night-time NMLs.

Mitigation and management measures are discussed in Section 5.4 of this report.

5.3.2 CSSI-7400 Conditions E37/E38

Table 5-5 presents the predicted worst-case construction noise levels for each of the construction stages identified in Table 5-1 at the most affected residential receiver in each NCA and other sensitive receivers (OSR). The results are compared with the internal NMLs in CSSI-7400 Conditions E37 and E38. Where the measured or predicted noise levels are above the equivalent external NML, consultation will be undertaken with affected receivers to determine appropriate hours of respite in accordance with CSSI-7400 Conditions E37 and E38. The impacts presented are as follows:

- ◆ Noise levels predicted to be below internal NMLs in CSSI-7400 Conditions E37 and E38
- Noise levels predicted to be above internal NMLs in CSSI-7400 Conditions E37 and E38

Table 5-5: Summary of construction noise impacts for the Day and E1 period – CSSI-7400 Conditions E37/ E38

NCA	Standard construction hours D(S) and Evening E1 period (7am to 8pm)													
	Construction scenario (see APPENDIX C)													
	Zone1-T	Zone1-H	Zone2-T	Zone2-H	Zone3-T	Zone3-H	Zone3.1-T	Zone3.1-H	Zone4-T	Zone4-H	Zone4.1-T	Zone4.1-H	Zone5-T	Zone5-H
BN_01	●	●	●	●	●	●	●	●	●	●	●	●	●	●
BN_02	●	□	●	□	●	□	●	●	●	□	●	●	●	□
BN_03	●	□	●	□	●	□	●	□	●	□	●	□	●	□
BN_04	●	●	●	●	●	●	●	●	●	●	●	●	●	●
BN_05	●	●	●	●	●	●	●	●	●	●	●	●	●	●
BN_06	●	●	●	●	●	●	●	●	●	●	●	●	●	●
OSR	●	●	●	●	●	●	●	□	●	●	●	□	●	□
	Zone6-T	Zone6-H	Zone8-T	Zone9-T	Zone9-H	ZoneA-T	ZoneA-H	ZoneB-T	ZoneB-H	ZoneC-T	ZoneC-H	AllZones-T	AllZones-H	NSB
BN_01	●	●	●	●	●	●	●	●	●	●	●	●	●	●
BN_02	●	□	●	●	●	●	□	●	●	●	□	●	□	●
BN_03	●	□	●	●	□	●	□	●	□	●	□	●	□	●
BN_04	●	●	●	●	●	●	●	●	●	●	●	●	●	●
BN_05	●	●	●	●	●	●	●	●	●	●	●	●	●	●
BN_06	●	●	●	●	●	●	●	●	●	●	●	●	●	●
OSR	●	□	●	●	●	●	●	●	●	●	□	●	□	●

Notes: D(S): 7am to 6pm Monday to Friday and 8am to 6pm Saturday, Sunday and Public Holidays
 E1: Evening period from 6pm to 8pm

Based on the results presented in Table 5-5, noise levels are predicted to comply with CSSI-7400 E37 and E38 during typical activities for nearby residential and other sensitive receivers. Noise levels are predicted to be exceed Conditions E37 and E38 during high impact activities for most affected residential receivers in NCA BN_02 and BN03.

The affected receivers requiring consultation are listed in APPENDIX D.2.

5.3.3 CSSI-7400 Conditions E41/E42

Table 5-6 summarises the predicted noise impacts for each construction stage in each NCA compared with the internal NMLs in CSSI-7400 Conditions E41 and E42. Where predicted levels are above the E41/42 NMLs at residential receivers, additional mitigation measures will be implemented in accordance with the documented procedure in Addendum A of the SMCNVS.

The impacts presented are as follow:

- ◆ Noise levels predicted to be below internal NMLs in CSSI-7400 Conditions E41 and E42
- Noise levels predicted to be above internal NMLs in CSSI-7400 Conditions E41 and E42

APPENDIX B **Nearest sensitive receivers and noise management levels**

Figure B1 –Construction work areas, NCAs and land use



LEGEND

Noise sensitive receivers

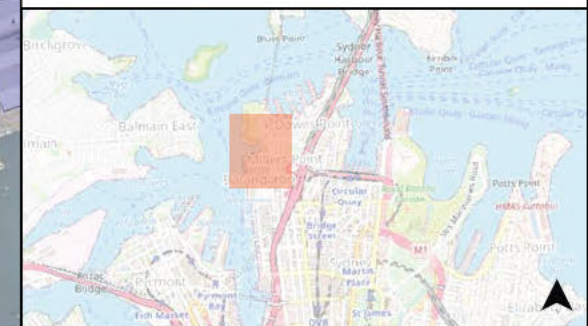
- Residential
- Mixed use
- Commercial
- Industrial
- Hotel/Motel/Hostel
- Medical facility
- Place of Worship
- Community centre
- Recording studio
- Library/Museum
- Childcare
- Educational
- Theatre/Auditorium
- Cinema
- Laboratory
- Flight simulator
- Horse Stable
- Recreational - Passive
- Recreational - Active
- Other
- Heritage

NCA

Heritage Wall

Additional Work Zones

Project Work Zones



REV	BY	DATE	DESCRIPTION	APPROVER
..
..
..
..
..
r0	MS	20/07/21	Prepare figures	MT

Co-ordinate System: MGA Zone 56

0 40 80 120 m

1:2000

FULL SIZE A3

NOTE: Do not scale from this drawing.

CLIENT

ACOUSTIC CONSULTANT

inspired to achieve

Ph (02) 8218 0500 Fax (02) 8218 0501

Sydney Metro Barangaroo Station
 Civil Works

Land Use, NCAs
 All Project Work Zones

Sheet 1 of 1

Table B1: Noise Sensitive Receivers and Construction Noise Management Levels

NCA	Receiver Type	Reference RBL	Existing Noise Levels, dB(A)			Residential NMLs based on ICNG (to guide notifications and feasible and reasonable mitigation measures)							Residential External Noise Management Levels (NMLs LAeq(15 min))				Comments		
			RBL Day	RBL Evening	RBL Night	LAeq_D	LAeq_E	LAeq_N	D(S)	D(O)	E1 / E2	NS	N	MS	D(S)/D(O)/E1 (7am to 8pm) ¹	E2/N (8pm to 7am) ¹		Sleep Disturbance	
																		Screening ²	Max ²
BN_01	Residential tower under construction	EIA B.12	50	45	40	61	64	51	60	55	50	47.5	45	50	70-80	55-65	55	65	
BN_02	Residential buildings north of Argyle St and Bettington St	EIA B.12	50	45	40	61	64	51	60	55	50	47.5	45	50	70-80	55-65	55	65	
BN_03	Residential buildings east of High St and south of Kent St	EIA B.12	50	45	40	61	64	51	60	55	50	47.5	45	50	70-80	55-65	55	65	
BN_04	Mixed residential and commercial west of Harbour Bridge	EIS B.13	62	62	52	66	65	63	72	67	67	62	57	62	70-80	55-65	67	65	
BN_05	Mixed residential and commercial at Jones Bay and Pymont Bay	EIS B.28	51	46	41	56	52	47	61	56	51	48.5	46	51	70-80	55-65	56	65	
BN_06	Residential buildings in Balmain East	EIS B.29	49	49	41	55	55	49	59	54	54	50	46	50	70-80	55-65	56	65	
Other sensitive receivers																			
	Studio building (music recording studio)								45	45	45	45	45	45					Source: AS2107 'maximum', assuming a conservative façade loss of 20 dB(A)
	Studio building (film or television studio)								50	50	50	50	50	50					Source: AS2107 'maximum', assuming a conservative façade loss of 20 dB(A)
	Cinema space, theatre, auditorium								55	55	55	55	55	55					Source: AS2107 'maximum', assuming a conservative façade loss of 20 dB(A)
	Hotel (Sleeping areas: Hotels near major roads)								60	60	60	60	60	60					Source: AS2107 'maximum', assuming a conservative façade loss of 20 dB(A)
	Classrooms at schools and other educational institutions								55	55	55	55	55	55					Source: ICNG, assuming a conservative façade loss of 10 dB(A)
	Childcare centre (internal play and sleeping areas)								50	50	50	50	50	50					Source: AAAC - guideline for Child Care Centre Acoustic Assessment, assuming a conservative façade loss of 10 dB(A)
	Hospital wards and operating theatres								65	65	65	65	65	65					Source: ICNG, assuming a conservative façade loss of 20 dB(A)
	Places of worship								55	55	55	55	55	55					Source: ICNG, assuming a conservative façade loss of 10 dB(A)
	Library (reading areas)								65	65	65	65	65	65					Source: AS2107 'maximum', assuming a conservative façade loss of 20 dB(A)
	Hotel (bars and lounges)								70	70	70	70	70	70					Source: AS2107 'maximum', assuming a conservative façade loss of 20 dB(A)
	Community centres – Municipal Buildings								60	60	60	60	60	60					Source: AS2107 'maximum', assuming a conservative façade loss of 10 dB(A)
	Restaurant, bar (Bars and lounges/ Restaurant)								70	70	70	70	70	70					Source: AS2107 'maximum', assuming a conservative façade loss of 20 dB(A)
	Café/ Restaurant/ Bar (outdoors)								60	60	60	60	60	60					Source: AS2107 'maximum1'
	Passive recreation areas (e.g. area used for reading, meditation)								60	60	60	60	60	60					Source: ICNG
	Active recreation areas (e.g. sports fields)								65	65	65	65	65	65					Source: ICNG
	Commercial premises (including offices and retail outlets)								70	70	70	70	70	70					Source: ICNG
	Industrial premises								75	75	75	75	75	75					Source: ICNG
Notes:																			
1 - Range in the external equivalent NMLs depends on the specific building façade loss and is based on PPA Conditions E37 and E41/E42																			
2 - Levels are estimated assuming an open windows (i.e. 10dBa façade loss)																			
D(S): standard construction hours from 7 am to 6 pm Monday to Friday, from 8 am to 6 pm Saturday, Sunday and Public holidays																			
D(O): out-of-hours day period from 1 pm to 6 pm Saturday, from 8 am to 6 pm Sunday and Public holidays - OOHW P1																			
E1: early evening period from 6 pm to 8 pm Monday to Sunday - OOHW P1																			
E2: late evening period from 8 pm to 10 pm Monday to Sunday - OOHW P1																			
NS: night shoulder period from 10pm to 12am Monday to Sunday - OOHW P1																			
N: night-time period from 12am pm to 5 am Monday to Friday, from 12am to 6 am Saturday, Sunday and Public holidays - OOHW P2																			
MS: morning shoulder period from 5 am to 7 am Monday to Friday, from 6 am to 8 am Saturday, Sunday and Public holidays - OOHW P1																			

APPENDIX D Detailed predicted noise levels

D.1 Predicted noise levels

The detailed predicted levels have been provided to BESIX Watpac in a spreadsheet table in order to more adequately mitigate and manage potential noise impacts.

Table D.1: Predicted construction noise levels

Barangaroo Civil Works

Receiver		Predicted noise levels, dB(A)	
		Day (Standard)	
NCA	Address	NML	Zone8-T
BN_01	23 BARANGAROO AVENUE BARANGAROO	60	46
BN_01	400 Barangaroo Avenue, Barangaroo	60	37
BN_01	33 BARANGAROO AVENUE BARANGAROO	60	40
BN_02	24 MUNN STREET BARANGAROO	60	51
BN_02	40-48 MERRIMAN STREET MILLERS POINT	60	50
BN_02	38 MERRIMAN STREET MILLERS POINT	60	47
BN_02	36 MERRIMAN STREET MILLERS POINT	60	47
BN_02	32 MERRIMAN STREET MILLERS POINT	60	46
BN_02	30 MERRIMAN STREET MILLERS POINT	60	46
BN_02	28 MERRIMAN STREET MILLERS POINT	60	46
BN_02	26 MERRIMAN STREET MILLERS POINT	60	46
BN_02	24 MERRIMAN STREET MILLERS POINT	60	46
BN_02	22 MERRIMAN STREET MILLERS POINT	60	45
BN_02	20 MERRIMAN STREET MILLERS POINT	60	44
BN_02	18 MERRIMAN STREET MILLERS POINT	60	41
BN_02	14-16 MERRIMAN STREET MILLERS POINT	60	40
BN_02	7 DALGETY ROAD MILLERS POINT	60	-
BN_02	11-13A DALGETY ROAD MILLERS POINT	60	34
BN_02	15-15A DALGETY ROAD MILLERS POINT	60	-
BN_02	2-18 DALGETY ROAD BARANGAROO	60	-
BN_02	1-5 Towns Place, Millers Point NSW 2000	60	42
BN_02	22 ARGYLE PLACE MILLERS POINT	60	35
BN_02	13 WINDMILL STREET MILLERS POINT	60	-
BN_02	13 WINDMILL STREET MILLERS POINT	60	-
BN_02	24 ARGYLE PLACE MILLERS POINT	60	-
BN_02	26 ARGYLE PLACE MILLERS POINT	60	35
BN_02	68 BETTINGTON STREET MILLERS POINT	60	36
BN_02	66 BETTINGTON STREET MILLERS POINT	60	41
BN_02	35-35A DALGETY ROAD MILLERS POINT	60	40
BN_02	33-33A DALGETY ROAD MILLERS POINT	60	-
BN_02	31-31A DALGETY ROAD MILLERS POINT	60	-
BN_02	29-29A DALGETY ROAD MILLERS POINT	60	-
BN_02	27-27A DALGETY ROAD MILLERS POINT	60	-
BN_02	25-25A DALGETY ROAD MILLERS POINT	60	-
BN_02	23-23A DALGETY ROAD MILLERS POINT	60	-
BN_02	21-21A DALGETY ROAD MILLERS POINT	60	-
BN_02	19-19A DALGETY ROAD MILLERS POINT	60	-
BN_02	17-17A DALGETY ROAD MILLERS POINT	60	-
BN_02	9 DALGETY ROAD MILLERS POINT	60	-
BN_02	34 MERRIMAN STREET MILLERS POINT	60	47
BN_02	18-20 BETTINGTON STREET MILLERS POINT	60	49
BN_02	15 WINDMILL STREET MILLERS POINT	60	-
BN_02	17 WINDMILL STREET MILLERS POINT	60	-
BN_02	19 WINDMILL STREET MILLERS POINT	60	-
BN_02	21 WINDMILL STREET MILLERS POINT	60	-

BN_02	23 WINDMILL STREET MILLERS POINT	60	-
BN_02	25 WINDMILL STREET MILLERS POINT	60	-
BN_02	27 WINDMILL STREET MILLERS POINT	60	-
BN_02	29 WINDMILL STREET MILLERS POINT	60	-
BN_02	31 WINDMILL STREET MILLERS POINT	60	-
BN_02	33 WINDMILL STREET MILLERS POINT	60	-
BN_02	35 WINDMILL STREET MILLERS POINT	60	-
BN_02	37 WINDMILL STREET MILLERS POINT	60	-
BN_02	39 WINDMILL STREET MILLERS POINT	60	-
BN_02	41 WINDMILL STREET MILLERS POINT	60	-
BN_02	43 WINDMILL STREET MILLERS POINT	60	-
BN_02	45 WINDMILL STREET MILLERS POINT	60	-
BN_02	47 WINDMILL STREET MILLERS POINT	60	-
BN_02	49 WINDMILL STREET MILLERS POINT	60	-
BN_02	51 WINDMILL STREET MILLERS POINT	60	-
BN_02	53 WINDMILL STREET MILLERS POINT	60	-
BN_02	55 WINDMILL STREET MILLERS POINT	60	-
BN_02	57 WINDMILL STREET MILLERS POINT	60	-
BN_02	59 WINDMILL STREET MILLERS POINT	60	-
BN_02	61 WINDMILL STREET MILLERS POINT	60	-
BN_02	63 WINDMILL STREET MILLERS POINT	60	-
BN_02	65 WINDMILL STREET MILLERS POINT	60	-
BN_02	67 WINDMILL STREET MILLERS POINT	60	-
BN_02	19 HICKSON ROAD DAWES POINT	60	-
BN_02	21-21A HICKSON ROAD MILLERS POINT	60	-
BN_02	6 TOWNS PLACE MILLERS POINT	60	-
BN_02	20 HICKSON ROAD MILLERS POINT	60	34
BN_02	1 POTTINGER STREET MILLERS POINT	60	34
BN_02	1B POTTINGER STREET MILLERS POINT	60	37
BN_02	81-83 LOWER FORT STREET MILLERS POINT	60	-
BN_02	64 Argyle Pl, Millers Point NSW 2000, A	60	-
BN_02	28 ARGYLE PLACE MILLERS POINT	60	34
BN_02	30 ARGYLE PLACE MILLERS POINT	60	35
BN_02	32 ARGYLE PLACE MILLERS POINT	60	35
BN_02	34 ARGYLE PLACE MILLERS POINT	60	34
BN_02	36 ARGYLE PLACE MILLERS POINT	60	-
BN_02	38 ARGYLE PLACE MILLERS POINT	60	-
BN_02	40 ARGYLE PLACE MILLERS POINT	60	-
BN_02	42 ARGYLE PLACE MILLERS POINT	60	-
BN_02	44 ARGYLE PLACE MILLERS POINT	60	-
BN_02	50 ARGYLE PLACE MILLERS POINT	60	-
BN_02	60 ARGYLE PLACE MILLERS POINT	60	34
BN_02	62 ARGYLE PLACE MILLERS POINT	60	-
BN_02	64 ARGYLE PLACE MILLERS POINT	60	-
BN_02	67 WINDMILL STREET MILLERS POINT	60	-
BN_02	48 ARGYLE PLACE MILLERS POINT	60	35
BN_02	46 ARGYLE PLACE MILLERS POINT	60	34
BN_02	52 ARGYLE PLACE MILLERS POINT	60	-
BN_02	54 ARGYLE PLACE MILLERS POINT	60	-
BN_02	56 ARGYLE PLACE MILLERS POINT	60	34

BN_02	58 ARGYLE PLACE MILLERS POINT	60	-
BN_02	80-82 Windmill St, Millers Point NSW 20	60	35
BN_02	81-83 LOWER FORT STREET MILLERS POINT	60	-
BN_02	8 Argyle Place, Millers Point	60	47
BN_03	38 HICKSON ROAD MILLERS POINT	60	49
BN_03	127-153 KENT STREET MILLERS POINT	60	51
BN_03	187 KENT STREET MILLERS POINT	60	48
BN_03	161 KENT STREET MILLERS POINT	60	48
BN_03	155-157 KENT STREET MILLERS POINT	60	49
BN_03	7-7A HIGH STREET MILLERS POINT	60	50
BN_03	115 KENT STREET MILLERS POINT	60	49
BN_03	117 KENT STREET MILLERS POINT	60	46
BN_03	119 KENT STREET MILLERS POINT	60	40
BN_03	121 KENT STREET MILLERS POINT	60	41
BN_03	123 KENT STREET MILLERS POINT	60	40
BN_03	80-80A HIGH STREET MILLERS POINT	60	50
BN_03	2-2A HIGH STREET MILLERS POINT	60	49
BN_03	2 HIGH STREET MILLERS POINT	60	49
BN_03	10-12 KENT STREET MILLERS POINT	60	42
BN_03	18 KENT STREET MILLERS POINT	60	39
BN_03	20 KENT STREET MILLERS POINT	60	44
BN_03	22 KENT STREET MILLERS POINT	60	43
BN_03	24-26 KENT STREET MILLERS POINT	60	41
BN_03	28 KENT STREET MILLERS POINT	60	42
BN_03	30A-30B KENT STREET MILLERS POINT	60	40
BN_03	32 KENT STREET MILLERS POINT	60	42
BN_03	34 KENT STREET MILLERS POINT	60	39
BN_03	36 KENT STREET MILLERS POINT	60	41
BN_03	38 KENT STREET MILLERS POINT	60	46
BN_03	40 KENT STREET MILLERS POINT	60	46
BN_03	42 KENT STREET MILLERS POINT	60	44
BN_03	44 KENT STREET MILLERS POINT	60	42
BN_03	46 KENT STREET MILLERS POINT	60	38
BN_03	48 KENT STREET MILLERS POINT	60	34
BN_03	50 KENT STREET MILLERS POINT	60	37
BN_03	52 KENT STREET MILLERS POINT	60	39
BN_03	54 KENT STREET MILLERS POINT	60	42
BN_03	54A-54B KENT STREET MILLERS POINT	60	41
BN_03	56 KENT STREET MILLERS POINT	60	40
BN_03	58 KENT STREET MILLERS POINT	60	41
BN_03	60 KENT STREET MILLERS POINT	60	37
BN_03	62 KENT STREET MILLERS POINT	60	39
BN_03	80 KENT STREET MILLERS POINT	60	37
BN_03	82 KENT STREET MILLERS POINT	60	35
BN_03	84 KENT STREET MILLERS POINT	60	34
BN_03	86 KENT STREET MILLERS POINT	60	34
BN_03	88 KENT STREET MILLERS POINT	60	36
BN_03	90 KENT STREET MILLERS POINT	60	34
BN_03	92 KENT STREET MILLERS POINT	60	36
BN_03	94 KENT STREET MILLERS POINT	60	36

BN_03	85-87 KENT STREET MILLERS POINT	60	51
BN_03	81 KENT STREET MILLERS POINT	60	51
BN_03	79 KENT STREET MILLERS POINT	60	51
BN_03	77 KENT STREET MILLERS POINT	60	51
BN_03	75 KENT STREET MILLERS POINT	60	50
BN_03	73 KENT STREET MILLERS POINT	60	50
BN_03	71 KENT STREET MILLERS POINT	60	49
BN_03	59 KENT STREET MILLERS POINT	60	50
BN_03	61 KENT STREET MILLERS POINT	60	50
BN_03	63 KENT STREET MILLERS POINT	60	49
BN_03	37 KENT STREET MILLERS POINT	60	46
BN_03	39 KENT STREET MILLERS POINT	60	47
BN_03	41 KENT STREET MILLERS POINT	60	48
BN_03	43 KENT STREET MILLERS POINT	60	48
BN_03	45 KENT STREET MILLERS POINT	60	49
BN_03	47 KENT STREET MILLERS POINT	60	50
BN_03	49 KENT STREET MILLERS POINT	60	49
BN_03	51 KENT STREET MILLERS POINT	60	50
BN_03	53 KENT STREET MILLERS POINT	60	50
BN_03	55 KENT STREET MILLERS POINT	60	50
BN_03	38-38A HIGH STREET MILLERS POINT	60	49
BN_03	40-40A HIGH STREET MILLERS POINT	60	50
BN_03	42-42A HIGH STREET MILLERS POINT	60	48
BN_03	44-44A HIGH STREET MILLERS POINT	60	50
BN_03	46-46A HIGH STREET MILLERS POINT	60	51
BN_03	48-48A HIGH STREET MILLERS POINT	60	49
BN_03	50-50A HIGH STREET MILLERS POINT	60	50
BN_03	52-52A HIGH STREET MILLERS POINT	60	49
BN_03	54-54A HIGH STREET MILLERS POINT	60	50
BN_03	56-56A HIGH STREET MILLERS POINT	60	52
BN_03	58-58A HIGH STREET MILLERS POINT	60	50
BN_03	60-60A HIGH STREET MILLERS POINT	60	52
BN_03	62-62A HIGH STREET MILLERS POINT	60	50
BN_03	64-64A HIGH STREET MILLERS POINT	60	50
BN_03	66-66A HIGH STREET MILLERS POINT	60	51
BN_03	68-68A HIGH STREET MILLERS POINT	60	50
BN_03	70-70A HIGH STREET MILLERS POINT	60	51
BN_03	72-72A HIGH STREET MILLERS POINT	60	51
BN_03	78-78A HIGH STREET MILLERS POINT	60	49
BN_03	76-76A HIGH STREET MILLERS POINT	60	50
BN_03	74-74A HIGH STREET MILLERS POINT	60	48
BN_03	4-4A HIGH STREET MILLERS POINT	60	49
BN_03	6-6A HIGH STREET MILLERS POINT	60	49
BN_03	8-8A HIGH STREET MILLERS POINT	60	52
BN_03	10-10A HIGH STREET MILLERS POINT	60	51
BN_03	12-12A HIGH STREET MILLERS POINT	60	52
BN_03	14-14A HIGH STREET MILLERS POINT	60	51
BN_03	16-16A HIGH STREET MILLERS POINT	60	51
BN_03	18-18A HIGH STREET MILLERS POINT	60	52
BN_03	20-20A HIGH STREET MILLERS POINT	60	51

BN_03	22-22A HIGH STREET MILLERS POINT	60	50
BN_03	24-24A HIGH STREET MILLERS POINT	60	52
BN_03	26-26A HIGH STREET MILLERS POINT	60	52
BN_03	28-28A HIGH STREET MILLERS POINT	60	50
BN_03	30-30A HIGH STREET MILLERS POINT	60	49
BN_03	32-32A HIGH STREET MILLERS POINT	60	48
BN_03	34-34A HIGH STREET MILLERS POINT	60	48
BN_03	36-36A HIGH STREET MILLERS POINT	60	49
BN_03	83 KENT STREET MILLERS POINT	60	50
BN_03	3-3A HIGH STREET MILLERS POINT	60	50
BN_03	5-5A HIGH STREET MILLERS POINT	60	50
BN_03	9-9A HIGH STREET MILLERS POINT	60	50
BN_03	64 KENT STREET MILLERS POINT	60	37
BN_03	68 KENT STREET MILLERS POINT	60	42
BN_03	72 KENT STREET MILLERS POINT	60	41
BN_03	76 KENT STREET MILLERS POINT	60	44
BN_04	114A KENT STREET MILLERS POINT	72	43
BN_04	9 AGAR STEPS MILLERS POINT	72	44
BN_05	48B PIRRAMA ROAD PYRMONT	61	38
BN_05	3 DARLING ISLAND ROAD PYRMONT	61	38
BN_05	3A DARLING ISLAND ROAD PYRMONT	61	38
BN_05	8-14 WHARF CRESCENT PYRMONT	61	36
BN_06	25 EDWARD STREET BALMAIN EAST	59	40
BN_06	25 EDWARD STREET BALMAIN EAST	59	40
BN_06	23 EDWARD STREET BALMAIN EAST	59	40
BN_06	21 EDWARD STREET BALMAIN EAST	59	38
BN_06	3 LITTLE EDWARD STREET BALMAIN EAST	59	39
BN_06	19 EDWARD STREET BALMAIN EAST	59	40
BN_06	17 EDWARD STREET BALMAIN EAST	59	40
BN_06	15 EDWARD STREET BALMAIN EAST	59	40
BN_06	11A EDWARD STREET BALMAIN EAST	59	40
BN_06	11 EDWARD STREET BALMAIN EAST	59	39
BN_06	9 EDWARD STREET BALMAIN EAST	59	40
BN_06	7 EDWARD STREET BALMAIN EAST	59	40
BN_06	2 LITTLE EDWARD STREET BALMAIN EAST	59	38
BN_06	4 LITTLE EDWARD STREET BALMAIN EAST	59	39
BN_06	6 LITTLE EDWARD STREET BALMAIN EAST	59	38
BN_06	8 LITTLE EDWARD STREET BALMAIN EAST	59	38
BN_06	10 LITTLE EDWARD STREET BALMAIN EAST	59	38
BN_06	12 LITTLE EDWARD STREET BALMAIN EAST	59	38
BN_06	4 WILLIAM STREET BALMAIN EAST	59	34
BN_06	6 WILLIAM STREET BALMAIN EAST	59	36
BN_06	5 LITTLE EDWARD STREET BALMAIN EAST	59	-
BN_06	5A LITTLE EDWARD STREET BALMAIN EAST	59	34
BN_06	7 LITTLE EDWARD STREET BALMAIN EAST	59	-
BN_06	8 WILLIAM STREET BALMAIN EAST	59	36
BN_06	8A WILLIAM STREET BALMAIN EAST	59	-
BN_06	10 WILLIAM STREET BALMAIN EAST	59	-
BN_06	10A WILLIAM STREET BALMAIN EAST	59	-
BN_06	12 WILLIAM STREET BALMAIN EAST	59	-

BN_06	14 WILLIAM STREET BALMAIN EAST	59	-
BN_06	16 WILLIAM STREET BALMAIN EAST	59	-
BN_06	18 WILLIAM STREET BALMAIN EAST	59	-
BN_06	20 WILLIAM STREET BALMAIN EAST	59	-
BN_06	22 WILLIAM STREET BALMAIN EAST	59	35
BN_06	18 JOHNSTON STREET BALMAIN EAST	59	35
BN_06	5 EDWARD STREET BALMAIN EAST	59	40
BN_06	1A WILLIAM STREET BALMAIN EAST	59	40
BN_06	1 WILLIAM STREET BALMAIN EAST	59	40
BN_06	1B WILLIAM STREET BALMAIN EAST	59	38
BN_06	3 WILLIAM STREET BALMAIN EAST	59	39
BN_06	15 WILLIAM STREET BALMAIN EAST	59	38
BN_06	17 WILLIAM STREET BALMAIN EAST	59	36
BN_06	19 WILLIAM STREET BALMAIN EAST	59	36
BN_06	21 WILLIAM STREET BALMAIN EAST	59	36
BN_06	23 WILLIAM STREET BALMAIN EAST	59	36
BN_06	25 WILLIAM STREET BALMAIN EAST	59	-
BN_06	27 WILLIAM STREET BALMAIN EAST	59	34
BN_06	29 WILLIAM STREET BALMAIN EAST	59	36
BN_06	31 WILLIAM STREET BALMAIN EAST	59	37
BN_06	33 WILLIAM STREET BALMAIN EAST	59	36
BN_06	35 WILLIAM STREET BALMAIN EAST	59	36
BN_06	18 ST MARYS STREET BALMAIN EAST	59	40
BN_06	16 ST MARYS STREET BALMAIN EAST	59	40
BN_06	14 ST MARYS STREET BALMAIN EAST	59	40
BN_06	12 ST MARYS STREET BALMAIN EAST	59	40
BN_06	10 ST MARYS STREET BALMAIN EAST	59	40
BN_06	6 ST MARYS STREET BALMAIN EAST	59	40
BN_06	4 ST MARYS STREET BALMAIN EAST	59	39
BN_06	7 WESTON STREET BALMAIN EAST	59	39
BN_06	5 WESTON STREET BALMAIN EAST	59	39
BN_06	2 PAUL STREET BALMAIN EAST	59	39
BN_06	4 PAUL STREET BALMAIN EAST	59	-
BN_06	6 PAUL STREET BALMAIN EAST	59	39
BN_06	8 PAUL STREET BALMAIN EAST	59	37
BN_06	10 PAUL STREET BALMAIN EAST	59	36
BN_06	12 PAUL STREET BALMAIN EAST	59	38
BN_06	14 PAUL STREET BALMAIN EAST	59	38
BN_06	2 PEARSON STREET BALMAIN EAST	59	42
BN_06	4 PEARSON STREET BALMAIN EAST	59	-
BN_06	8 PEARSON STREET BALMAIN EAST	59	-
BN_06	10 PEARSON STREET BALMAIN EAST	59	-
BN_06	16 PEARSON STREET BALMAIN EAST	59	39
BN_06	12 PEARSON STREET BALMAIN EAST	59	-
BN_06	14 PEARSON STREET BALMAIN EAST	59	34
BN_06	18 PEARSON STREET BALMAIN EAST	59	-
BN_06	20 PEARSON STREET BALMAIN EAST	59	-
BN_06	22 PEARSON STREET BALMAIN EAST	59	37
BN_06	24A PEARSON STREET BALMAIN EAST	59	37
BN_06	24 PEARSON STREET BALMAIN EAST	59	35

BN_06	26 PEARSON STREET BALMAIN EAST	59	38
BN_06	1 PEARSON STREET BALMAIN EAST	59	40
BN_06	3 PEARSON STREET BALMAIN EAST	59	38
BN_06	5 PEARSON STREET BALMAIN EAST	59	37
BN_06	7 PEARSON STREET BALMAIN EAST	59	38
BN_06	9 PEARSON STREET BALMAIN EAST	59	37
BN_06	11 PEARSON STREET BALMAIN EAST	59	37
BN_06	16 PAUL STREET BALMAIN EAST	59	38
BN_06	18 PAUL STREET BALMAIN EAST	59	36
BN_06	20 PAUL STREET BALMAIN EAST	59	37
BN_06	22-26 PAUL STREET BALMAIN EAST	59	40
BN_06	12 JOHNSTON STREET BALMAIN EAST	59	38
BN_06	2-8 WESTON STREET BALMAIN EAST	59	38
BN_06	10 DARLING STREET BALMAIN EAST	59	39
BN_06	1 PAUL STREET BALMAIN EAST	59	39
BN_06	3 PAUL STREET BALMAIN EAST	59	39
BN_06	5 PAUL STREET BALMAIN EAST	59	38
BN_06	7 PAUL STREET BALMAIN EAST	59	38
BN_06	9 PAUL STREET BALMAIN EAST	59	37
BN_06	11 PAUL STREET BALMAIN EAST	59	37
BN_06	13 PAUL STREET BALMAIN EAST	59	36
BN_06	3 WESTON STREET BALMAIN EAST	59	38
BN_06	1 WESTON STREET BALMAIN EAST	59	39
BN_06	12 DARLING STREET BALMAIN EAST	59	38
BN_06	14 DARLING STREET BALMAIN EAST	59	38
BN_06	16 DARLING STREET BALMAIN EAST	59	37
BN_06	18 DARLING STREET BALMAIN EAST	59	-
BN_06	22 DARLING STREET BALMAIN EAST	59	38
BN_06	24 DARLING STREET BALMAIN EAST	59	39
BN_06	26 DARLING STREET BALMAIN EAST	59	35
BN_06	28 DARLING STREET BALMAIN EAST	59	35
BN_06	30 DARLING STREET BALMAIN EAST	59	-
BN_06	32 DARLING STREET BALMAIN EAST	59	36
BN_06	34 DARLING STREET BALMAIN EAST	59	37
BN_06	34 DARLING STREET BALMAIN EAST	59	37
BN_06	40 DARLING STREET BALMAIN EAST	59	-
BN_06	40 DARLING STREET BALMAIN EAST	59	-
BN_06	42 DARLING STREET BALMAIN EAST	59	36
BN_06	44 DARLING STREET BALMAIN EAST	59	35
BN_06	46 DARLING STREET BALMAIN EAST	59	35
BN_06	48 DARLING STREET BALMAIN EAST	59	35
BN_06	50 DARLING STREET BALMAIN EAST	59	35
BN_06	52 DARLING STREET BALMAIN EAST	59	-
BN_06	54-56 DARLING STREET BALMAIN EAST	59	-
BN_06	4 JOHNSTON STREET BALMAIN EAST	59	35
BN_06	6 JOHNSTON STREET BALMAIN EAST	59	36
BN_06	8 JOHNSTON STREET BALMAIN EAST	59	36
BN_06	10 JOHNSTON STREET BALMAIN EAST	59	35
BN_06	23 PAUL STREET BALMAIN EAST	59	-
BN_06	21 PAUL STREET BALMAIN EAST	59	-

BN_06	19 PAUL STREET BALMAIN EAST	59	-
BN_06	17 PAUL STREET BALMAIN EAST	59	34
BN_06	15 PAUL STREET BALMAIN EAST	59	35
BN_06	38 DARLING STREET BALMAIN EAST	59	36
BN_06	36 DARLING STREET BALMAIN EAST	59	36
BN_06	21 DARLING STREET BALMAIN EAST	59	39
BN_06	23 DARLING STREET BALMAIN EAST	59	38
BN_06	25 DARLING STREET BALMAIN EAST	59	37
BN_06	27A DARLING STREET BALMAIN EAST	59	38
BN_06	29 DARLING STREET BALMAIN EAST	59	38
BN_06	31 DARLING STREET BALMAIN EAST	59	36
BN_06	33-33A DARLING STREET BALMAIN EAST	59	37
BN_06	35-37 DARLING STREET BALMAIN EAST	59	37
BN_06	1 JAMES LANE BALMAIN EAST	59	37
BN_06	3 JAMES LANE BALMAIN EAST	59	37
BN_06	5 JAMES LANE BALMAIN EAST	59	38
BN_06	11A LOOKES AVENUE BALMAIN EAST	59	36
BN_06	13 LOOKES AVENUE BALMAIN EAST	59	37
BN_06	15 LOOKES AVENUE BALMAIN EAST	59	37
BN_06	17 LOOKES AVENUE BALMAIN EAST	59	37
BN_06	8 LOOKES AVENUE BALMAIN EAST	59	38
BN_06	3 GALLIMORE AVENUE BALMAIN EAST	59	36
BN_06	3 GALLIMORE AVENUE BALMAIN EAST	59	35
BN_06	22 ST MARYS STREET BALMAIN EAST	59	41
OSR	Cutaway	65	47
OSR	36 HICKSON ROAD MILLERS POINT	70	48
OSR	125A KENT STREET MILLERS POINT	70	-
OSR	30-34 HICKSON ROAD MILLERS POINT	70	50
OSR	89-105 KENT STREET MILLERS POINT	60	51
OSR	27 KENT STREET MILLERS POINT	70	45
OSR	14-16 KENT STREET MILLERS POINT	55	47
OSR	14-16 KENT STREET MILLERS POINT	55	40
OSR	120 KENT STREET MILLERS POINT	70	44
OSR	124 KENT STREET MILLERS POINT	70	46
OSR	136-166 KENT STREET MILLERS POINT	70	-
OSR	65-69 KENT STREET MILLERS POINT	60	50
OSR	33-35 KENT STREET MILLERS POINT	70	48
OSR	37 HIGH STREET MILLERS POINT	55	46
OSR	35-37 BETTINGTON STREET MILLERS POINT	60	51
OSR	8 WINDMILL STREET MILLERS POINT	70	36
OSR	26 HICKSON ROAD MILLERS POINT	70	36
OSR	19 KENT STREET MILLERS POINT	60	45
OSR	6-12A ARGYLE PL, MILLERS POINTS	70	49
OSR	56A PIRRAMA ROAD PYRMONT	70	37
OSR	54 PIRRAMA ROAD PYRMONT	70	37
OSR	26 PIRRAMA ROAD PYRMONT	70	38
OSR	30-32 PIRRAMA ROAD PYRMONT	70	38
OSR	8 DARLING ISLAND ROAD PYRMONT	70	38
OSR	1 DARLING ISLAND ROAD PYRMONT	70	37
OSR	4 TOWNS PLACE BARANGAROO	70	36

OSR	23 HICKSON ROAD MILLERS POINT	70	36
OSR	22 HICKSON ROAD MILLERS POINT	50	-
OSR	24 HICKSON ROAD MILLERS POINT	70	-
OSR	100 BARANGAROO AVENUE BARANGAROO	70	46
OSR	200 BARANGAROO AVENUE BARANGAROO	70	39
OSR	51A-B HICKSON ROAD BARANGAROO	60	47
OSR	400 BARANGAROO AVENUE BARANGAROO	70	-
OSR	189-197 KENT STREET SYDNEY	60	45
OSR	60 hisckson road barangaroo	70	46
OSR	12 Argyle Place, Millers Point	70	49
OSR	6 Argyle Place, Millers Point	70	45
OSR	10 Argyle Place, Millers Point	70	49
OSR	1 KENT STRET / 14 ARGYLE PLACE MILLERS	70	48
OSR	1 Barangaroo Ave, Barangaroo NSW 2000	60	55

ASBESTOS IDENTIFICATION AND MANAGEMENT

INTRODUCTION

Asbestos is the name given to a group of fibrous silicate minerals that occur naturally in the environment. The three main types of asbestos are: chrysotile (often called white asbestos); crocidolite (often called blue asbestos) and amosite (often called brown asbestos).

Asbestos is a hazardous material that poses a risk to health if its fibres are inhaled.

Asbestos and Asbestos Containing Materials (**ACM**) were used extensively in Australian buildings, structures, plant, ships, trains and motor vehicles in the 1950s, 1960s and 1970s.

Because of its wide use over a long period, ACM are likely to be used in buildings or structures encountered during work on projects.

Work Health & Safety legislation (**the legislation**) generally prohibits a person conducting a business or undertaking (**PCBU**) from carrying out work involving asbestos or allowing a worker to carry out work involving ACM, unless strict requirements are satisfied.

ACM removal should only be undertaken by a qualified removalist.

Due to the inherent dangers associated with work involving ACM, it is critical ACM on all BESIX Watpac sites is identified and managed in a way that eliminates or otherwise minimises the risks of exposure to asbestos fibres.

PURPOSE AND SCOPE

The purpose of this procedure is to set out a method to manage the risks associated with ACM.

This procedure does not apply to ACM Removal, as this work is to be subcontracted and not performed by BESIX Watpac. However, due to the inherent dangers involved in ACM Removal it is critical that effective management of ACM risks are known and managed on all BESIX Watpac sites.

This procedure applies to all BESIX Watpac projects unless the Project Safety Management Plan for a project specifically excludes it.

DEFINITIONS

ACM (asbestos Containing materials):	Asbestos or any material or thing that, as part of its design, contains asbestos.
asbestos-contaminated dust or debris (ACD):	means dust or debris that has settled within a workplace and is, or is assumed to be, contaminated with asbestos.
asbestos register:	A register recording any asbestos or ACM (material) identified in a place or likely to be present in a place and particulars relevant to this material including the date on which the material was identified and the location, type and condition of the material.
asbestos removalist:	means a person conducting a business or undertaking who carries out asbestos removal work.
asbestos removal work:	means work involving the removal of asbestos containing material or asbestos contaminated material.

ASBESTOS IDENTIFICATION AND MANAGEMENT

asbestos removal licence:	<p>means a licence that has been issued to an organisation or business from the regulator that permits</p> <p>Class A Can remove any amount or quantity of asbestos or ACM, including:</p> <ul style="list-style-type: none"> any amount of friable asbestos or ACM; any amount of ACD; any amount of non-friable asbestos or ACM. <p>Class B Can remove:</p> <ul style="list-style-type: none"> any amount of non-friable asbestos or ACM; <i>Note: A Class B licence is required for removal of more than 10 m² (square metres) of non-friable asbestos or ACM but the licence holder can also remove up to 10 m² of non-friable asbestos or ACM.</i> ACD associated with the removal of non-friable asbestos or ACM. <i>Note: A Class B licence is required for removal of ACD associated with the removal of more than 10 m² of non-friable asbestos or ACM but the licence holder can also remove ACD associated with removal of up to 10m² of non-friable asbestos or ACM.</i>
asbestos removal supervisor:	means a person that has nominated by the asbestos removalist to supervise the asbestos removal process conducted by the asbestos removal workers.
asbestos removal worker:	means a worker who hold the appropriate certificate of competency for the class of asbestos removal work being carried out.
asbestos related work	means where there may be a significant risk of exposure to asbestos fibres, not associated with the removal process e.g. undertaking site investigating works, setting up exclusion zones, undertaking a destructive survey.
asbestos waste:	means asbestos or ACM removed and disposable items used during asbestos removal work including plastic sheeting and disposable tools.
Exposure:	The exposure of people to airborne asbestos fibres.
HSR:	Health and Safety Representatives
Occupational hygienist (OH)	means a person who has acquired through training or experience the knowledge and skills of relevant asbestos removal industry practice and holds a certification in relation to the specified VET course for asbestos assessor work or a tertiary qualification in occupational health and safety, occupational hygiene, science, building, construction or environmental health, who can identify asbestos in workplaces, sample asbestos containing material in accordance in a NATA laboratory, develop asbestos registers, develop asbestos management plans, conduct para occupational monitoring and conduct clearance inspections
Licensed asbestos assessor (LAA)	A LAA must be licensed by the Work Health and Safety State Regulator (subject to transitional arrangements in each State or Territory).
Person Conducting a Business or Undertaking (PCBU):	A person conducting a business or undertaking at BESIX Watpac alone or with others, whether or not for profit or gain. A PCBU may be a sole trader, a partnership, company, unincorporated association or

ASBESTOS IDENTIFICATION AND MANAGEMENT

	government department of public authority
Subcontractor:	A person is a subcontractor if they carry out work for a person conducting a business or undertaking. This includes work as a contractor or subcontractor, an employee of a contractor or subcontractor, an employee of a labour hire company, an outworker, an apprentice or trainee, a student gaining work experience, a volunteer or a person of a prescribed class
Work:	Work on a project including demolition and refurbishment not including construction work.
Worker:	A person is a worker if the person carries out work in any capacity for a person conducting a business or undertaking, including work as an employee; a contractor or subcontractor; an employee of a contractor or subcontractor; an employee of a labour hire company; an outworker, an apprentice or trainee; a student gaining work experience; a volunteer or a person of a prescribed class. <u>Note:</u> This definition includes engineers, architects, consultants, managers, sales persons, etc.
Workplace:	A place where work is carried out for a business or undertaking and includes any place where a worker goes, or is likely to go in the course of their work

PROCEDURE

The typical hazards associated with works addressed in this procedure include:

HAZARDS	RISK (Potential)
<ul style="list-style-type: none"> Release of asbestos fibres into the atmosphere Unexpected finds of asbestos 	High

Therefore, BESIX Watpac and subcontracted personnel are required to comply with the relevant provisions described in this procedure (and references).

The BESIX Watpac project management team must ensure where asbestos has been identified that no work is to occur in the relevant area until an Asbestos Register and management plan has been completed.

To demonstrate and assist in the implementation of this procedure the form S08-04-70.1 Asbestos removal checklist must be completed by the Site Manager / Foreman

TRAINING & INFORMATION

Reference is made to Procedure S04-02 Training.

Clauses 445 and 480 of the Work Health and Safety Regulation 2011 (WHS Regulation) require BESIX Watpac to ensure that training and certain information is provided to a worker carrying out work for the business or undertaking if the worker is carrying out asbestos-related work, on the identification and safe handling of, and suitable control measures for ACM and the provision of information relating to the health risks and health effects associated with exposure to asbestos and the need for health monitoring.

IDENTIFICATION OF ACM, THE ASBESTOS REGISTER AND THE ASBESTOS MANAGEMENT PLAN

- BESIX Watpac must ensure, as far as is reasonably practicable, that all ACM is identified at a workplace by an OH/LAA. To this end, BESIX Watpac needs to ensure that there is an accurate asbestos register which identifies ACM is kept at the workplace.
- The Project Manager needs to ensure that all ACM listed on the asbestos register is clearly indicated and labelled where reasonably practicable.

ASBESTOS IDENTIFICATION AND MANAGEMENT

3. The Project Manager must review any existing asbestos register and asbestos management plan and assess their adequacy to ascertain whether it is necessary to arrange an inspection of the workplace by an OH/LAA. The asbestos register's requirements are set out within clause 425 of the WHS Regulation and the asbestos management plan's requirements are set out in clause 429 of the WHS Regulation.
4. If the building owner does not provide an asbestos register or asbestos management plan or if there is no adequate asbestos register or asbestos management plan, the Project Manager is to arrange for an OH/LAA to conduct an inspection of the workplace including taking a sample to determine whether ACM is present. Where asbestos is found to be present or there is uncertainty the hygienist is to prepare an asbestos register and/or asbestos management plan.
5. The OH/LAA, should provide a written report recording the results of the inspection. The inspection report should specifically identify:
 - 5.1. areas that were not able to be accessed during the inspection;
 - 5.2. structure or plant (or parts of) that are inaccessible and likely to be disturbed by the works;
 - 5.3. Whether the OH/LAA is uncertain as to whether or not asbestos is fixed to or installed in the structure or plant.
6. The Project Manager must assume that asbestos is present in the areas specified above and must inform any other person who has management or control of the workplace.
7. If ACM is determined or assumed to be fixed or installed in a structure or plant, BESIX Watpac must inform the person with management or control of the workplace (if other than BESIX Watpac).
8. The asbestos register and any asbestos management plan must be readily accessible to workers, HSRs (relevant persons) or, PCBU carrying out or intending to carrying out work at the workplace or a PCBU that requires work to be carried out and if there is a risk of exposure to airborne asbestos, BESIX Watpac must ensure that the relevant persons are provided a copy of the asbestos register.
9. The asbestos register should be reviewed and updated:
 - 9.1. if the asbestos management plan is reviewed;
 - 9.2. if a risk assessment indicates the need for reassessment;
 - 9.3. if further ACM is identified at the workplace;
 - 9.4. if asbestos is removed from, disturbed, sealed or enclosed at the workplace; or
 - 9.5. if demolition or refurbishment is carried out at the workplace; and
 - 9.6. reviewed every 12 months or earlier (where necessary)
10. The asbestos management plan should be reviewed and updated:
 - 10.1. if there is a review of the asbestos register or a control measure;
 - 10.2. if the plan is no longer adequate for managing asbestos or ACM at the workplace;
 - 10.3. if HSR requests a review; or
 - 10.4. if asbestos is removed from, disturbed, sealed or enclosed at the workplace; and
 - 10.5. at least once every 5 years.
11. If BESIX Watpac relinquishes management or control of the workplace it must ensure, so far as is reasonably practicable that the asbestos register is given to the person assuming management or control of the workplace.
12. Where required a destructive survey must be undertaken in accordance with AS 2601 The Demolition of Structures (2001).
13. BESIX Watpac must ensure where reasonably practical that the asbestos management plan is adequate, i.e. ACM is properly identified, safe work method statements have been developed and control measures are in place and procedures for detailing incidents or emergencies involving ACM at the workplace are included.

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14. The asbestos removalist is to ensure that emergency procedures, specific to the scope of works, are developed for the asbestos removal works.

REMOVAL OF ASBESTOS

15. Assuming that an asbestos register and asbestos management plan is in place (as outlined in clause 4 of this procedure), prior to any demolition or refurbishment, BESIX Watpac must ensure that all asbestos likely to be disturbed is identified and so far as is reasonably practicable, the asbestos is removed. A procedure must be developed (taking into account the asbestos register) which will, in so far as is reasonably practicable, reduce the risk of exposure to workers and people in the vicinity of the work.
16. For the removal of ACM, BESIX Watpac will engage an appropriately qualified and licensed asbestos removalist (**asbestos removalist**). BESIX Watpac is required to provide the asbestos removalist with the asbestos register. The asbestos removalist will devise a Safe Work Method Statement for the prescribed activity of ACM removal (the removal) and an Asbestos Removal Control Plan. The Asbestos Removal Plan's requirements are set out in clause 464 of the WHS Regulation. These documents must be submitted to BESIX Watpac Project Management team for review prior to the removal commencing.
17. The asbestos removalist must determine and document the necessary supervision, labour and tool requirements necessary for the removal.
18. The asbestos removalist is to ensure that emergency procedures, specific to the scope of works, are developed for the asbestos removal works.
19. The asbestos removalist must inform BESIX Watpac in advance of the date when removal will commence. BESIX Watpac must then take reasonable steps to ensure, that all workers and PCBUs or anyone occupying the premises in the immediate vicinity of the workplace are informed of the removal and the date of commencement.
20. Before demolition is commenced, all ACM and associated dust is to be removed from the building or structure by a certified asbestos removalist.
21. The asbestos removalist is required to provide signs alerting people to the presence of ACM. BESIX Watpac is required to ensure that no persons other than the asbestos removalist are to have access to the removal area.
22. To ensure potential exposure levels are identified and within acceptable limits in accordance with legislation, Codes of Practice and Australian Standards, the Project needs to engage an independent OH/LAA who is independent of the removal to determine any necessary air monitoring requirements, including ventilation needs, arising from the removal and of whom will undertake the air monitoring, such as Class A removal. If Class A, air monitoring is required, it is required to commence prior to removal and the results of the monitoring must be given to the asbestos removalist, workers, HSRs, PCBUs and other persons at the workplace.
23. Engagement of an independent OH/LAA and deciding on the air monitoring requirements must occur before removal work commences. The independent OH/LAA may be engaged by BESIX Watpac Project Management instead of the asbestos removalist.
24. If a person commissions licensed asbestos removal work at a workplace they must ensure that a clearance inspection of the asbestos work area is carried out by an independent OH/LAA in the case of Class A asbestos removal (friable) or in any other case. The clearance inspection must include a visual inspection and may include air monitoring, however the Code of Practice: How to Safely Remove Asbestos, SafeWork Australia (2018) states that air monitoring must be carried out as part of the clearance inspection in relation to Class A (friable) removal works. The clearance certificate must be issued before the removal area is reoccupied.

Health Surveillance during the removal

25. Clause 435 of the WHS Regulation stipulates that BESIX Watpac as PCBU must ensure that health monitoring is provided to a worker carrying out work for the business or undertaking if the worker is carrying out asbestos-related work and is at risk of exposure to asbestos when carrying out the work. Disturbance of asbestos or ACM is defined in Clause 419(2) of the WHS Regulation as asbestos-related work.

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26. Where BESIX Watpac is responsible for organising health surveillance for BESIX Watpac employees involved in the asbestos removal works is required to provide a copy of the monitoring report to the worker or workers as soon as practicable after obtaining the report and other parties (if necessary). BESIX Watpac will include a contractual requirement in all its asbestos removal contracts and OH/LAA contracts that the subcontractors have to provide health surveillance to its workers. It is at BESIX Watpac Project Management discretion as to whether it requests from the subcontractor evidence that health surveillance is provided.
27. Refer to Part 8.5, Division 1 of the WHS Regulation for full details of requirements.

MANAGEMENT OF ACM RELATED WORKS

28. When undertaking asbestos related work, as distinct to asbestos removal, BESIX Watpac is required to engage an OH/LAA to undertake air monitoring of the work area where asbestos related work is carried out, if there is uncertainty as to whether the exposure standard is likely to be exceeded.
29. If the OH/LAA determines that the exposure standard has been exceeded BESIX Watpac must so far as it is reasonably practicable, determine which workers and other persons were working in the work area at the time, warn them of the possible exposure and provide them with the results of the air monitoring.
30. When undertaking asbestos related work, BESIX Watpac is required to ensure that the asbestos related work area is separated from other work areas, and that signage and barricading is installed to alert persons to the presence of asbestos related work being carried out. BESIX Watpac must also ensure that its workers do not use compressed air or high-pressure water spray on ACM.
31. BESIX Watpac must not direct or allow a worker to use power tools, brooms or any other implements that cause the release of ACM into the air, unless it is controlled, as set out in clause 446(4) of the Work Health and Safety Regulation 2011.
32. BESIX Watpac will ensure that there are facilities to decontaminate the asbestos related work area, any plant used in the asbestos related work area and workers carrying out the asbestos related work.
33. BESIX Watpac must also ensure that nothing contaminated with ACM is removed from the asbestos related work area, unless contained and labelled in accordance with the Globally Harmonised System of Classification and Labelling of Chemicals and is then disposed of at a site authorised to accept asbestos waste. In the instance of personal protective equipment, if it cannot be disposed of, it should be laundered at a laundry equipped to launder asbestos clothing.

UNEXPECTED FINDS OF MATERIAL NOT IDENTIFIED ON THE ASBESTOS REGISTER

34. In the event that that material suspected to be ACM is discovered but has not been identified on the asbestos register, the following procedure should apply:
 - 34.1. All work is to cease in the area where the material suspected to be ACM is identified;
 - 34.2. BESIX Watpac is required to notify an OH, who is a LAA;
 - 34.3. The OH/LAA will advise BESIX Watpac on whether the material is ACM and what further steps are required, such as whether BESIX Watpac workers are permitted to do such measures as isolating and barricading, wetting down the area, installing of signage, decontamination, etc.
 - 34.4. If BESIX Watpac is concerned that any workers have been exposed to ACM, they are to remove contaminated clothing in an isolated area and the clothing is to be contained and labelled accordingly.

Under NO circumstances are workers to enter the amenities areas or leave site with asbestos contaminated clothing, tools or equipment.

35. Notify BESIX Watpac OHS Manager or in their absence the Construction Manager/Operations Manager.
36. An OH/LAA, needs to attend the site who will undertake whatever analysis is required.

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37. If asbestos is identified, BESIX Watpac will engage a licensed asbestos removalist, and notify the Regulator as advised by the OH/LAA.
38. The OH/LAA will review and revise the asbestos management plan for the asbestos removal.
39. The asbestos removalist will use the asbestos management plan to develop the Asbestos Removal Control Plan.
40. The asbestos removalist will work under the direction of the BESIX Watpac nominated project OH/LAA.
41. If any earthmoving plant is to be used for removal work (e.g. excavator) the operator must be an employee of the asbestos removalist, trained in asbestos removal.
42. The project independent OH/LAA, will determine the need to provide air monitoring during all asbestos removal works.
43. If asbestos contamination is widely spread through other materials such as soil or demolition rubble, the bulk material may need to be disposed of as Asbestos Contaminated Waste. This is required to be removed by a licensed asbestos removalist and is to be transported and disposed of in compliance with EPA regulations.

STATE SPECIFIC REQUIREMENTS

- NIL

REFERENCES

Document Title	Standard / Section No.
Work Health and Safety Act (Commonwealth, ACT, NSW, QLD, NT)	
Occupational Health & Safety Act (VIC)	
Health and Safety at Work Act (NZ)	
Work Health and Safety Regulation (Commonwealth, ACT, NSW, QLD, NT)	Clauses 419 – 430, 435 – 458, 463, 468, 470, 473 – 476, 479 - 484
Occupational Health & Safety Regulation (VIC)	Part 4.4
Health and Safety at Work (General Risk and Workplace Management) Regulations (NZ)	
Code of Practice: How to manage and control asbestos in the workplace	
Code of Practice: How to safely remove asbestos	

DOCUMENTATION REQUIRED

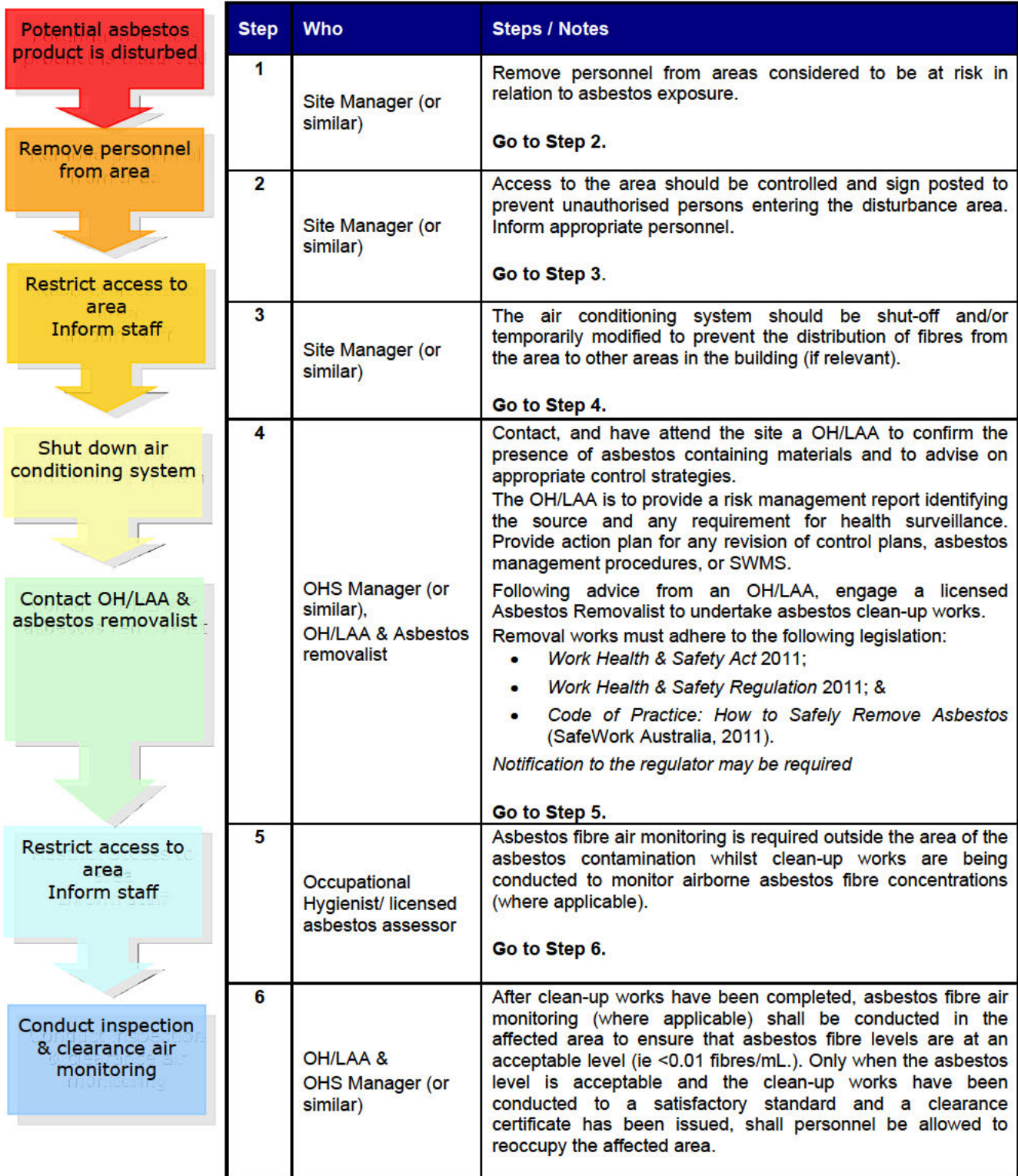
- S08-04-70.01 Asbestos removal checklist
- S08-04-70.02 Unexpected Finds checklist
- Asbestos Register
- Asbestos Management Plan
- Asbestos Removal Control Plan
- Asbestos Removalist Safe Work Method Statements.
- Clearance inspection reports from Occupational Hygienist Asbestos Assessor.
- Air monitoring reports
- Health Surveillance monitoring report

ASBESTOS IDENTIFICATION AND MANAGEMENT

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ACCIDENTAL EXPOSURE TO ASBESTOS FLOWCHART

In the event that an activity causes the accidental disturbance of asbestos materials (i.e. an unplanned disturbance), the following steps should be followed:



Asbestos Removal Checklist

BESIX WATPAC DETAILS

Project Name: _____ Project No: _____

Scope of removal: _____

BESIX Watpac Site Manager: _____ Date: _____

- 1. Is a copy of the Asbestos Register and Asbestos Management Plan & Asbestos Removal Control Plan available on site? Yes No
- 2. Has the HSR (where applicable) been provided with all relevant information for the asbestos removal works, & the WHS Regulator notified 5 days prior to commencement? Yes No
- 3. Have all site personnel been informed of the intended asbestos removal? Yes No
- 4. Have we given adjoining premises notice of asbestos removal works? Yes No

ASBESTOS AUDIT AND REGISTER

Audit undertaken by: _____

Audit Dated: _____ Audit within Last 5 Years: Yes No Copy held on site: Yes No

Audit reviewed by (may require external specialist advice): _____

OCCUPATIONAL HYGIENIST / LICENSED ASBESTOS ASSESSOR

Contact Name: _____

Company: _____ License No: _____

Contact Number: _____

- 1. Has the Occupational Hygienist been provided with the Asbestos Register, the Asbestos Management Plan and Asbestos Removal Control Plan? Yes No
- 2. Is the Hygienist providing air monitoring prior to and during removal works? Yes No
- 3. Is pump calibration records provided with air monitoring reports? Yes No

ASBESTOS REMOVALIST / LICENCE HOLDER

Company Name: _____

Nominated Supervisor: _____

Contact Number: _____ License Number: _____

Class of License: Class A Class B

- 1. Has BESIX Watpac provided the Asbestos Register to the Asbestos Removal License Holder? Yes No
- 2. Is Asbestos Removal License appropriate for the type of removal being conducted? (*Class A Friable Class B non-friable*) Yes No
- 3. Has the removalist provided BESIX Watpac with an Asbestos Removal Control Plan? Yes No
- 4. Is the supervisor for the job listed on the license? Yes No
- 5. Does the supervisor acknowledge they are required to be on site at all times during the asbestos removal work? Yes No
- 6. Has the removalist provided evidence of notification to WHS Regulator? (*5 days notice (24 hour notice for emergency works)*) Yes No
- 7. Is the removal to be conducted in a manner consistent with the Notification to WHS Regulator? (*ie are materials, location, volume consistent with notification*) Yes No
- 8. Have training records been provided for all asbestos removal workers conducting removal? (*Yearly Class A, 2 yearly Class B*) Yes No
- 9. Have all asbestos removal workers had appropriate training for this class of removal? Yes No
- 10. Evidence that health monitoring has been provided for all asbestos removal workers? (*minimum intervals of 2 years*) Yes No
- 11. Has the Asbestos Removalist provided a SWMS to control other relevant risks? Yes No
- 12. Have log books been kept to record maintenance of control equipment (for friable asbestos removal)? Yes No

(To be completed by the BESIX Watpac Site Manager / Project Safety Adviser prior to commencement of Asbestos Removal Works)

Checklist answers must all be YES before proceeding with any Asbestos Removal Work

Asbestos Removal Control Plan:

NOTIFICATION:

- 1. Does the plan include confirmation that notification requirements have been met and will the required documentation be on site? (e.g. removal license, control plan and training records) Yes No

IDENTIFICATION:

- 2. Does the plan detail the asbestos to be removed (e.g. the location(s), whether it is friable or non-friable, type, condition and the quantity to be removed)? Yes No

PREPARATION:

- 3. Does the plan include consultation arrangements with relevant parties including: HSR's; BESIX Watpac; Licensed asbestos assessors/ hygienists; and Any other person affected by the removal work (e.g. neighbours) Yes No
- 4. Does the plan include assigned responsibilities for the asbestos removal work? Yes No
- 5. Does the plan include the program including commencement and completion dates? Yes No
- 6. Are emergency plans included? Yes No
- 7. Are Asbestos removal boundaries detailed, including the type and extent of isolation required and the location of any signs and barriers? Yes No
- 8. Does the plan detail how other hazards will be controlled, including electrical and lighting installations? Yes No
- 9. Are the details of the personal protective equipment (PPE) to be used, including respiratory protective equipment (RPE) included? Yes No

REMOVAL:

- 10. Does the plan include details of air monitoring programs? Yes No
- 11. Does the plan include details of the waste storage and disposal program? Yes No
- 12. Are the methods for removing the asbestos detailed (i.e. wet method or dry method)? Yes No
- 13. Has the asbestos removal equipment (spray equipment, asbestos vacuum cleaners, cutting tools, etc) been identified? Yes No
- 14. Are details included on any required enclosures, including: size; shape; structure, etc; smoke testing enclosures; and the location of negative pressure exhaust units Yes No
- 15. Are details included on temporary buildings required by the asbestos removalist (e.g. decontamination units) including: details on water; lighting and power requirements; negative air pressure exhaust units; and the locations of decontamination units Yes No
- 16. Does the plan also consider other risk control measures to prevent the release of airborne asbestos fibres from the area where asbestos removal is to be undertaken? Yes No

DECONTAMINATION:

- 17. Does the plan include detailed procedures for: workplace decontamination; the decontamination of tools and equipment; personal decontamination; and the decontamination of non-disposable PPE and RPE? Yes No

WASTE DISPOSAL:

- 18. Does the plan include the methods of disposing of asbestos waste, including details on the disposal of: disposable protective clothing and equipment, and the structure(s) used to enclose the removal area? Yes No

CLEARANCE AND AIR MONITORING:

- 19. Does the plan include the name of the independent licensed asbestos assessor (Occupational Hygienist) to conduct air monitoring? Yes No

Signed By: _____ Site Manager / Foreman Date: _____

Checklist answers must all be YES before proceeding with any Asbestos Removal Work

To be completed by the BESIX Watpac Site Manager at commencement of Asbestos Removal Works

PRIOR TO COMMENCING REMOVAL WORKS

- 20. Has the site been consulted (Tool box meeting) regarding the asbestos removal activities Yes No
- 21. Have all asbestos workers been inducted onto the site by BESIX Watpac and inducted into the asbestos control plan & SWMS by the removal supervisor? Yes No
- 22. Has all plant and equipment been inducted / registered / checked as per BESIX Watpac's requirements Yes No
- 23. Have signs and barricades been installed to identify and isolate the asbestos removal area as per asbestos removal plan? Yes No
- 24. Have the decontamination equipment / facilities been provided and set up ready for use as per the control plan? Yes No
- 25. Has sufficient space been provided for the placement, lining, loading and sealing of asbestos waste containers? Yes No
- 26. Have all required services been isolated / terminated and certificates of such been provided to the removal supervisor? Yes No
- 27. Has provision for water, temporary power and emergency lighting been made for the removal works (if applicable)? Yes No
- 28. Have filters been installed on plant air intakes, storm water pits etc. Yes No
- 29. Has the Hygienist installed air monitoring pumps prior to works commencing? Yes No

DURING WORKS (Asbestos supervisor to complete)

- 30. If power tools are being used on asbestos, is the area controlled to ensure the asbestos removalist is not exposed to more than half the exposure standard? Yes No
- 31. Is the removal to be conducted in a manner consistent with the control measures outlined in the Asbestos Removal Control Plan? (ie is it project specific) Yes No
- 32. Has the removal been conducted as per the requirements of the asbestos control plan? Yes No
- 33. Has the asbestos waste been correctly placed in the asbestos waste containers? Yes No
- 34. Is air monitoring being conducted throughout the removal process? Yes No
- Comments: Yes No

Asbestos supervisor name; _____ Signature: _____

COMPLETION

- 35. Has the Hygienist collected the pumps following completion of asbestos removal and provided BESIX Watpac with the results of the air monitoring? Yes No
- 36. Has all equipment used in removal works been decontaminated and inspected by the Hygienist or sealed in asbestos containment? Yes No
- 37. Has Hygienist issued a clearance for plant and equipment (plant and equipment is NOT to leave site until clearance has been provided)? Yes No
- 38. Has the Hygienist provided a written Clearance Certificate for the areas where the asbestos removal works were conducted? Yes No

BESIX WATPAC MUST NOT ALLOW THE AREA TO BE RE-OCCUPIED BY ANY PERSON UNTIL THE CLEARANCE LETTER IS PROVIDED – VERBAL CLEARANCE IS NOT ACCEPTABLE

Name: _____

Date: _____

Signature: _____ Site Manager / Foreman

Checklist answers must all be YES before proceeding with any Asbestos Removal Work

Unexpected Finds Checklist

Business Unit Details

Business Unit Name: BESIX Watpac Construction State : Choose an item.

Project No: _____ Project Name: _____

Location of Project: _____

BESIX Watpac Representative Name: _____ Date: _____

Subcontracting Business Name: _____ Time: _____

Subcontractor Representative Name: _____ Mobile: _____

UNEXPECTED FIND CHECKLIST

Location on Project: _____

Specific works being carried out: _____

Details of work crew and equipment being used: _____

Suspected Material identified: _____

Weather conditions at the time: _____

Was direct contact made with the material by the workers and equipment? Yes No Unknown

What actions were taken: _____

What actions were made to make area safe: _____

Name of OH/LAA*/ Environmental Consultant contacted: _____ Date Contacted: _____ / _____ / _____

Date OH/LAA*/ Environmental Consultant arrived on site: _____ / _____ / _____ Time On-Site: _____ : _____ AM PM

Samples taken? Yes No

Was any specialist advice provided? _____

Was any risk to worker health or environment identified? _____

Action to be taken _____

Actions taken to remediate contamination or mitigate risk during works _____

Work recommencement date: _____ / _____ / _____

Other Comments: _____

*OH/LAA (Occupational Hygienist / Licensed Asbestos Assessor)

BARANGAROO STATION

Construction Environmental Management Plan

Acid Sulfate Soil	
Standard Environmental Protocol F.20	
Objective	To avoid significant impact caused by the disturbance of Acid Sulfate Soils (ASS).
Management Strategy	<p>A soil investigation and analysis will be conducted to determine the extent of ASS on-site.</p> <p>Site environmental induction to address management of ASS.</p> <p>Excavations will be confined to minimum requirements.</p> <p>Bunds around all disturbed areas of ASS will be provided.</p>
Action	<p>Initial approach and planning</p> <p>A soil investigation and analysis will be conducted to determine the extent of ASS on site, including the possible and potential acid sulfate soils, and at what depths.</p> <p>An Acid Sulfate Soils Management Plan will be produced to outline the risks and liming rates to inform the earthworks contractors.</p> <p><u>Field Indicators</u></p> <ul style="list-style-type: none"> • Field indicators for Actual Acid Sulfate include: <ul style="list-style-type: none"> • Water of pH <5.5 in groundwater or adjacent streams, drains, groundwater or ponding on the surface • Unusually clear or milky blue-green drain water within or flowing from the area (aluminium released by the acid sulfate soils acts as a flocculating agent) • Extensive iron stains on any drain or pond surfaces, iron-stained water or ochre deposits • Any jarositic (jarosite is a pale-yellow mineral deposit which can precipitate as pore fillings and coatings on fissures) horizons or iron oxide mottling in auger holes or recently dug surfaces. • With a fluctuating water table, jarosite may be found along cracks and root channels in the soil — however, jarosite is not always found in actual acid sulfate soils • Jarosite present in surface encrustations or in any material dredged or excavated and left exposed • Corrosion of concrete and/or steel structures • Dominance of mangroves, reeds, rushes and other swamp-tolerant vegetation – including estuarine occurrences of swamp trees • Field indicators for Potential Acid Sulfate include: <ul style="list-style-type: none"> • Typically waterlogged, soft muds (soft, buttery texture) or estuarine silty sands • Mid to dark grey to dark greenish-grey coloured soils or sediments • Offensive odour, predominantly due to 'rotten egg gas' (H₂S). <p><u>Screening process</u></p> <ul style="list-style-type: none"> • Soils are usually “screened” to isolate areas of interest to test for. pH_F and pH_{FOX} indicate possible actual acid sulfate soils (AASS) or potential acid sulfate soils (PASS). • pH_F — measure of soil pH of a soil:water paste. pH_F <4 indicates oxidation has occurred in the past and that AASS is present. • pH_{FOX} — measure of soil pH after rapid oxidation with hydrogen peroxide (H₂O₂). pH_{FOX} <3, plus a pH_{FOX} reading at least one pH unit below pH_F, plus a strong reaction with peroxide, strongly indicates the presence of PASS. • Effervescence (or reaction rate) — a visual measure of the vigorousness of the oxidation reaction where: 1 = slight; 2 = moderate; 3 = high; and 4 = extreme. <p><u>Assessment Process</u></p> <ul style="list-style-type: none"> • Lab tests are the only truly definitive way of measuring for actual or potential acid sulfate. This is done by the SPOCAS or Chromium Suite method. • The SPOCAS suite is effective for coarser textured sediments. • The Chromium Suite (aka SCR suite) is effective for assessing soils with lower percentages of sulfide and for soils containing organic material.

BARANGAROO STATION

Construction Environmental Management Plan

Acid Sulfate Soil

- Chromium reducible sulphur values (SCR) greater than 0.01% S indicate a significant level of sulphides, and where greater than 0.03% S then the soil has a high potential acidity level and an Acid Sulfate Soils Management Plan will be required.
- Net Acidity (TAA + SCR + SNAS – ANC/1.5) of greater than or equal to 0.03% S for soils, for greater than 1000 tonnes of disturbance.

Preparing a neutralisation zone/liming pad

- Prepare a liming pad/stockpile site of appropriate area for the volume of soil to be treated. The pad should be prepared on relatively level or gently sloping ground to minimise the risk of any potential instability issues, with a natural (or shaped) fall to the local drainage sump.
- Where the subgrade soils are other than low permeability clays, the surface of the pad should be lined with selected approved compacted clay (at least two layers to a combined compacted thickness of 0.5m) or a geosynthetic liner. Where the subgrade soils comprise low permeability clay, no clay or geosynthetic lining will be required.
- A guard layer of 'ag lime' should be applied over the clay subgrade or compacted clay liner, to neutralise downward seepage.. The guard layer of lime should be applied at a rate of approximately 5kg lime per square metre of surface area for every 1 m height of stockpiled soil.
- Liming pads should be bunded off, and a circumference drain excavated to collect and localise leachate. The drain and inner bund slopes should be covered with a layer of fine lime applied to neutralise any possible leachate migrating from the stockpiled material.

Neutralisation Process

- Supervision by a Scientist is not considered mandatory.
- Soil neutralisation can only be validated by lab tests (SPOCAS or Chromium suite).
- Aglime is the mandatory treatment material. Using aglime, overliming isn't an issue—it's not ecologically harmful as it only has neutralising properties on exposure to acid. In water it has low solubility (because water is neutral).
- Indicative liming rates can be applied before arranging lab tests, so lab tests are only done on the verification stage—rather than both the initial and verification stages.
- The excavated soil should then be spread onto the guard layer in layers of no greater than 200mm thickness, leaving a 1m flat area between the toe of the spread soil and the containment bund or drain. When spreading the first soil layer, care should be taken not to churn up the lime guard layer.
- It should be noted that saturated soil cannot be neutralised effectively with lime, particularly where it is cohesive (ie. comprises a majority of silt/clay sized particles). This is because the lime must be well mixed into the soil and this cannot be performed when the soil is overly wet and 'sticky'. Hence, the excavated soil must be dried back on a limed pad, before effective mixing can take place with earthmoving machinery. This is to enable the collection and separate treatment of any acid leachate formed during the soil drying and liming process. Wet weather will thus have a potential to delay the lime treatment process.

the stockpiled soil at the indicative liming rate given above over each spread layer and mix through spreading the next layer.

- ASS testing should be carried out on each layer to verify the lime dosing rates to be applied. This would confirm ASS soils have been neutralised and allow identification of problem material.
- Continue the spreading/liming/mixing cycle till excavation is finished.
- When testing indicates that lime neutralisation is complete, then the stockpiled soil may be removed from the liming/neutralisation pad.
- Verification testing of the soil is required to be conducted after the addition of lime to test whether or not mixing has been adequate, and to reduce the risk of acidic water being returned to other watercourses. The soil and water contained within the treatment bunds should not be removed until the target values have been achieved.
- Validation samples of soil should be collected and tested at a frequency of approximately one per 500m³ of treated soil. Similarly, additional layers of soil should not be added to the bunded stockpile for treatment until the underlying layers have been validated.

Acid Sulfate Soil

Water Run-off

- All water draining from the soil, once it is removed from the excavation, should be considered as potentially acidic and should be separated in a controlled area, such as the above referred bunded and lined pad, and not be allowed to flow back into waterways or stormwater until it has been tested for pH and for any other environmental tests required by the appropriate regulatory authority.
- Liming pads should be bunded off, and a circumference drain excavated to collect and localise leachate. The drain and inner bund slopes should be covered with a layer of fine lime applied to neutralise any possible leachate migrating from the stockpiled material.
- The pH of all ponded drainage water around the confines of the treatment bunds should be measured daily.

Soil Testing and Verification

- Soil sampling for verification (and assessment) will be as soon as practically possible within 66 hours (i.e.3 nights). Large shells (>2 mm), fragments of wood, charcoal and stones will be noted before being removed from the samples in the field. Biological remnants such as small roots will not be removed from the soil sample as they may contain sulfides:
- Divide the treatment pad area into areas containing a volume of soil equivalent to the nominated verification testing rate (e.g. for a treatment pad holding 2000m³ and a test rate of 1 per 1000m³, divide the pad into two sections). A treatment pad holding 500m³ at a test rate of 1 per 1000m³ is considered as 'one' treatment area/section.
- Within each area, use a randomised procedure to nominate at least six random sampling locations.
- Within each area, use a consistent-volume sampler to gather subsamples of treated soil from each of the pre-defined locations on the treatment pad (at least 4 x 250g subsamples). Subsamples should extend through the total depth of the treated material but avoid sampling the underlying guard layer.
- Composite the subsamples thoroughly together in a container with a secure lid (e.g. clean plastic 5L plastic pail).
- Subsample approximately 400g of the composited material and submit it for analysis.
- Leave the soil on the treatment pad until the results are available.
- Samples will be collected in laboratory supplied acid sulfate soil bags, stored on ice in a cool box and submitted to a laboratory (with chain of custody documentation) that is accredited by the National Association of Testing Authorities (NATA) for acid sulfate soil analysis. Visual and olfactory monitoring of the surrounding receiving environment to identify and report any potential concerns or impacts as a result of the activities conducted within the Acid Sulfate Soil Treatment Area.

Off-Site Treatment

- The following excavation procedures will be adopted during works onsite:
- All excavations below the upper ASS horizon shall be programmed to ensure that the period of open excavation is kept to a minimum;
- Any exposed walls of excavations shall be treated by "dusting" with fine agricultural lime prior to backfilling;
- Where provisions have been made, all ASS material is to be immediately placed onto trucks and transported to a licenced treatment facility;
- Where the immediate transfer to trucks is not feasible, on-site storage of untreated ASS is not permitted for more than 18 hours for sandy material, and 70 hours for peat or clays.
- In the event temporary stockpiling of soils is required, the soils should be placed on bunded limestone pad approximately 300mm thick, in a location up gradient of the development area to prevent potential leaching or run off into undisturbed areas.

Performance Indicators

No acid discharge from site.
 Satisfactory laboratory results of tests on stockpiled ASS.

Reporting

Daily monitoring reflected in daily site diary entries

BARANGAROO STATION

Construction Environmental Management Plan

Acid Sulfate Soil	
	Weekly Inspections undertaken and recorded on the Weekly Environment Inspection Form
Reference	<ul style="list-style-type: none">• ANZECC/NHMRC Guidelines• NEPM for Assessment of Site Contamination.



Sydney Metro Unexpected Heritage Finds Procedure

[SM-18-00105232]

Sydney Metro Integrated Management System (IMS)

Applicable to:	Sydney Metro
Document Owner:	Author/Document owner
System Owner:	IMS element owner (generally a member of the Executive)
Status:	Draft/Final
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1. Purpose

This procedure is applicable to the Sydney Metro program of works including major projects delivered under Critical State Significant Infrastructure Planning Approvals (CSSI), early CSSI minor and enabling works and works that are subject to the NSW Heritage Act (1977) including s57/139 and s60/140 exemptions and permit approvals.

This procedure has been prepared for Sydney Metro programs to provide a method for managing unexpected heritage items (both Aboriginal and non-Aboriginal) that are discovered during preconstruction (pre-Construction Heritage Manage Plan approval), construction phases (post Construction Heritage Manage Plan approval) and for works subject to the NSW Heritage Act (1977).

An ‘unexpected heritage find’ can be defined as any unanticipated archaeological discovery, that has not been previously assessed or is not covered by an existing approval under the Heritage Act 1977 (Heritage Act) or National Parks and Wildlife Act 1974 (NPW Act).

In NSW, there are strict laws to protect and manage heritage objects and relics. As a result, appropriate heritage management measures need to be implemented to minimise impacts on heritage values; ensure compliance with relevant heritage notification and other obligations; and to minimise the risk of penalties to individuals, Sydney Metro and its contractors. This procedure includes Sydney Metro’s heritage notification obligations under the Heritage Act, NPW Act and the Coroner’s Act 2009 and the requirements of the conditions of approval (CoA) issued by NSW Department of Planning and Environment.

Note that a Contractor must not amend the Sydney Metro Unexpected Finds Procedure without the prior approval of Sydney Metro.

It should be noted that this procedure must be read in conjunction with the relevant CSSI conditionals of approval (if applicable), the contract documents and other plans including the Sydney Metro Exhumation Management Plan and procedures developed by the contractor during the delivery of the Sydney Metro works.

1.1. Legislation that does not apply

The following authorisations are not required for Sydney Metro approved Critical State Significant Infrastructure (and accordingly the provisions of any Act that prohibits an activity without such an authority do not apply):

- Division 8 of Part 6 of the Heritage Act 1977 does not apply to prevent or interfere with the carrying out of approved State significant infrastructure.
- An approval under Part 4, or an excavation permit under section 139, of the Heritage Act 1977,
- An Aboriginal heritage impact permit under section 90 of the National Parks and Wildlife Act 1974,

This document provides relevant background information in Section 4, followed by the technical procedure in Sections 6 and 7. Associated guidance referred to in the procedure can be found in Appendices 1-6.

2. Scope

Despite earlier investigation, unexpected heritage items may still be discovered during works on a Sydney Metro site. When this happens, this procedure must be followed. This procedure provides direction on when to stop work, where to seek technical advice and how to notify the regulator, if required.

This procedure **applies to**:

- the discovery of any unexpected heritage item, relic or object, where the find is not anticipated in an approved Archaeological Assessment Design Report (AARD) or Archaeological Method Statements (AMS) that are prepared as part of the planning approval for that project.

This procedure must be followed by all Sydney Metro staff, contractors, subcontractors or any person undertaking works for Sydney Metro. It includes references to some of the relevant legislative and regulatory requirements, but is not intended to replace them.

This procedure **does not apply to**:

- The discovery and disturbance of heritage items as a result of investigations being undertaken in accordance with the Office of Environment and Heritage’s (OEH) *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW 2010*¹; an Aboriginal Heritage Impact Permit (AHIP) issued under the NPW Act; or a permit approval issued under the Heritage Act.
- the discovery and disturbance of heritage items as a result of construction related activities, where the disturbance is permissible in accordance with an AHIP; or an approval issued under the Heritage Act or CSSI /CSSD planning approval;

3. Definitions

All terminology in this procedure is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

	Definitions
AHIP	Aboriginal Heritage Impact Permit
Aboriginal object	An Aboriginal object is any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains. An Aboriginal object may include a shell midden, stone tools, bones, rock art, Aboriginal-built fences and stockyards, scarred trees and the remains of fringe camps.
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
CSSD	Critical State Significant Development
CSSI	Critical State Significant Infrastructure
EP&A Act	NSW Environmental Planning and Assessment Act 1979
Excavation	A person that complies with the Heritage Council of NSW’s Criteria for Assessment of

¹ An act carried out in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* as published by the Department in the Gazette on 24 September 2010 is excluded from the definition of **harm** an object or place in section 5 (1) of the NPW Act.

Director	Excavation Directors (July 2011) to oversee and advise on matters associated with historic archaeology. Note this applies to a specific project/program and requires consultation and/or approval by OEH.
Heritage Act	NSW <i>Heritage Act 1977</i>
NPW Act	NSW <i>National Parks and Wildlife Act 1974</i>
OEH	Office of Environment and Heritage
SM	Sydney Metro
Relic (non-Aboriginal heritage)	<p>A relic means any deposit, artefact, object or material evidence that:</p> <ul style="list-style-type: none"> a) relates to the settlement of the area that comprises NSW, not being Aboriginal settlement, and b) is of State or local significance. <p>A relic may include items such as bottles, utensils, remnants of clothing, crockery, personal effects, tools, machinery and domestic or industrial refuse.</p>
TfNSW	Transport for New South Wales
Work (non-Aboriginal heritage)	Archaeological features such as historic utilities or buried infrastructure that provide evidence of prior occupations such as former rail or tram tracks, timber sleepers, kerbing, historic road pavement, fences, culverts, historic pavement, buried retaining walls, cisterns, conduits, sheds or building foundations, but are also subject to assessment by the Excavation Director to determine its classification

4. Types of unexpected heritage items and corresponding statutory protections

The roles of project, field and environmental personnel (including construction contractors) are critical to the early identification and protection of unexpected heritage items.

Appendix 1 illustrates the wide range of heritage discoveries found on Sydney Metro projects and provides a useful photographic guide. Subsequent to confirmation of a heritage discovery it must then be identified and assessed by Excavation Director. An ‘unexpected heritage item’ means any unanticipated discovery of an actual or potential heritage item, for which Sydney Metro does not have approval to disturb² and/or have an existing management process in place.

These discoveries are categorised as either:

- (a) Aboriginal objects
- (b) Historic (non-Aboriginal) heritage items
- (c) Human skeletal remains.

The relevant legislation that applies to each of these categories is described below and is also addressed in the Sydney Metro Exhumation Management Plan).

4.1. Aboriginal objects

The NPW Act protects Aboriginal objects which are defined as:

² Disturbance is considered to be any physical interference with the item that results in it being destroyed, defaced, damaged, harmed, impacted or altered in any way (this includes archaeological investigation activities).

“any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains”³.

Examples of Aboriginal objects include stone tool artefacts, shell middens, axe grinding grooves, pigment or engraved rock art, burials and scarred trees.

IMPORTANT!

All Aboriginal objects, regardless of significance, are protected under law.

If any impact is expected to an Aboriginal object, an AHIP is usually required from OEH. Also, when a person becomes aware of an Aboriginal object they must notify the Director-General of OEH about its location⁴. Assistance on how to do this is provided in Section 7 (Step 5).

4.2. Historic heritage items

Historic (non-Aboriginal) heritage items may include:

- Archaeological ‘relics’
- Other historic items (i.e. works, structures, buildings or movable objects).

4.2.1. Archaeological relics

The Heritage Act protects *relics* which are defined as:

“any deposit, artefact, object or material evidence that relates to the settlement of the area that comprises NSW, not being Aboriginal settlement; and is of State or local heritage significance”⁵.

Relics are archaeological items of local or state significance which may relate to past domestic, industrial or agricultural activities in NSW, and can include bottles, remnants of clothing, pottery, building materials and general refuse.

IMPORTANT!

All relics are subject to statutory controls and protections.

If a relic is likely to be disturbed, a heritage approval is usually required from the NSW Heritage Council⁶. Also, when a person discovers a relic they must notify the NSW Heritage Council of its location⁷.

4.2.2. Other historic items

Some historic heritage items are not considered to be ‘relics’, but are instead referred to as works, buildings, structures or movable objects. Examples of these items that may be encountered include culverts, historic pavements, retaining walls, tramlines, rail tracks, timber sleepers, cisterns, fences, sheds, buildings and conduits. Although an approval under the Heritage Act may not be required to disturb these items, their discovery must be managed in accordance with this procedure.

³ Section 5(1) NPW Act.

⁴ This is required under section 89(A) of the NPW Act and applies to all Sydney Metro projects.

⁵ Section 4(1) Heritage Act.

⁷ This is required under section 146 of the Heritage Act and applies to all Sydney Metro projects.

As a general rule, an archaeological relic requires discovery or examination through the act of excavation. For an unexpected find an archaeological excavation permit under section 140 of the Heritage Act may be required to do this. In contrast, ‘other historic items’ either exist above the ground surface (e.g. a shed), or they are designed to operate and exist beneath the ground surface (e.g. a culvert).

4.3. Human skeletal remains

Also refer to Sydney Metro Exhumation Management Plan for a more detailed explanation of the approval processes.

Human skeletal remains can be identified as either an Aboriginal object or non-Aboriginal relic depending on ancestry of the individual (Aboriginal or non-Aboriginal) and burial context (archaeological or non-archaeological). Remains are considered to be archaeological when the time elapsed since death is suspected of being 100 years or more. Depending on ancestry and context, different legislation applies.

As a simple example, a pre-European settlement archaeological Aboriginal burial would be protected under the NPW Act, while a historic (non-Aboriginal) archaeological burial within a cemetery would be protected under the Heritage Act. For a non-Aboriginal archaeological burial, the relevant heritage approval and notification requirement described in Section 3.1 would apply. In addition to the NPW Act, finding Aboriginal human remains also triggers notification requirements to the Commonwealth Minister for the Environment under section 20(1) of the Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth).

IMPORTANT!

All human skeletal remains are subject to statutory controls and protections.

All bones must be treated as potential human skeletal remains and work around them must stop while they are protected and investigated urgently.

However, where it is suspected that less than 100 years has elapsed since death, the human skeletal remains come under the jurisdiction of the State Coroner and the Coroners Act 2009 (NSW). Such a case would be considered a ‘reportable death’ and under legal notification obligations set out in section 35(2); a person must report the death to a police officer, a coroner or an assistant coroner as soon as possible. This applies to all human remains less than 100 years old⁸ regardless of ancestry (i.e. both Aboriginal and non-Aboriginal remains). Public health controls may also apply.

Guidance on what to do when suspected human remains are found is provided in Appendix 5.

5. Legislative Requirements

Table 1 identifies some of the relevant legislation/regulations for the protection of heritage and the management of unexpected heritage finds in NSW. It should be noted that significant

⁸ Under section 19 of the *Coroners Act 2009*, the coroner has no jurisdiction to conduct an inquest into reportable death unless it appears to the coroner that (or that there is reasonable cause to suspect that) the death or suspected death occurred within the last 100 years.

penalties exist for breaches of the listed legislation as a result of actions that relate to unauthorised impacts on heritage items. Further, it is noted that heritage that has been assessed and is being managed in accordance with relevant statutory approvals(s) is exempt from these offences.

To avoid breaches of legislation, it is important that Sydney Metro and its contractors are aware of their statutory obligations under relevant legislation and that appropriate control measures are in place to ensure that unexpected heritage items are appropriately managed during construction. Contractors/Alliances will need to ensure that they undertake their own due diligence to identify any other legislative requirements that may apply for a given project.

Table 1 Legislation and guidelines for management of unexpected heritage finds

Relevant Requirement	Objectives and offences
Environmental Planning and Assessment Act 1979 (EP&A Act)	Section 115ZB Giving of approval by Minister to carry out a project.
Environmental Planning and Assessment Act 1979 (EP&A Act)	Requires heritage to be considered within the environmental impact assessment of projects. This guideline is based on the premise that an appropriate level of Aboriginal and non-Aboriginal cultural heritage assessment and investigations and mitigation have already been undertaken under the relevant legislation, including the EP&A Act, during the assessment and determination process. It also assumes that appropriate mitigation measures have been included in the conditions of any approval.
Heritage Act 1977 (Heritage Act)	The Heritage Act provides for the care, protection and management of heritage items in NSW. Under section 139, it is an offence to disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed, unless the disturbance or excavation is carried out in accordance with an excavation permit issued by the Heritage Division of the OEH. Under the Act, a relic is defined as: <i>'any deposit, artefact, object or material evidence that: (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and (b) is of State or local heritage significance.'</i> A person must notify the Heritage Division of OEH, if a person is aware or believes that they have discovered or located a relic (section 146). Penalties for offences under the Heritage Act can include six months imprisonment and/or a fine of up to \$1.1million.

Relevant Requirement	Objectives and offences
<p>National Parks and Wildlife Act 1974 (NPW Act)</p>	<p>The NPW Act provides the basis for the care, protection and management of Aboriginal objects and places in NSW.</p> <p>An Aboriginal object is defined as: <i>‘any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains’.</i></p> <p>An ‘Aboriginal place’ is an area declared by the Minister administering the Act to be of special significance with respect to Aboriginal culture. An Aboriginal place does not have to contain physical evidence of occupation (such as Aboriginal objects).</p> <p>Under section 87 of the Act, it is an offence to harm or desecrate an Aboriginal object or place. There are strict liability offences. An offence cannot be upheld where the harm or desecration was authorised by an AHIP and the permit’s conditions were not contravened. Defences and exemptions to the offence of harming an Aboriginal object or Aboriginal place are provided in section 87, 87A and 87B of the Act.</p> <p>A person must notify OEHL if a person is aware of the location of an Aboriginal object.</p> <p>Penalties for some of the offences can include two years imprisonment and/or up to \$550,000 (for individuals), and a maximum penalty of \$1.1 million (for corporations).</p>

6. Unexpected heritage finds protocol

6.1. What is an unexpected heritage find?

An ‘unexpected heritage find’ can be defined as any unanticipated archaeological discovery that has not been identified during a previous assessment or is not covered by an existing permit under the Heritage Act. The find may have potential cultural heritage value, which may require some type of statutory cultural heritage permit or notification if any interference of the heritage item is proposed or anticipated.

The range of potential archaeological discoveries can include but are not limited to:

- remains of rail infrastructure including buildings, footings, stations, signal boxes, rail lines, bridges and culverts
- remains of other infrastructure including sandstone or brick buildings, wells, cisterns, drainage services, conduits, old kerbing and pavement, former road surfaces, timber and stone culverts, bridge footings and retaining walls
- artefact scatters including clustering of broken and complete bottles, glass, ceramics, animal bones and clay pipes
- Archaeological human skeletal remains.

6.2. Managing unexpected heritage finds

In the event that an unexpected heritage find (the find) is encountered on a Sydney Metro site, the flowchart in Figure 1 must be followed. There are eight steps in the procedure. These steps are summarised in Figure 1 and explained in detail in Table 2.

Figure 1 Overview of steps to be undertaken on the discovery of an unexpected heritage item

IMPORTANT!

Sydney Metro may have approval to impact on certain heritage items during construction. If you think that you may have discovered a heritage item and you are unsure whether an approval is in place or not, **STOP** works and follow this procedure.

Table 2 Specific tasks to be implemented following the discovery of an unexpected heritage item

Step	Task	Responsibility	Guidance and tools
1	Stop work, protect item and inform the Excavation Director		
1.1	Stop all work in the immediate area of the item and notify the Project Manager	Contractor/ Supervisor	Appendix 1 (Identifying Unexpected Heritage items)
1.2	Establish a 'no-go zone' around the item. Use high visibility fencing, where practical. No work is to be undertaken within this zone until further investigations are completed and, if required, appropriate approvals are obtained. Inform all site personnel about the no-go zone.	Project Manager/ Contractor/ Supervisor	
1.3	Inspect, document and photograph the item.	Archaeologist and or Excavation Director	Appendix 2 (Unexpected Heritage Item Recording Form) Appendix 3 (Photographing Unexpected Heritage items)
1.4	Is the item likely to be bone? If yes , follow the steps in Appendix 4 – 'Uncovering bones'. Where it is obvious that the bones are human remains, you must notify the local police by telephone immediately. They may take command of all or part of the site. Also refer to the Sydney Metro Exhumation Management Plan If no , proceed to next step.	Excavation Director	Appendix 4 (Uncovering Bones)

Step	Task	Responsibility	Guidance and tools
1.5	<p>Inform the Excavation Director of the item and provide as much information as possible, including photos and completed form (Appendix 2).</p> <p>Where the project has a Sydney Metro Environmental Manager, the Environmental Manager should be involved in the tasks/process.</p>	Contractors Project Manager	
1.6	<p>Can the works avoid further disturbance to the item? Project Manager to confirm with Sydney Metros Environment Manager.</p> <p>Complete the remaining tasks in Step 1.</p>	Contractors Project Manager	
1.7	<p>Excavation Director and Sydney Metro Environmental Manager to advise the Project Manager whether Sydney Metro has approval to impact on the 'item'.</p> <p>Does Sydney Metro have an approval or permit to impact on the item?</p> <p>If yes, work may recommence in accordance with that approval or permit. There is no further requirement to follow this procedure.</p> <p>If no, continue to next step.</p>	Contractors Project Manager	
1.8	<p>Has the 'find' been damaged or harmed?</p> <p>If yes, record the incident in the Incident Management System Implement any additional reporting requirements related to the planning approval and CEMP, where relevant.</p>	Contractors Project Manager, Excavation Director	
2	Contact and engage an archaeologist and/or an Aboriginal heritage consultant		
2.1	<p>If an archaeologist and/or Aboriginal heritage consultant has been previously appointed for the project, contact them to discuss the location and extent of the item and arrange a site inspection, if required. The project CEMP may contain contact details of the archaeologist/Aboriginal heritage consultant.</p> <p>Where there is no project archaeologist engaged for the works engage a suitably qualified consultant to assess the find:</p> <p>if the find is a non-Aboriginal deposit, engage a suitably qualified and experienced archaeological consultant</p> <p>if the find is likely to be an Aboriginal object, engage an Aboriginal heritage consultant to assess the find.</p>	Contractors Project Manager, Excavation Director	
2.2	<p>If requested, provide photographs of the item taken during Step 1.3 to the archaeologist or Aboriginal heritage consultant.</p>	Contractors Project Manager, Excavation Director	Appendix 3 (Photographing Unexpected Heritage items)

Step	Task	Responsibility	Guidance and tools
3	Preliminary assessment and recording of the find		
3.1	In a minority of cases, the archaeologist/Aboriginal heritage consultant may determine from the photographs that no site inspection is required because no heritage constraint exists for the project (e.g. the item is not a 'relic', a 'heritage item' or an 'Aboriginal object'). Any such advice should be provided in writing (e.g. via email or letter with the consultant's name and company details clearly identifiable) to the Sydney Metro Project Manager.	Archaeologist/ Aboriginal heritage consultant/ Excavation Director	Proceed to Step 8
3.2	Arrange site access for the archaeologist/Aboriginal heritage consultant to inspect the item as soon as practicable. In the majority of cases a site inspection is required to conduct a preliminary assessment.	Contractors Project Manager, Excavation Director	
3.3	Subject to the archaeologist/Aboriginal heritage consultant's assessment, work may recommence at a set distance from the item. This is to protect any other archaeological material that may exist in the vicinity, which may have not yet been uncovered. Existing protective fencing established in Step 1.2 may need to be adjusted to reflect the extent of the newly assessed protective area. No works are to take place within this area once established.	Archaeologist/ Aboriginal heritage consultant Contractors Project Manager, Excavation Director	
3.4	The archaeologist/Aboriginal heritage consultant may provide advice after the site inspection and preliminary assessment that no heritage constraint exists for the project (e.g. the item is not a 'relic' or a 'heritage item' or an 'aboriginal item'. Any such advice should be provided in writing (e.g. via email or letter with the consultant's name and company details clearly identifiable) to the Metro Project Manager. Note that : a relic is evidence of past human activity which has local or State heritage significance. It may include items such as bottles, utensils, remnants of clothing, crockery, personal effects, tools, machinery and domestic or industrial refuse an Aboriginal object may include a shell midden, stone tools, bones, rock art or a scarred tree a "work", building or standing structure may include tram or train tracks, kerbing, historic road pavement, fences, sheds or building foundations.	Archaeologist/ Aboriginal heritage consultant/ Contractors Project Manager, Excavation Director	Proceed to Step 8 Refer to Appendix 1 (Identifying heritage items)

Step	Task	Responsibility	Guidance and tools
3.5	Where required, seek additional specialist technical advice (such as a forensic or physical anthropologist to identify skeletal remains). The archaeologist/Aboriginal heritage consultant can provide contacts for such specialist consultants.	Excavation Director Archaeologist	
3.6	Where the item has been identified as a 'relic' or 'heritage item' or an 'Aboriginal object' the archaeologist should formally record the item.	Archaeologist/ Aboriginal heritage consultant	
3.7	OEH (Heritage Division for non-Aboriginal relics and Planning and Aboriginal Heritage Section for Aboriginal objects) can be notified informally by telephone at this stage by the Sydney Metro Environmental Manager Any verbal conversations with regulators must be noted on the project file for future reference.	Contractors Project Manager, Excavation Director	
4	Section 4 not used		
5	Notify the regulator, if required.		
5.1	Based on the findings of the archaeological or heritage management plan and corresponding legislative requirements, is the find required to be notified to OEH and the Secretary? If no, proceed directly to Step 6 If yes, proceed to next step.	Sydney Metro Environmental Manager Excavation Director	
5.2	If notification is required, complete the template notification letter, including the archaeological/heritage management plan and other relevant supporting information and forward to the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) for signature.	Sydney Metro Environmental Manager Excavation Director	Appendix 6 (Template Notification Letter)
5.3	Forward the signed notification letter to OEH and the Secretary. Informal notification (via a phone call or email) to OEH prior to sending the letter is appropriate. The archaeological or heritage management plan and the completed site recording form (Appendix 2) must be submitted with the notification letter (for both Aboriginal objects and non-Aboriginal relics). For Part 5.1 projects, the Department of Planning and Environment must also be notified.		

Step	Task	Responsibility	Guidance and tools
5.4	A copy of the final signed notification letter, archaeological or heritage management plan and the site recording form is to be kept on file and a copy sent to the Sydney Metro Project Manager.	Contractors Project Manager, Excavation Director	
6	Implement archaeological or heritage management plan		
6.1	Modify the archaeological or heritage management plan to take into account any additional advice resulting from notification and discussions with OEH.	Contractors Project Manager, Excavation Director	
6.2	Implement the archaeological or heritage management plan. Where impact is expected, this may include a formal assessment of significance and heritage impact assessment, preparation of excavation or recording methodologies, consultation with Registered Aboriginal Parties, obtaining heritage approvals etc., if required.	Contractors Project Manager, Excavation Director	
6.3	Where heritage approval is required contact the Sydney Metro Environment Manager for further advice and support material. Please note there are time constraints associated with heritage approval preparation and processing.	Contractors Project Manager, Excavation Director	
6.4	Assess whether heritage impact is consistent with the project approval or if project approval modification is required from the Department of Planning and Environment.	, Excavation Director/Sydney Metro Environmental Manager	
6.5	Where statutory approvals (or project approval modification) are required, impact upon relics and/or Aboriginal objects must not occur until heritage approvals are issued by the appropriate regulator.	Contractors Project Manager, Excavation Director	
6.6	Where statutory approval is not required but where recording is recommended by the archaeologist/Aboriginal heritage consultant, sufficient time must be allowed for this to occur.	Contractors Project Manager, Excavation Director	
6.7	Ensure short term and permanent storage locations are identified for archaeological material or other heritage material removed from site, where required. Interested third parties (e.g. museums, local Aboriginal land councils, or local councils) should be consulted on this issue. Contact the archaeologist or Aboriginal heritage consultant for advice on this matter, if required.	Contractors Project Manager, Excavation Director	
7	Section 7 Not Used		

Step	Task	Responsibility	Guidance and tools
8	Resume work		
8.1	Seek written clearance to resume project work from the project Excavation Director/Archaeologist/Aboriginal heritage consultant. Clearance would only be given once all archaeological excavation and/or heritage recommendations and approvals (where required) are complete. Resumption of project work must be in accordance with the all relevant project/heritage approvals/determinations.	Contractors Project Manager, Excavation Director	
8.2	If required, ensure archaeological excavation/heritage reporting and other heritage approval conditions are completed in the required timeframes. This includes artefact retention repositories, conservation and/or disposal strategies.	Contractors Project Manager, Excavation Director	
8.3	Deleted		
8.4	If additional unexpected items are discovered this procedure must begin again from Step 1.	All	

7. Responsibilities

Table 3 Roles and Responsibilities

Role	Responsibility or role under this guideline
Contractor / Supervisor	Stop work immediately when an unexpected heritage find is encountered. Cordon off area until Environmental Manager /Excavation Director advises that work can recommence.
Contractor or Environment Manager	Manage the process of identifying, protecting and mitigating impacts on the 'find'. Liaise with Sydney Metro Project Manager and Environment Manager and assist the archaeologist/Aboriginal heritage consultant with mitigation and regulatory requirements. Complete Incident Report and review CEMP for any changes required. Propose amendments to the CEMP if any changes are required.
Contractor's or Project Heritage Advisor or Consultant	Provide expert advice to the Sydney Metro Environment Manager on 'find' identification, significance, mitigation, legislative procedures and regulatory requirements.
Environmental Representative	Independent environmental advisor engaged by Sydney Metro Ensures compliance with relevant approvals (new and existing).
Heritage Division of OEH	Regulate the care, protection and management of relics (non-Aboriginal heritage). Delegated authority for Heritage Council Issue excavation permits.

Role	Responsibility or role under this guideline
Registered Aboriginal Parties (RAPs)	Aboriginal people who have registered with Sydney Metro to be consulted about a proposed project or activity in accordance with the OEH <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010</i> .
Sydney Metro Environment Manager	Notify the Sydney Metro Principal Manager, Environmental Management of 'find' and manage Incident Reporting once completed by Environmental Manager.
Contractors Project Manager	Ensures all aspects of this procedure are implemented. Advise Contractor / Supervisor to recommence work if all applicable requirements have been satisfied and the Excavation Director /Project Archaeologist has approved recommend of work.

8. Seeking Advice

Advice on this procedure should be sought from the Sydney Metro Environment a Manager in the first instance. Contractors and alliance partners should ensure their own project environment managers are aware of and understand this procedure.

Technical archaeological or heritage advice regarding an unexpected heritage item should be sought from a suitably qualified and experienced archaeologist/Aboriginal heritage consultant.

9. Related documents and references

- Environmental Incident Classification and Reporting – 9TP-PR-105
- Guide to Environmental Control Map – 3TP-SD-015
- NSW Heritage Office (1998), *Skeletal remains: guidelines for the management of human skeletal remains*.
- Roads and Maritime Services (2015), *Standard Management Procedure Unexpected Heritage Items*.
- Department of Environment and Conservation NSW (2006), *Manual for the identification of Aboriginal remains*.
- Sydney Metro Exhumation Management Plan

10. List of appendices

The following appendices are included to support this procedure:

- Appendix 1: Examples of finds encountered during construction works
- Appendix 2: Unexpected Heritage Item Recording Form
- Appendix 3: Photographing Unexpected Heritage Items
- Appendix 4: Uncovering Bones
- Appendix 5: Archaeological Advice Checklist
- Appendix 6: Template Notification Letter

11. Document history

Version	Date of approval	Notes
1.1		Incorporates ER comments 21/06/17
1.2		Amends p13 step 8 reference to s146 added
1.3		Incorporates Planning Mods 1-4 including amended CoA E20
1.4		Incorporates ER comments 21/03/18
2.0		Removes SSI 15-7400 COA reference

Appendix 1: Examples of finds encountered during construction works



Photo 1 - Aboriginal artefacts found at the Wickham Transport Interchange, 2015



Photo 2 – Aboriginal artefacts (shell material) found at the Wickham Transport Interchange, 2015



Photo 3 1840s seawall and 1880s retaining wall uncovered at Balmain East, 2016



Photo 4 Sandstone pavers uncovered at Balmain East, 2016



Photo 5 - Platform structure at Hamilton Railway Station classified as a 'work' by the project archaeologist - Wickham Transport Interchange project, 2015

Photo 6 - Platform structure at Hamilton Railway Station classified as a 'work' by the project archaeologist - Wickham Transport Interchange project, 2015



Photo 7 - Sandstone flagging and cesspit - Wynyard Walk project, 2014



Photo 8 - Chinese Ming Dynasty pottery and English porcelain/pottery dating back to early 19th century - Wynyard Walk project, 2014



Photo 9 - Pottery made by convict potter Thomas Ball during the early settlement - Wynyard Walk project, 2014

The following images, obtained from the Roads and Maritime Services' *Standard Management Procedure for Unexpected Heritage items 2015*, can be used to assist in the preliminary identification of potential unexpected items during construction and maintenance works.



Photo 10 - Top left hand picture continuing clockwise: Stock camp remnants (Hume Highway Bypass at Tarcutta); Linear archaeological feature with post holes (Hume Highway Duplication), Animal bones (Hume Highway Bypass at Woomargama); Cut wooden stake; Glass jars, bottles, spoon and fork recovered from refuse pit associated with a Newcastle Hotel (Pacific Highway, Adamstown Heights, Newcastle area) (RMS, 2015).

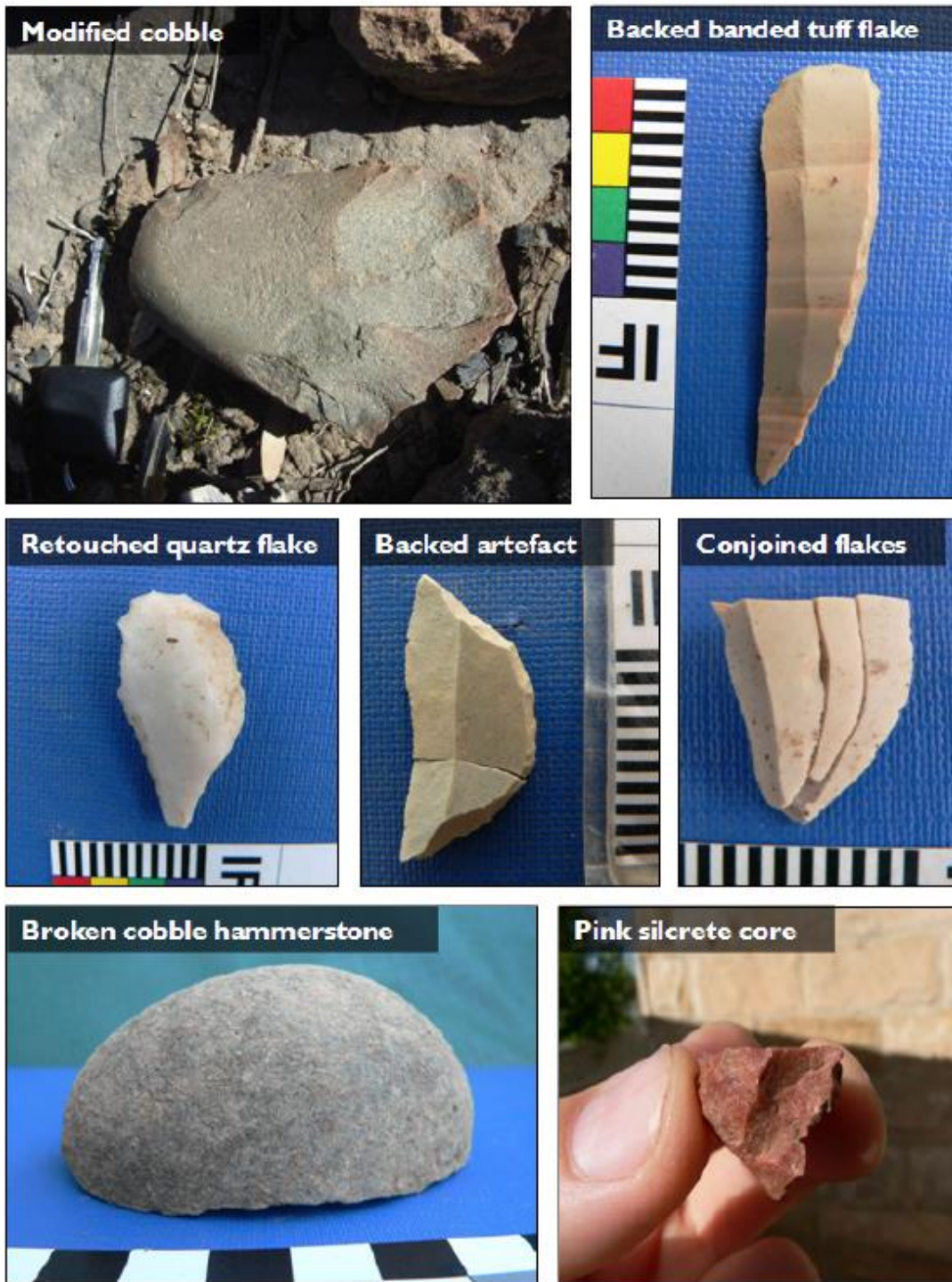


Photo 11 - Top left hand picture continuing clockwise: Stock camp remnants (Hume Highway Bypass at Tarcutta); Linear archaeological feature with post holes (Hume Highway Duplication), Animal bones (Hume Highway Bypass at Woomargama); Cut wooden stake; Glass jars, bottles, spoon and fork recovered from refuse pit associated with a Newcastle Hotel (Pacific Highway, Adamstown Heights, Newcastle area) (RMS, 2015).

Appendix 2 - Unexpected heritage item recording form

Example of unexpected heritage item recording form:

This form is to be completed Excavation Director on the discovery of an archaeological heritage item during construction or maintenance works			
Date:		Recorded by:	
		(include name and position)	
Project name:			
Description of works being undertaken:			
Description of exact location of item			
Description of item found <i>(What type of item is it likely to be? Tick the relevant boxes).</i>			
A. A relic	<input type="checkbox"/>	A 'relic' is evidence of a past human activity relating to the settlement of NSW with local or state heritage significance. A relic might include bottle, utensils, plates, cups, household items, tools, implements, and similar items	
B. A 'work', building or structure'	<input type="checkbox"/>	A 'work' can generally be defined as a form infrastructure such as track or rail tracks, timber sleepers, a culvert, road base, a bridge pier, kerbing, and similar items	
C. An Aboriginal object	<input type="checkbox"/>	An 'Aboriginal object' may include stone tools, stone flakes, shell middens, rock art, scarred trees and human bones	
D. Bone	<input type="checkbox"/>	Bones can either be human or animal remains. Remember that you must contact the local police immediately by telephone if you are certain that the bone(s) are human remains.	
E. Other	<input type="checkbox"/>		
Provide a short description of the item <i>(E.g. metal rail tracks running parallel to the rail corridor. Good condition. Tracks set in concrete, approximately 10 cm below the current ground surface).</i>			

(Uncontrolled when printed)

<p>Sketch <i>(Provide a sketch of the item's general location in relation to other road features so its approximate location can be mapped without having to re-excavate it. In addition, please include details of the location and direction of any photographs of the item taken)</i></p>			
<p>Action taken (Tick either A or B)</p>			
<p>A. Unexpected item would not be further impacted by the works</p>	<input type="checkbox"/>	<p>Describe how works would avoid impact on the item. (E.g. the rail tracks would be left in situ and recovered with paving).</p>	
<p>B. Unexpected item would be further impacted by the works</p>	<input type="checkbox"/>	<p>Describe how works would impact on the item. (E.g. milling is required to be continued to a depth of 200 mm depth to ensure the pavement requirements are met. Rail tracks would need to be removed.)</p>	
<p>Excavation Director</p>		<p>Signature</p>	
		<p>Signature</p>	

Important
It is a statutory offence to disturb Aboriginal objects and historic relics (including human remains) without an approval. All works affecting objects and relics must cease until an approval is sought.
Approvals may also be required to impact on certain works.

Appendix 3 - Photographing unexpected heritage items

Photographs of unexpected items in their current context (*in situ*) may assist archaeologists/Aboriginal heritage consultants to better identify the heritage values of the item. Emailing good quality photographs to specialists can allow for better quality and faster heritage advice. The key elements that must be captured in photographs of the item include its position, the item itself and any distinguishing features. All photographs must have a scale (ruler, scale bar, mobile phone, coin etc.) and a note describing the direction of the photograph.

Context and detailed photographs

It is important to take a general photograph (Figure 1) to convey the location and setting of the item. This will add value to the subsequent detailed photographs also required (Figure 2).

Removal of the item from its context (e.g. excavating from the ground) for photographic purposes is not permitted.

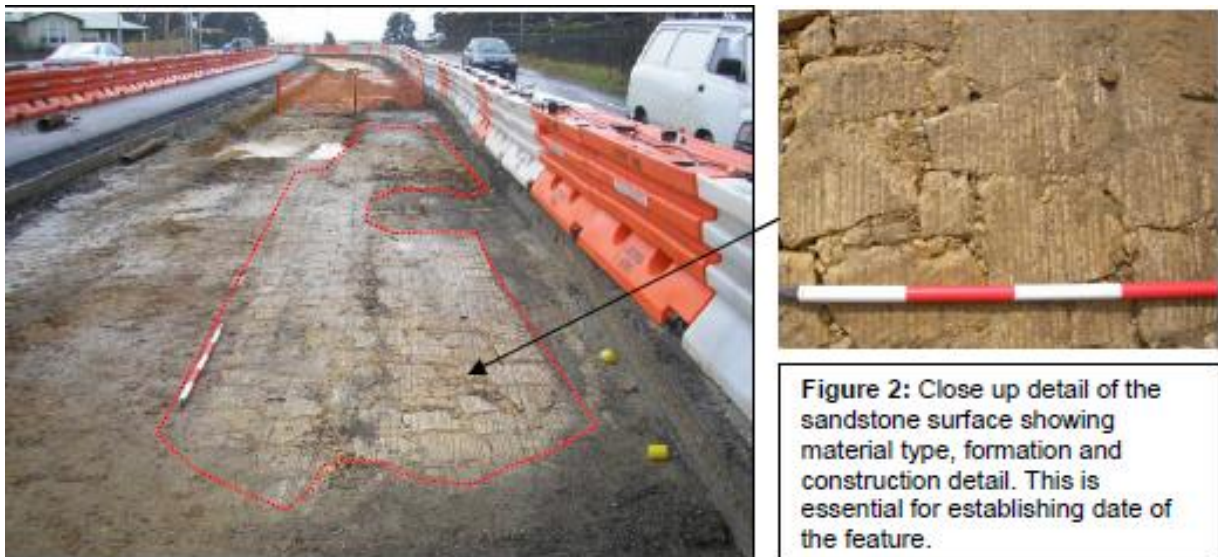


Figure 1: Telford road uncovered on the Great Western Highway (Leura) in 2008 (RMS, 2015).

Photographing distinguishing features

Where unexpected items have a distinguishing feature, close up detailed photographs must be taken of these features, where practicable. In the case of a building or bridge, this may include diagnostic details architectural or technical features. See Figures 3 and 4 for examples.



Figure 3: Ceramic bottle artefact with stamp.



Figure 4: Detail of the stamp allows 'Tooth & Co Limited' to be made out. This is helpful to a specialist in gauging the artefact's origin, manufacturing date and likely significance.

Photographing bones

The majority of bones found on site will those of be recently deceased animal bones often requiring no further assessment (unless they are in archaeological context). However, if bones are human, the police must be contacted immediately (see Appendix 6 for detailed guidance). Taking quality photographs of the bones can often resolve this issue quickly. The project archaeologist can confirm if bones are human or non-human if provided with appropriate photographs.

Ensure that photographs of bones are not concealed by foliage (Figure 5) as this makes it difficult to identify. Minor hand removal of foliage can be undertaken as long as disturbance of the bone does not occur. Excavation of the ground to remove bone(s) should not occur, nor should they be pulled out of the ground if partially exposed.

Where sediment (adhering to a bone found on the ground surface) conceals portions of a bone (Figure 6) ensure the photograph is taken of the bone (if any) that is not concealed by sediment.



Figure 5: Bone concealed by foliage.



Figure 6: Bone covered in sediment

Ensure that all close up photographs include the whole bone and then specific details of the bone (especially the ends of long bones, the *epiphysis*, which is critical for species identification). Figures 7 and 8 are examples of good photographs of bones that can easily

be identified from the photograph alone. They show sufficient detail of the complete bone and the epiphysis.



Figure 7: Photograph showing complete bone.



Figure 8: Close up of a long bone's epiphysis.

Appendix 4 - Uncovering bones

This appendix provides advice regarding:

- what to do on first discovering bones
- the range of human skeletal notification pathways
- additional considerations and requirements when managing the discovery of human remains.

1. First uncovering bones

Refer to the Sydney Metro Exhumation Management Plan

Stop all work in the vicinity of the find. All bones uncovered during project works should be **treated with care and urgency** as they have the potential to be human remains. The bones must be identified as either human or non-human as soon as possible by a qualified forensic or physical anthropologist.

On the very rare occasion where it is immediately obvious from the remains that they are human, the Project Manager (or a delegate) should **inform the police by telephone** prior to seeking specialist advice. It will be obvious that it is human skeletal remains where there is no doubt, as demonstrated by the example in Figure 1⁹. Often skeletal elements in isolation (such as a skull) can also clearly be identified as human. Note it may also be obvious that human remains have been uncovered when soft tissue and/or clothing are present.

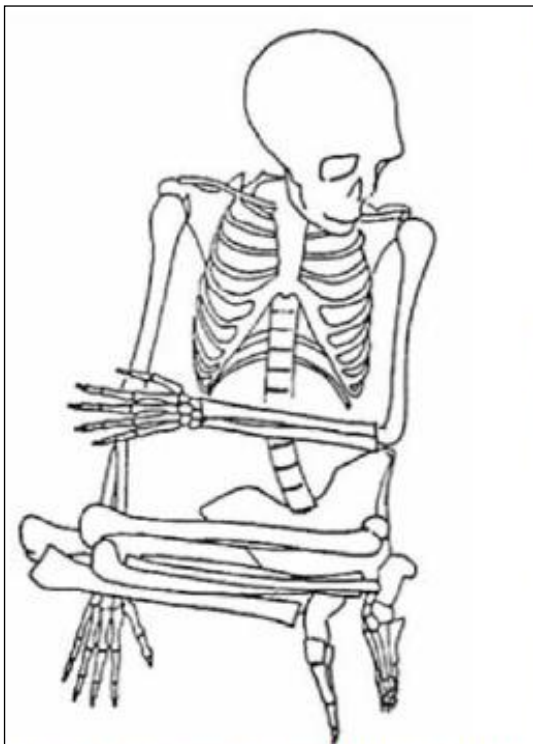


Figure 1: Schematic of a complete skeleton that is 'obviously' human¹².



Figure 2: Disarticulated bones that require assessment to determine species.

⁹ After Department of Environment and Conservation NSW (2006), *Manual for the identification of Aboriginal Remains*: 17

This preliminary phone call is to let the police know that a specialist skeletal assessment to determine the approximate date of death which will inform legal jurisdiction. The police may wish to take control of the site at this stage. If not, a forensic or physical anthropologist must be requested to make an on-site assessment of the skeletal remains.

Where it is not immediately obvious that the bones are human (in the majority of cases, illustrated by Figure 2), specialist assessment is required to establish the species of the bones. Photographs of the bones can assist this assessment if they are clear and taken in accordance with guidance provided in Appendix 3. Good photographs often result in the bones being identified by a specialist without requiring a site visit; noting they are nearly always non-human. In these cases, non-human skeletal remains must be treated like any other unexpected archaeological find.

If the bones are identified as human (either by photographs or an on-site inspection) a technical specialist must determine the likely ancestry (Aboriginal or non-Aboriginal) and burial context (archaeological or forensic). This assessment is required to identify the legal regulator of the human remains so **urgent notification** (as below) can occur.

Preliminary telephone or verbal notification by the archaeologist to the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) is appropriate. This must be followed up later by a formal letter notification to the relevant regulator when a management plan has been developed and agreed to by the relevant parties.

2. Range of human skeletal notification pathways

The following is a summary of the different notification pathways required for human skeletal remains depending on the preliminary skeletal assessment of ancestry and burial context.

A. Human bones are from a recently deceased person (less than 100 years old).

Action

A police officer must be notified immediately as per the obligations to report a death or suspected death under s35 of the *Coroners Act 2009* (NSW). It should be assumed the police will then take command of the site until otherwise directed.

B. Human bones are archaeological in nature (more than 100 years old) and are likely to be **Aboriginal** remains.

Action

The OEH (Planning and Aboriginal Heritage Section) must be notified immediately. The Aboriginal Cultural Heritage Advisor must contact and inform the relevant Aboriginal community stakeholders who may request to be present on site.

C. Human bones are archaeological in nature (more than 100 years old) and likely to be non-Aboriginal remains.

Action

The OEH (Heritage Division) must be notified immediately

Figure 3 summarises the notification pathways on finding bones.

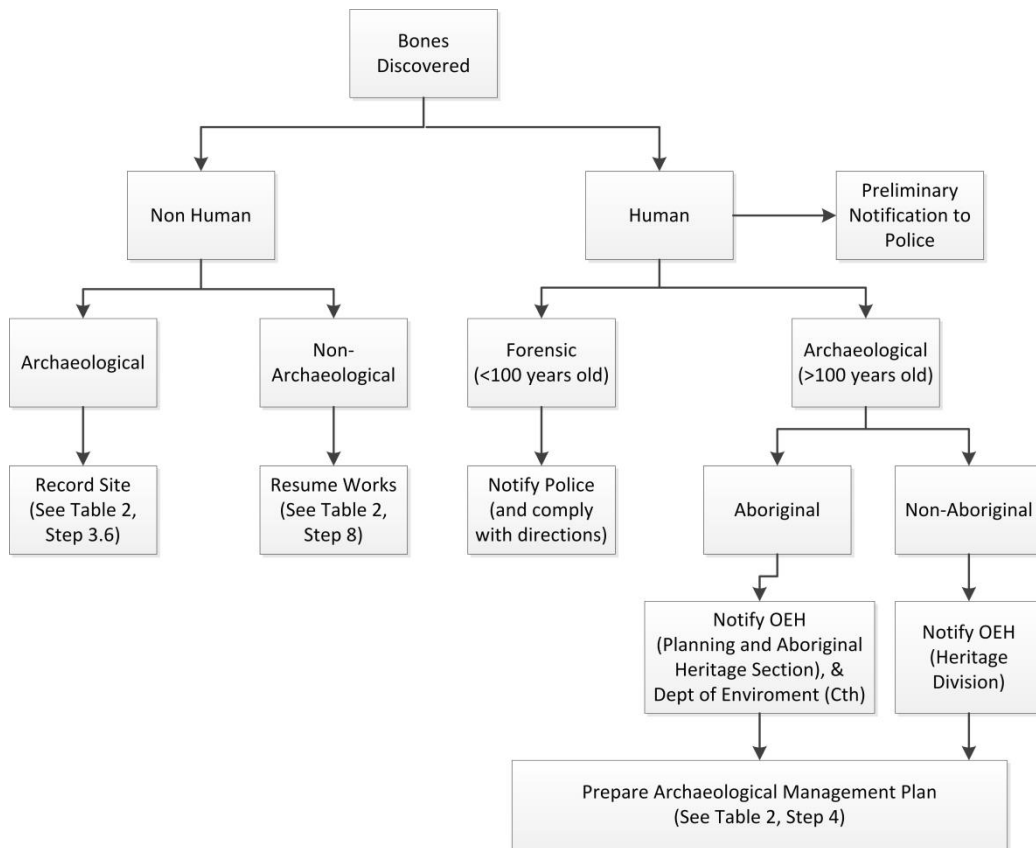


Figure 3 Overview of steps to be undertaken on the discovery of bones

After the appropriate verbal notifications (as described in 2B and 2C above), the Project Manager must proceed through the *Unexpected Heritage Items Exhumation Management Plan* (Step 4). It is noted that no *Exhumation Management Plan* is required for forensic cases (2A), as all future management is a police matter. Non-human skeletal remains must be treated like any other unexpected archaeological find and so must proceed to record the find as per Step 3.6.

3. Additional considerations and requirements

Uncovering archaeological human remains must be managed intensively and needs to consider a number of additional specific issues. These issues might include facilitating culturally appropriate processes when dealing with Aboriginal remains (such as repatriation and cultural ceremonies). Project Managers may need to consider overnight site security of any exposed remains and may need to manage the onsite attendance of a number of different external stakeholders during assessment and/or investigation of remains.

Project Managers may also be advised to liaise with local church/religious groups and the media to manage community issues arising from the find. Additional investigations may be required to identify living descendants, particularly if the remains are to be removed and relocated.

If exhumation of the remains (from a formal burial or a vault) is required, Project Managers should also be aware of additional approval requirements under the *Public Health Act 1991* (NSW). Specifically, Sydney Metro may be required to apply to the Director General of NSW

Department of Health for approval to exhume human remains as per Clause 26 of the *Public Health (Disposal of Bodies) Regulation 2002 (NSW)*¹⁰.

Further, the exhumation of such remains needs to consider health risks such as infectious disease control, exhumation procedures and reburial approval and registration. Further guidance on this matter can be found at the NSW Department of Health website.

In addition, due to the potential significant statutory and common law controls and prohibitions associated with interfering with a public cemetery, project teams are advised, when works uncover human remains adjacent to cemeteries, to confirm the cemetery's exact boundaries.

¹⁰ This requirement is in addition to heritage approvals under the *Heritage Act 1977*.

Appendix 5 - Archaeological/heritage advice checklist

The archaeologist/Aboriginal heritage consultant must advise the Sydney Metro Principal Manager Sustainability Environment and Planning (Program) of an appropriate archaeological or heritage management plan as soon as possible after an inspection of the site has been completed (see Step 4). An archaeological or heritage management plan can include a range of activities and processes, which differ depending on the find and its significance.

In discussions with the archaeologist/Aboriginal heritage consultant the following checklist can be used as a prompt to ensure all relevant heritage issues are considered when developing this plan. This will allow the project team to receive clear and full advice to move forward quickly. Archaeological and/or heritage advice on how to proceed can be received in a letter or email outlining all relevant archaeological and/or heritage issues.

	Required	Outcome/notes
Assessment and investigation		
• Assessment of significance	Yes/No	
• Assessment of heritage impact	Yes/No	
• Archaeological excavation	Yes/No	
• Archival photographic recording	Yes/No	
Heritage approvals and notifications		
• AHIP, section 140, section 139 exceptions etc.	Yes/No	
• Regulator relics/objects notification	Yes/No	
• Notification to Sydney Trains for s170 heritage conservation register	Yes/No	
• Compliance with CEMP or other project heritage approvals	Yes/No	
Stakeholder consultation		
• Aboriginal stakeholder consultation	Yes/No	
Artefact/heritage item management		
• Retention or conservation strategy (e.g. items may be subject to long conservation and interpretation)	Yes/No	
• Disposal strategy	Yes/No	
• Short term and permanent storage locations (interested third parties should be consulted on this issue).	Yes/No	
• Control Agreement for Aboriginal objects	Yes/No	

Appendix 6 - Template notification letter

Insert on TfNSW letterhead
Select and type date]
[Select and type reference number]

XXX

Manager, Conservation
Heritage Division, Office of Environment and Heritage
Locked Bag 5020
Parramatta NSW 2124

[Select and type salutation and name],

Re: Unexpected heritage item discovered during Sydney Metro activities.

I write to inform you of an unexpected [select: relic, heritage item or Aboriginal object] found during Sydney Infrastructure and Services construction works at [insert location] on [insert date] in accordance with the notification requirement under select: section 146 of the *Heritage Act 1977* (NSW). [Where the regulator has been informally notified at an earlier date by telephone, this should be referred to here].

NB: On finding Aboriginal human skeletal remains this letter must also be sent to the Commonwealth Minister for the Environment in accordance with notification requirements under section 20(1) of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Commonwealth).

[Provide a brief overview of the project background and project area. Provide a summary of the description and location of the item, including a map and image where possible. Also include how the project was assessed under the *Environmental Planning and Assessment Act 1979* (NSW) (e.g. Part 5). Also include any project approval number, if available].

Sydney Metro [or contractor] has sought professional archaeological advice regarding the item. A preliminary assessment indicates [provide a summary description and likely significance of the item]. Please find additional information on the site recording form attached.

Based on the preliminary findings, Sydney Metro [or contractor] is proposing [provide a summary of the proposed archaeological/heritage approach (e.g. develop archaeological research design (where relevant), seek heritage approvals, undertake archaeological investigation or conservation/interpretation strategy). Also include preliminary justification of such heritage impact with regard to project design constraints and delivery program].

The proposed approach will be further developed in consultation with a nominated Office of Environment and Heritage staff member.

Should you have any feedback on the proposed approach, or if you require any further information, please do not hesitate to contact [Environment and Planning Project Manager] on (02) XXXX XXXX.

Yours sincerely

[Sender name]

Sydney Metro Principal Manager Sustainability Environment and Planning (Program) [Attach the archaeological/heritage management plan and site recording form]

Appendix 3: Cover Page

Community Notification.

Appendix 4: Cover Page

Environmental Representative Supporting Letter.