

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 TfNSW/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:	GHD
Project:	Sydney Metro City & Southwest, Contamination & Geotechnical Assessment
Application Title: (e.g. Smith St trenching works)	Geotechnical/ Contamination sampling boreholes at Central Station
Application Number:	20170905
Application Date:	05/09/17 (updated on 11/9/17)
Planning Approval:	City & Southwest Chatswood to Sydenham
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?	<p><i>If 'Yes', this completed form must be endorsed by an Environmental Representative, approved by TfNSW and submitted to the applicable planning authority to determine that the works are not defined as 'construction'.</i></p> <p>Yes</p> <p>TfNSW to check and determine if these boreholes can be done under existing approval for bores done recently. Existing DPE determination (previous) for similar works is attached to Appendix 4</p>

Part 2: Details	
<p>Describe the proposed Minor Works: Including work methodologies, site location(s) and site description(s) (e.g. landscape type, waterways, etc.).</p>	<p>Works relate to borehole investigation in Central station platforms and tracks as shown in the attached plan. Works involve</p> <ol style="list-style-type: none"> 1) Contamination sampling works using a mini probe on platforms 12-15 (CBH001-010) 2) Geotech and Contamination sampling on tracks 13-15 (CBH011-014, BH085) <p>Borehole drilling works will be carried out as per Sydney Metro approved methodology (attached). In general this will include the following:</p> <ol style="list-style-type: none"> 1) BH on platforms will be drilled using a Mini Probe (drill) after the top 1.5m is cleared by NDD plant 2) BH on tracks will be drilled using a Comacchio drill rig after the top 1.5 is cleared by NDD
<p>Planned Commencement Date:</p>	17 th September 2017
<p>Local Sensitivities: Describe the presence (if any) of local sensitive environmental areas and community receptors.</p>	The work inside the station is being coordinated with Sydney Trains, including rail possessions.

Part 3: Environmental Risk Assessment and Management	
<p>Prepare an Environmental Risk Assessment (in accordance with the <i>Sydney Metro Risk Management Standard</i>) 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>	
<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>These investigation works will be carried out under the approved Environment Management Plan (CEMP) for the works.</i> <i>Attached in Appendix 2</i></p>

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>	GHD will do a pre works brief to personnel doing the borehole investigation works. This brief will cover the Environmental, community and safety risks and control measures.

Part 5: Community Consultation	
<p>What community consultation has been undertaken already?</p>	These investigation works are carried out in Central Station. Sydney Trains have been consulted and briefed on the works activity and methodology, timing.
<p>What community consultation is planned to be undertaken?</p>	Sydney Metro City & Southwest Communications team shall issue notification as appropriate one week prior to works commencement.
If drafted already, attach applicable Community Notification as Appendix 3.	


Part 6: Contact Details

Nominate contractor's project manager, environmental and communications contact(s).

Name:	Kamal Kamalarasa	Position:	Project Manager	Phone:	0421677766
	Henry Luo		Field works Coordinator		0414090002
	Greg Bowyer		Project Director		0402060122

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.

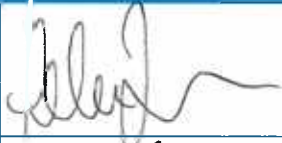

Name:	Kamal Kamalarasa		
Signature:		Date:	5/09/17

Determination Page

(TfNSW/Environmental Representative Use Only)


12. Endorsement/Approval

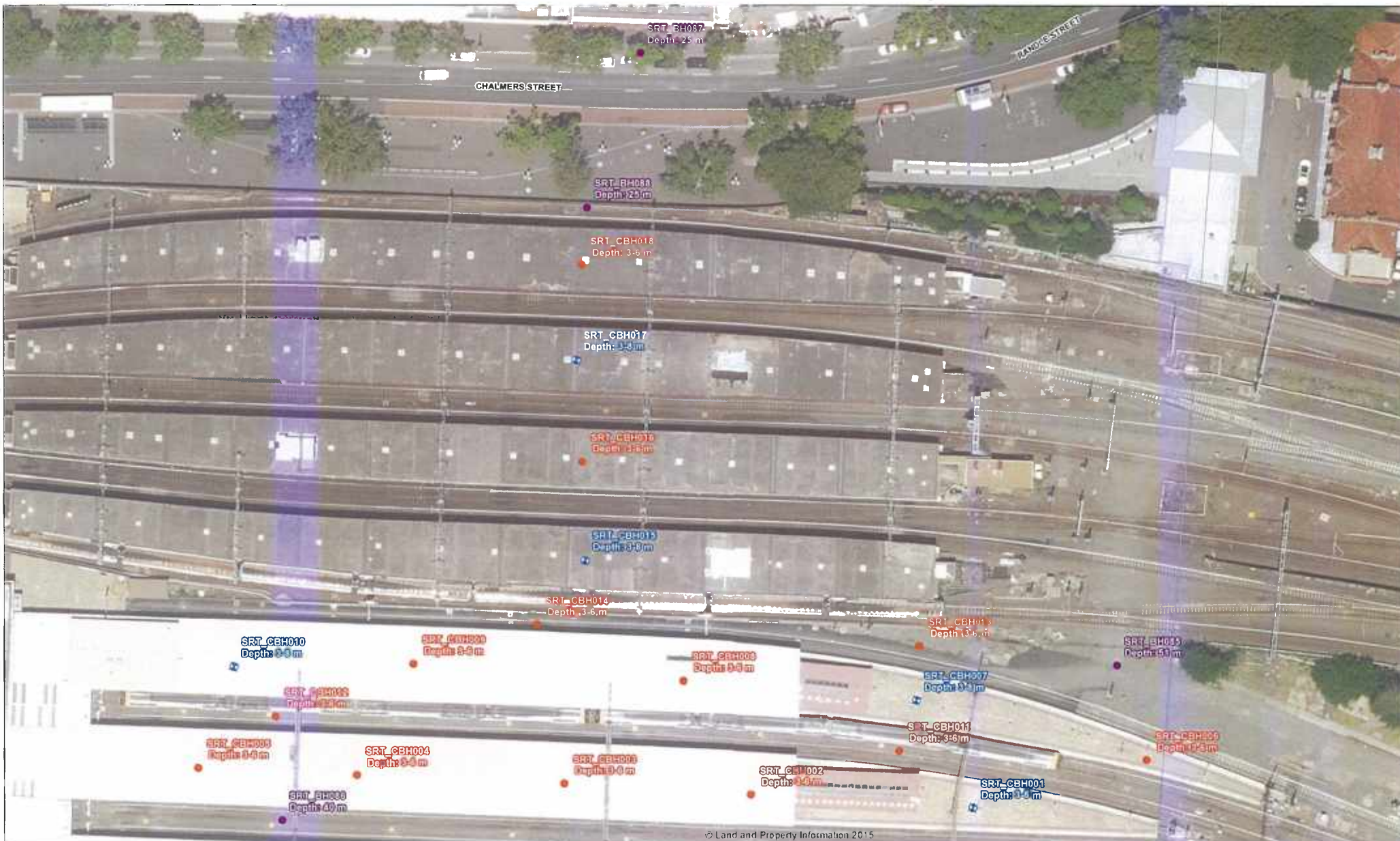
These signatures represent formal endorsement/approval for the proposed Minor Works to commence in accordance with this application and the applicable planning approval requirements (subject to any determination from the applicable planning authority as may be required by the planning approval conditions).

	TfNSW Principal Manager, Communication & Engagement – Endorsement (required for all applications)	TfNSW Principal Manager, Sustainability, Environment & 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:	HELENA JOHANSSON	FIL CERONE	
Date:	14/9/17	15/9/17	
Comments:			Supporting letter attached as Appendix 4 if necessary.
Conditions:		Bore holes SRT-CRHO13-018 and SRT-13HO82 require GEH & DP&E approval <u>prior</u> to being undertaken.	Supporting letter attached as Appendix 4 if necessary.
<input checked="" type="checkbox"/>	Approved (by TfNSW)		
<input type="checkbox"/>	Endorsed (by Environmental Representative)		
<input type="checkbox"/>	Rejected		

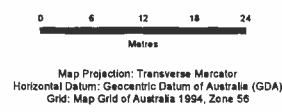
Determination Page

(TfNSW/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).			
	TfNSW Principal Manager, Communication & Engagement – Endorsement (required for all applications)	TfNSW Principal Manager, Sustainability, Environment & 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:			Alice Pryke
Date:			15/09/17
Comments:			<p><i>Supporting letter attached as Appendix 4 if necessary.</i></p> <p>The ER approval is subject to the following being obtained prior to relevant works commencing:</p> <ul style="list-style-type: none"> • Boreholes: SRT_CBH013 – SRT_CBH018 and SRT_BH082 require OEH and DP&E approval prior to being undertaken as well as Sydney Trains signature as land owner. • Boreholes: SRT_CBH001 – SRT_CBH012 and SRT_BH085 require DP&E approval prior to being undertaken <p>Copies of OEH, DP&E and Sydney Trains approvals are to be sent to the ER prior to the relevant works commencing.</p>
Conditions:			<p><i>Supporting letter attached as Appendix 4 if necessary.</i></p>
<input type="checkbox"/>	Approved (by TfNSW)		
<input checked="" type="checkbox"/>	Endorsed (by Environmental Representative)		
<input type="checkbox"/>	Rejected		



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- LEGEND**
- Borehole (Contamination)
 - Borehole (Geotechnical and Contamination)
 - ◆ Monitoring Well (Contamination)



Transport for NSW
Sydney Metro - Central Contamination
and Geotechnical Assessment

**Proposed Investigation Locations
- Central Station**

Job Number 21-25491-45
Revision A
Date 24 Aug 2017




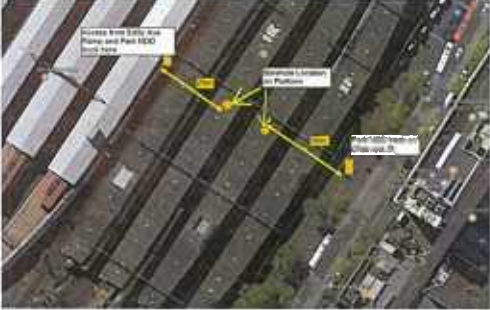

Figure 1




© 1311254910\3\Map\Deliverables\2125491_2015_Central_Station\Investigation_Central.mxd
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Appendix 1: Cover Page

Environmental Risk Assessment and Environmental Control Map.

Sydney Metro – Central Station Borehole Investigations – Methodology & Coordination Requirements

Borehole reference (refer to attached Plan)	Location	Access & Plant	Methodology	Proposed Timeframe & Coordination Requirements
SRT_CBH001-010 (3-8m)	Intercity platforms 12-14	<p>Mini Probe access from Eddy Avenue Ramp (photo shows mini probe and support trolleys)</p>  <p>Mini Probe is approximately 1m wide, 2m long, 1.5m high and weighs 900kg. During drilling the height will be 2.2m</p>	<ol style="list-style-type: none"> 1. Delineate and fence off work area (approx. 4mx4m) 2. DSS and services search to clear borehole location 3. Saw-cut tiles through grout and pop the tiles for reuse. 4. Use NDD technique to advance the bore to a depth of 1.5m. NDD truck to be parked on Road 15 and suction hose to cross tracks 13/14 for CBH001-005. 5. Use mini Probe to drill deeper and collect samples as required. 6. Install monitoring well at locations indicated in the plan. 7. Reinstate borehole, clean up and demobilise. Spare tiles to be used if tile is damaged. 	<p>Night works. Typically one night per borehole. Ten boreholes in total.</p> <p>NDD truck to be parked on Road 15 and suction hose to cross tracks 13/14 for CBH001-005. Weeknight possession (and no stabling) of tracks 13/14 required for 6 nights (electrical permit not required).</p>
SRT_CBH015-018 (3-8m)	Suburban platforms 16-23	<p>Mini Probe access from Eddy Avenue Ramp and then use the passenger lifts to access suburban platforms.</p> 	<p>Similar to above except NDD hose crossing tracks as shown in plan below.</p> 	<p>Night works. Typically one night per borehole. Four boreholes in total.</p> <p>NDD truck to be parked on Road 15 and suction hose to cross tracks 16/17/18 for CBH015-016. Weeknight possession of tracks 16/17/18 required for 3 nights (electrical permit not required).</p> <p>NDD truck to be parked on Chalmers St and suction hose to cross tracks 21/22/23 for CBH017-018. Weeknight possession of tracks 21/22/23 required for 3 nights (electrical permit not required).</p>
SRT_CBH013-014 (3-6m)	Road 15	<p>Mini Probe access from Eddy Avenue Ramp</p> 	<ol style="list-style-type: none"> 1. Delineate and barricade work area across road 15 2. DSS and services search to clear borehole location 3. Use NDD technique to advance the bore to a depth of 1.5m. 4. Use Mini Probe to drill deeper and collect samples as required. 5. Reinstate borehole, clean up and demobilise. 	<p>Day works. Typically 3 hours per borehole. Two boreholes in total. These two can be completed in one day. Coordinate with SYAB contractor.</p>

SRT_CBH011-012 (3-6m)	Between tracks 13/14	<p>Mini Probe access from Eddy Avenue Ramp. Mini Probe to cross from Road 15 into track 14 at the country end of station and crawl back up the track. (If this is not possible, then a Hi-Rail will be required. However hi-rail access will reduce the actual time available for drilling and therefore each hole may require more than one night, and hence not preferred)</p> 	<ol style="list-style-type: none"> 1. Delineate and secure work area (approx. 5mx5m) 2. DSS and services search to clear borehole location 3. Move just enough ballast with hand tools to commence borehole 4. Use NDD technique to advance the bore to a depth of 1.5m. NDD truck to be parked on Road 15 and suction hose to cross platform 14/15. 5. Use Mini Probe to drill deeper and collect samples as required. 6. Reinstate borehole and ballast, clean up and demobilise. 	<p>Night works. Typically 3 hours per borehole. Two boreholes in total. These two can be completed in one night. Weeknight possession and no stabling on tracks 13/14 required for one night (electrical permit may be required).</p>
SRT_BH085 (51m)	Road 15 near country end of station	<p>Comacchio Drill rig access from Eddy Avenue Ramp and coordinated with SYAB contractor.</p> 	<ol style="list-style-type: none"> 1. Delineate and fence off work area adjacent to road 15 2. DSS and services search to clear borehole location 3. Use NDD technique to advance the bore to a depth of 1.5m. 4. Use Comacchio Drill Rig to drill deeper and collect samples as required. 5. Reinstate borehole, clean up and demobilise. 	<p>Day works. 2-3 days required to complete this borehole. Coordinate with SYAB contractor.</p>
SRT_BH086 (40m)	Between tracks 11/12	<p>Drill rig access by Hi-rail during WE17 Rail Possession.</p> 	<ol style="list-style-type: none"> 1. Delineate and secure work area (approx. 5mx5m) 2. DSS and services search to clear borehole location 3. Move just enough ballast with hand tools to commence borehole 4. Use NDD technique to advance the bore to a depth of 1.5m 5. Use Comacchio drill rig to drill deeper and collect samples as required. 6. Reinstate borehole and ballast, clean up and demobilise. 	<p>Weekend works. This borehole is scheduled to be completed during WE17 Rail Possession. Possession and no stabling on Tracks 11/12 required during weekend. Scope has been included in WE17 Possession Planning.</p>

Appendix 2: Cover Page

Environmental Management Documentation.



Transport for NSW

Sydney Metro City & Southwest Asset Condition Assessment
Environmental Management Plan
VO 07 & **08** Geotechnical and Contamination Investigations

September 2017

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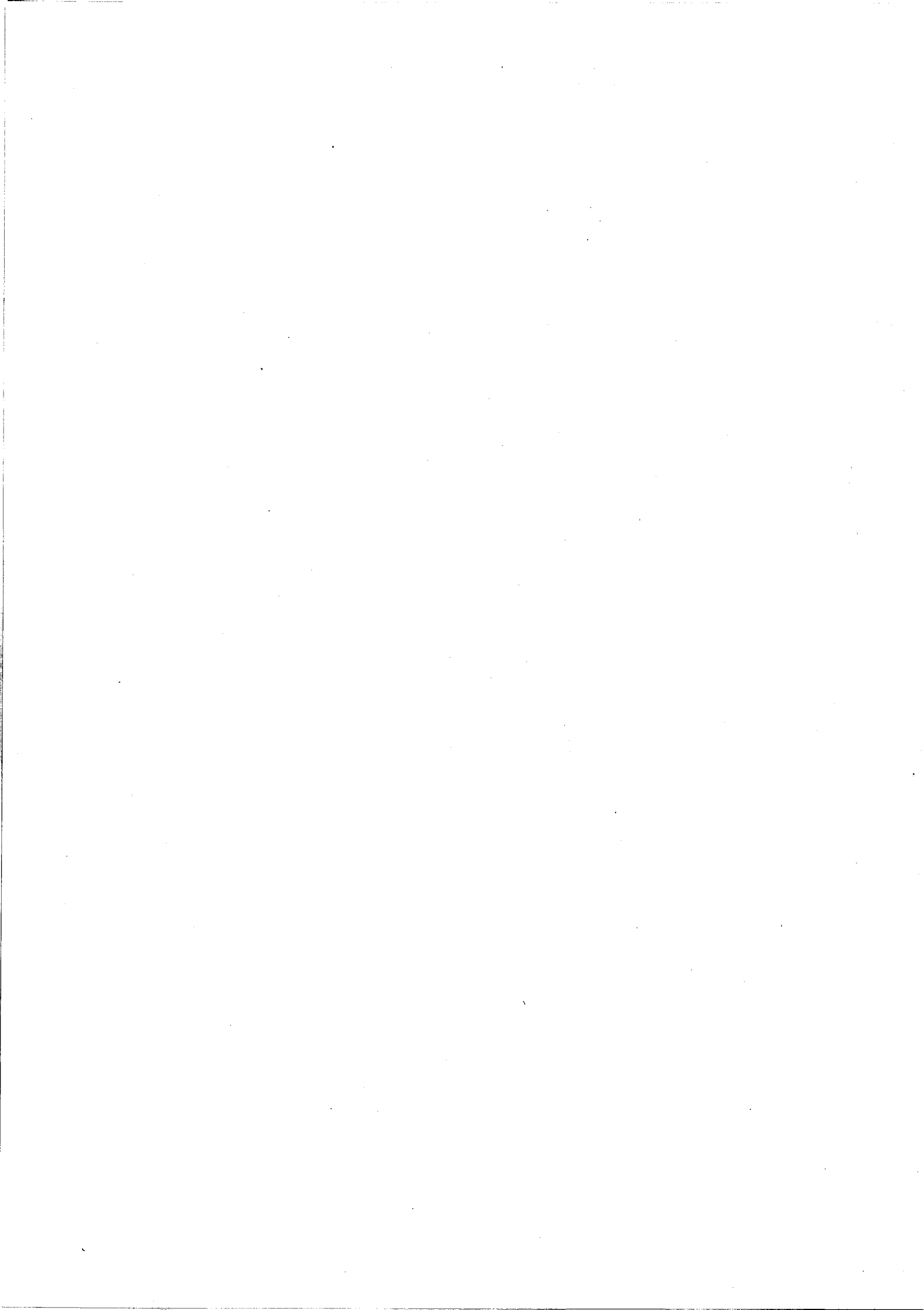
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- Appendix C – Incident Reporting Forms
- Appendix D – Exempt Development Checklist Approval Form
- Appendix E – Minor Works Approval Form



1. Introduction

This Environmental Management Plan (EMP) has been prepared for site investigations being conducted by GHD at Central Station and on the Bankstown Line rail corridor from Sydenham to Bankstown between kilometrage 4.5 km through 19.3 km.

This version of the EMP is limited to geotechnical and contamination investigations on the Bankstown Line rail corridor between Sydenham to Bankstown. These investigations are to be undertaken in 2017 as variation order 07 to the original contract. A small portion of this work (Sydenham Stabling Site) is located inside the Chatswood to Sydenham EIS boundaries.

Refer Revision 5 of the Environmental Management Plan for earlier asset condition assessment activities completed from May 2016 to February 2017 on both the Sydenham to Bankstown line and at central Station.

2. Scope of activity

The geotechnical and contamination investigative field works are described in Table 1 below.

Table 1 Scope of activity – Ground Condition Investigations

Activity	Description
Contamination investigations	<ul style="list-style-type: none"> Undertaking an assessment of the contamination status of soils within the platforms on Bankstown line Stations. Powered hand drill will be used to drill and obtain samples up to a depth of 1.5m. Undertaking an assessment of the contamination status of soils along Bankstown line corridor (Sydenham to Bankstown) and adjacent to Sydenham Station within the areas impacted by the proposed Metro works Hand auger as well as a truck mounted auger will be used to drill and obtain samples up to 6m depth. Undertaking an assessment of the contamination status of soils within the platforms 12 to 15 and 16 to 23, road 15 and track 13 to 14 in Central Station. NDD and mini powered rig will be used for drilling and obtaining samples up to depth of 6 m on platforms and track 13 to 14. Undertaking an assessment of groundwater at selected locations on platforms and on tracks at Central Station All sampling will be undertaken in accordance with GHD's Standard Field Operating Procedures
Geotechnical investigations	<ul style="list-style-type: none"> Drilling of ten boreholes for geotechnical assessment within commercial properties at Sydney Steel Road, Sydenham Road and Murray Street for the Sydenham Stabling Site. Drilling of two boreholes for geotechnical assessment on Chalmers Street, one borehole on Road 15 and one borehole on track 11 to 12, with depth up to 51 m.



Activity	Description
	<ul style="list-style-type: none"><li data-bbox="595 253 1385 320">• Undertake an assessment of the groundwater levels on selected bore hole locations<li data-bbox="595 342 1337 409">• Borehole investigation will be undertaken in accordance with GHD's Standard Field Operating Procedures

3. Location of activities

The proposed site investigations are to be undertaken at locations between Sydenham to Bankstown on the Bankstown Line from kilometerages 4.5 km through to 19.3 km, including:

1. All Railway station platforms. These include the following:
 - Sydenham Station
 - Marrickville Station
 - Dulwich Hill Station
 - Hurlstone Park Station
 - Canterbury Station
 - Campsie Station
 - Belmore Station
 - Lakemba Station
 - Wiley park Station
 - Punchbowl Station
 - Bankstown Station
2. Non-station rail corridor areas outside the danger zone
3. Parcels of land outside the rail corridor around Sydenham Station for the Sydenham Junction and Sydenham Stabling Site. These parcels of land include the following:
 - Industrial Complex – 11 Sydenham Road, Marrickville
 - Signalling Site – 100 Marrickville Road, Marrickville
 - Depot Site – Railway Pde, Sydenham
 - Sydenham Basin – Garden Street, Marrickville
 - Warehouses – 1A, 1B and 1C Sydney Steel Road, Marrickville
 - Industrial complex west of Murray Street

4. Central Station and Chalmers Street

The number and locations of the proposed investigations are yet to be determined. These locations will be identified following an initial site inspection and the development of the Sampling, Analysis and Quality Plans (SAQP's). Indicative numbers of boreholes amount to approximately 320 in total.

It is not intended to undertake geotechnical investigations in areas of known heritage significance. Where these areas are identified the work is not classified as early works (pre-construction) and further approvals and time would be required to undertake the works.

4. Approvals required

GHD has been advised by TfNSW via email dated 7 June 2017, that:

1. For boreholes located outside the Chatswood to Sydenham boundaries, the works are subject to Exempt Development Checklist (EDC -refer Appendix D). These works qualify as exempt development under the EP&A Act for the Sydney Metro Sydenham to

Bankstown project and any scope of works undertaken within the Sydney Trains rail corridor is subject to the Sydney Trains EPL as applicable.

This includes the following works / locations:

- Portion 1 – the Sydenham to Bankstown station platform boreholes
- Portion 2 – the Sydenham to Bankstown rail corridor boreholes
- Portion 3 – the Industrial Complex, Signalling Site, Depot Site and Sydenham Basin boreholes at Marrickville and Sydenham

All intrusive works at these locations require an EDC to be completed and approved by TfNSW prior to the works commencing.

For approval efficiency, a separate EDC should be submitted for any works in heritage areas, as opposed to any works outside heritage areas.

2. For boreholes located inside Chatswood to Sydenham EIS boundaries, the work is subject to Minor Works Application (MW - refer Appendix E).

This includes the following:

- Portion 4 & 5 –the boreholes within the warehouse and industrial complex at 1A, 1B and 1C Sydney Steel Road, 11 Sydenham Road, Murray Street (west), Marrickville
- Vary 08 boreholes in Central Station and Chalmers Street

The exception being work in heritage areas that will need exemption from the Department of Planning and Environment (DPE) in accordance with the following excerpt:

“However, where heritage items, or threatened species, populations or ecological communities (within the meaning of the EP&A Act) are affected or potentially affected by any low impact work, that work is construction, unless otherwise determined by the Secretary in consultation with OEH or DPI Fisheries (in the case of impact upon fish, aquatic invertebrates or marine vegetation).”

In such cases, GHD is to seek assistance from TfNSW.

Some of the key relevant planning approval requirements to be mindful of include:

- i. Dangerous goods to be stored and handled appropriately
- ii. No pruning or removal of trees (unless a tree report produced)
- iii. Implement Unexpected Find Procedure, esp for heritage items
- iv. Notify of incidents within 24 hours
- v. Notify of emergency works as soon as possible and follow-up with email report within 24 hours
- vi. Implement appropriate erosion and sediment controls.
- vii. No heavy vehicle usage of weight-restricted roads or local roads.

In addition, it is noted that Sydney Metro Standard Hours are 7am to 6pm weekdays and 8am to 1pm Saturdays, excluding public holidays. Work outside of these hours will be subject to a Sydney Metro Out-of-Hours (OOH) Work Application Form (refer Appendix B).

Works within TSE contractor area (Marrickville Warehouse and Industrial Complex)

Boreholes in the scope of Portions 4 & 5 are within TSE contractor area and within a current demolition footprint. As such works within this footprint will also be bound by the WHS and Environmental Management Plan of the TSE contractor. Additional conditions for access requirements and timeframes will have to be taken into consideration and coordinated through TfNSW.

Works within SLR contractor area (Chalmers Street)

Works in Chalmers Street is within SLR construction area and in possession of Acciona. An interface agreement and coordination with Acciona is required with regards to works interface, safety, access and timeframes.

5. Timing and duration of activities

The geotechnical and contamination investigation activities covered by this EMP will be undertaken on the Bankstown Line between kilometerages 4.5 km through 19.3 km during daylight hours, during rail possessions or during out of possession periods. It is envisaged that field investigations will be undertaken mid 2017.

Works on station platforms will be carried out during off-peak hours.

The geotechnical and contamination investigation activities at Central Station will be undertaken during daylight and night hours out of possession, and during rail possessions. It is envisaged that field investigations will be undertaken between September and October 2017.

Works on station platforms and tracks will be carried out during night hours.

6. Consultation requirements

The proposed geotechnical and contamination investigative works covered by this EMP will be undertaken in consultation with TfNSW, Sydney Trains and NSW Trains.

GHD is proceeding on the basis that all required community consultation will be completed by TfNSW / Sydney Trains and GHD is not required to notify sensitive receivers of the proposed works.

GHD will provide the TfNSW Communications team with the required information for community notification at least 10 business days prior to the works. For work done out of hours, this will be initiated through submission of a completed OOH Work Application Form.

GHD will consult with the relevant Authorities when undertaking investigations on third party assets (Sydney Water) or in a manner impacting on third party lands (RMS and Local Councils).

7. Incident Reporting

Incident reporting will be undertaken in accordance with the following TfNSW procedure from the Services Brief section D.12.6.

TfNSW and Sydney Metro reporting templates, for WHS and Environmental issues respectively, can be found in Appendix C.

In addition, all incidents, including those reported in Appendix C templates shall be raised in GHD's Incident Register and Improvement System (IRIS) in LotusNotes, and followed through to close out.

D.12.6 Incident Reporting

The Service Provider must immediately notify the Principal of any incident associated with the Services that may have an impact on the community, environment, employees of the Service Provider or its subcontractors, or other stakeholders that may attract the attention of the news media, the Minister of Transport, a local MP, council or the broader community.

In the event of an incident, the Service Provider and/or its subcontractors must not contact or provide information to any person (other than that which is required to directly manage the incident), including any stakeholder, the news media or the public, without the prior approval of the Principal's Representative. The Service Provider must make available senior personnel to respond to the community, the news media and other stakeholders when required by the Principal.

As required, the Service Provider must provide the Principal with all necessary information that may need to be disseminated as a result of such incidents.

The details of response times for incident reporting by the Service Provider are:

- a) immediate verbal notification to the Principal:
 - xi. within 10 minutes of the incident occurring, in the case of an incident that has attracted or has the potential to imminently attract the attention of the news media, the Minister for Transport, a local MP, council, or the broader community. Examples of such incidents include without limitation:
 - A. any delays to train timetables or significant delays to vehicle/pedestrian movements caused by the incident;
 - B. incidents where employees of the Service Provider or its subcontractor, or a member of the community is harmed; and
 - C. access to trains/vehicles is blocked and preventing (or severely restricting) access to commuters/drivers.
 - xii. otherwise, within 1 hour of the incident occurring;
- b) a report detailing the incident to be issued to the Principal within 24 hours of the incident occurring, using:
 - i. TfNSW Safety and Environmental Incident Report (90-FT-002), for incident or issue in respect of WHS; or
 - ii. Sydney Metro Northwest Environmental Incident/Non-compliance Report, for environmental incident;
 - iii. the Service Provider's incident report form, in respect of all other incidents or issues; and
- c) a corrective action report to prevent reoccurrence of the incident, prepared by the Service Provider, and submitted to the Principal within 5 Business Days of the incident occurring.

8. Risk rating

Risk ratings have been determined using both the GHD and Sydney Metro risk assessment criteria. A comparison between the GHD and Sydney Metro risk matrices has been completed to identify the comparable risk ratings. The risk rating outcomes for the EMP are detailed in Table 2 EMP Risk Register – Sydenham to Bankstown. The Sydney Metro risk rating is noted in brackets in the tables.

The risk matrix below shows the corresponding Sydney Metro risk criteria. See Appendix A for the full comparison.

Risk Quantification (Likelihood x Consequence)		No environmental impact. Sydney Metro – C6	Minor environmental impact. Sydney Metro C4, C5	Major environmental impact. Sydney Metro C2, C3	Catastrophic environmental impact. Sydney Metro C1
		Consequence			
Likelihood		1	2	3	4
Almost no likelihood Sydney Metro L6	1	Low (1)	Low (2)	Low (3)	Low (4)
A small likelihood Sydney Metro L4, L5	2	Low (2)	Low (4)	Medium (6)	High (8)
A high likelihood Sydney Metro L2, L3	3	Low (3)	Medium (6)	High (9)	High (12)
Almost certain Sydney Metro L1.	4	Low (4)	High (8)	High (12)	High (16)

Table 2 EMP Risk Register – Sydenham to Bankstown

Risk ratings are using both the GHD and NWRL risk assessment criteria. The NWRL risk rating is noted in the brackets. A comparison between the GHD and NWRL risk matrices has been completed to identify the comparable risk ratings – see Appendix A.

#	Sequence of Work Activities <i>How will the work be done?</i>	Potential Hazards <i>What harm can occur?</i>	Risk <i>High-Med-Low</i>	Safeguards/controls <i>How can the risk be minimised?</i>	Residual risk	Responsibility <i>Who will ensure that controls are in place?</i>
1	Confirm required approvals to commence activity	Non-compliance with conditions of approval	High (A)	<ul style="list-style-type: none"> EMP to be signed off by Sydney Trains and TfNSW representatives, GHD PD and JM prior to commencing works All personnel performing this work must be toolboxed in this EMP prior to commencing works and must sign on to the EMP Obtain landowners consent to access sites (Sub-portions 3, 4 & 5) Obtain TSE Contractor approval to gain access to Portions 4 & 5 locations within the Marrickville industrial complex (demolition footprint) Plan and coordinate safe work areas, safe work method statements and timeframes with TSE contractor prior to commencing Portions 4 & 5 works Obtain Sydney Trains' approval to gain access to Central Station Obtain Sydney Light Rail (i.e. Acciona) agreement to gain access to Chalmers Street Create a register of approvals for all boreholes. The register should list each borehole and individual approvals required at each borehole location and other information such as community notification. The register of approvals should be included in the daily toolbox talk and no work is to proceed until PM have confirmed relevant approvals have been received. 	Medium (B)	GHD JM or nominated Site Coordinator
2	Undertake required community consultation	Community not adequately consulted with works	Medium (B)	<ul style="list-style-type: none"> GHD JM to confirm that TfNSW and Sydney Trains have completed all community consultation prior to commencing works – evidence of consultation to be provided to GHD JM. 	Low (D)	GHD JM
3	Delineation of sensitive areas	Impact to sensitive areas	High (A)	<ul style="list-style-type: none"> Sensitive areas to be identified prior to commencing works and clearly delineated on site maps for the site works. 	Medium (C)	GHD JM or nominated Site Coordinator

#	Sequence of Work Activities <i>How will the work be done?</i>	Potential Hazards <i>What harm can occur?</i>	Risk <i>High-Med-Low</i>	Safeguards/controls <i>How can the risk be minimised?</i>	Residual risk	Responsibility <i>Who will ensure that controls are in place?</i>
				<ul style="list-style-type: none"> Relevant GHD staff to be briefed by GHD JM or nominated Site Coordinator regarding the sensitivity of areas adjacent to the proposed work sites. 		
4	Erosion and Sediment Control	Sediment laden water entering waterways during rainfall	Medium (B)	<ul style="list-style-type: none"> Erosion and Sediment Controls to be sketched on a site map for each geotechnical investigation borehole location prior to commencing works. Erosion and sediment controls will be designed, installed and managed in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004). Erosion and sediment controls, if required, are to be installed prior to commencement of works and are not to be removed until the works are complete and areas are backfilled with appropriate surface cover. Ensure all disturbed areas are adequately stabilised to prevent erosion and sediment-laden runoff leaving the site at the end of the work shift. Drilling waste, including mud water generated from coring and drilling spoil, if any, will be removed from the investigation locations and disposed of lawfully following the completion of each working shift. 	Low (D)	Site Supervisor
5	Poorly maintained or insufficient equipment and materials	Spill and leaks to the environment causing contamination of land/water Excessive exhaust fumes causing air quality issues	Medium (B)	<ul style="list-style-type: none"> All machinery to be checked by site staff prior to use and completed/signed inspection checklist to be provided to GHD JM or nominated Site Coordinator. Plant and equipment to be free of leaks and operating to appropriate standard in accordance with relevant standards, legislation and owner's manuals. Daily pre-start to be completed for all plant and equipment. Spill kits to be present on site in accessible location for the geotechnical works. 	Low (D)	Site Supervisor
6	Access Sydenham to Bankstown site and carry out geotechnical	Impacts to residents and road users	High (A)	<ul style="list-style-type: none"> Works to be undertaken during daylight hours only. Demobilisation of plant and equipment may be undertaken outside of daylight hours Consultation with the local community by TfNSW initiated through submission of an OOH Work Application Form (refer Appendix B) Access to local streets and driveways to be maintained. 	Medium (B)	GHD JM or nominated Site Coordinator / Site Supervisor

#	Sequence of Work Activities <i>How will the work be done?</i>	Potential Hazards <i>What harm can occur?</i>	Risk <i>High-Med-Low</i>	Safeguards/controls <i>How can the risk be minimised?</i>	Residual risk	Responsibility <i>Who will ensure that controls are in place?</i>
	investigation works			<ul style="list-style-type: none"> • Access for pedestrians and cyclists to be maintained. • Construction areas, in particular geotechnical investigation work areas to be set up to minimise the need for reversing movement. • All plant and equipment to include “quacker” non-tonal reversing alarms • All reasonable and feasible noise mitigation measures will be implemented with the aim of achieving the construction noise criteria established using the Interim Construction Noise Guideline (DECC 2009) • Minimise two-way radio noise, reversing alarms etc. when near potentially affected receivers; • Yelling or rowdy behaviour is to be minimised at all times; • Equipment that is not in use for extended periods of time will be switched off. • Equipment will be orientated away from receivers where reasonable and feasible • The distance between construction plant and sensitive receivers will be maximised as much as feasible and reasonable • Rail corridor gates are to be left how they are found (locked or closed) • All interactions with members of the community are to be passed onto TfNSW representatives. • All community complaints are to be recorded where received by GHD personnel and communicated to the TfNSW representative. The complaint will be investigated, works may temporarily cease (subject to the severity of the complaint) and the required action communicated formally to relevant parties. 		
7		Impact to sensitive areas	High (A)	<ul style="list-style-type: none"> • Ensure vehicles stay on local roads unless approval provided by Sydney Trains for vehicles to access the rail corridor. • Vegetation clearing is not permitted for the asset investigations. • TfNSW to be notified of any heritage features identified during site investigative works. Any works impacting the identified feature are to be ceased and cannot commence until approval given by TfNSW. 	Medium (B)	Site Supervisor / GHD JM or nominated Site Coordinator

#	Sequence of Work Activities <i>How will the work be done?</i>	Potential Hazards <i>What harm can occur?</i>	Risk <i>High-Med-Low</i>	Safeguards/controls <i>How can the risk be minimised?</i>	Residual risk	Responsibility <i>Who will ensure that controls are in place?</i>
				Any unexpected finds will be documented using the Unexpected Finds Procedure		
8		Pollution of waterways due to ground disturbance from the works.	Low (D)	<ul style="list-style-type: none"> Develop a sketch for each geotechnical investigation borehole location prior to commencing works on site to identify relevant erosion and sediment controls. Controls to be implemented / installed prior to commencing works There is to be no release of dirty water (i.e. from borehole) into drainage lines or waterways. Plant and equipment to be serviced, maintained and inspected on a regular basis. Any fuels, chemicals and liquids that are not being utilised during the site investigations, including test pitting, will be appropriately stored and banded. No refuelling of vehicles is to be undertaken on site Excavated material to be re-used for reinstatement of capping layer and ballast as soon as practical. Any remaining spoil to be classified in accordance with the Waste Classification Guidelines (NSW EPA 2014) based on soil analytical results from the boreholes and disposed of at an appropriately licenced waste facility. Waste generated from drilling will be taken from the investigation locations by the driller or the waste company at the end of the each working shift. 	Low (D)	Site Supervisor
9		Potential contamination of soil and water	Medium (C)	<ul style="list-style-type: none"> Site personnel are to observe for signs of potential contamination during works such as the presence of odour, staining and imported materials. If contamination or asbestos is encountered (or suspected), stop all works in the vicinity and notify the GHD site manager immediately, who will advise GHD JM. If unexpected contamination is uncovered during the works, all works must cease in the vicinity of the material and GHD JM and TfNSW representatives to be notified immediately. Works can only recommence following TfNSW approval to the GHD JM. Any 	Low (D)	Site Supervisor

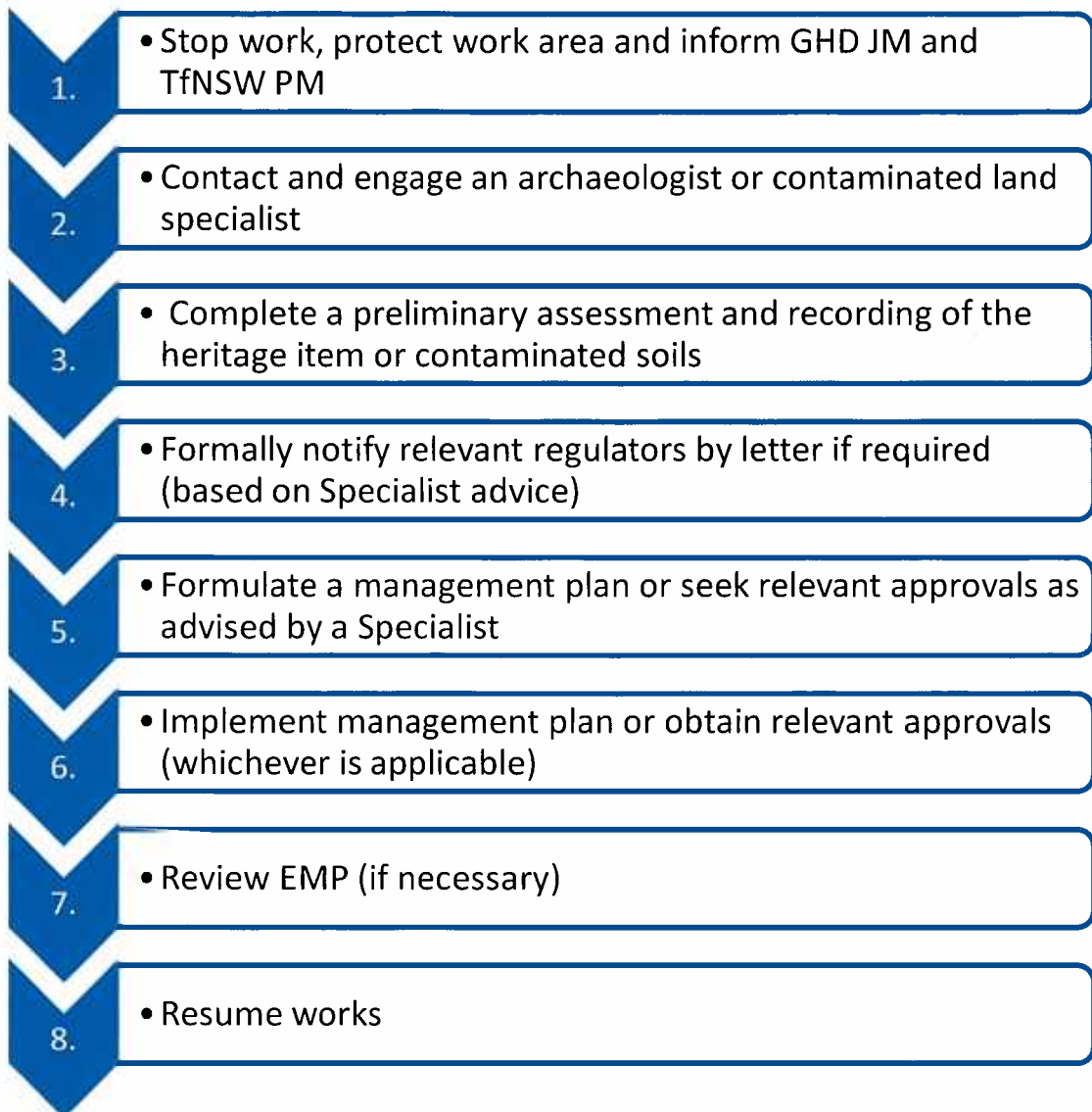
#	Sequence of Work Activities <i>How will the work be done?</i>	Potential Hazards <i>What harm can occur?</i>	Risk <i>High-Med-Low</i>	Safeguards/controls <i>How can the risk be minimised?</i>	Residual risk	Responsibility <i>Who will ensure that controls are in place?</i>
				<p>unexpected finds will be documented using the Unexpected Finds Procedure.</p> <ul style="list-style-type: none"> • Subject to TfNSW approval, contact a licensed contamination or asbestos assessor to undertake sampling, testing, reporting and removal in accordance with the EPA and WorkCover's Guidelines and the Protection of the Environment Operations (Waste) Regulation 2014. • Where works are to be relocated to an alternative location, seek advice from the GHD JM or nominated Site Coordinator • No chemical or fuel waste is to be disposed of on site. • All solid waste materials generated during geotechnical investigations are removed and disposed of off-site (in compliance with relevant legislation). • Cease works if heavy rainfall or dust issues occur. <p>For Central Station Works the following applies:</p> <ul style="list-style-type: none"> • Proper control measures such as sediment controls and personal protection equipment (PPE) are provided as per the JSEA. • Unexpected finds protocols will be implemented in the event large scale contamination is noted during the investigations works (i.e. ACM, tar). • use fine mist sprays and odour suppressants 		
9.1		Soil contamination		<ul style="list-style-type: none"> • Proper control measures such as sediment controls and personal protection equipment (PPE) are provided per the JSEA. • Unexpected finds protocols should be implemented for the event of large scale of contamination is noted during the investigations works (i.e. strong odours, free tar). • Stop work if the PID reading of ambient air is more than 100 ppm or free tar is recovered from the borehole. Reinstate the borehole and report to Principal as soon as possible. • use fine mist sprays and odour suppressants 		

#	Sequence of Work Activities <i>How will the work be done?</i>	Potential Hazards <i>What harm can occur?</i>	Risk <i>High-Med-Low</i>	Safeguards/controls <i>How can the risk be minimised?</i>	Residual risk	Responsibility <i>Who will ensure that controls are in place?</i>
		Groundwater contamination		<ul style="list-style-type: none"> Proper control measures such as sediment controls and personal protection equipment (PPE) are provided as per the JSEA. use fine mist sprays and odour suppressants if strong odour is encountered during purging. 		
		Asbestos in soil		<ul style="list-style-type: none"> Proper control measures such as sediment controls and personal protection equipment (PPE) are provided as per the JSEA. Unexpected finds protocols should be implemented in the event large scale contamination is noted during the investigations works (i.e. suspected ACM). Reinstate the borehole as soon as possible. Stop work if suspected ACM is continuously encountered during drilling. 		
10		Air quality impacts as a result of dust generation from ground disturbance	Low (D)	<ul style="list-style-type: none"> In the event of extreme weather such as during high or unfavourable wind conditions, geotechnical works are to be modified, reduced, controlled or postponed if they would potentially increase offsite dust emissions. Stockpiles or areas that may generate dust are to be managed to suppress dust emissions. 	Low (D)	Site Supervisor
11		Impacts to groundwater sources	Low (D)	<ul style="list-style-type: none"> Boreholes will be backfilled with excess spoil, where available and surface reinstated. Where spoil cannot be used as backfill material, a suitable alternate is to be provided by GHD. A suitable alternate backfill material is to be confirmed and sourced for use (i.e. on standby) prior to commencing the works 	Low (D)	Site Supervisor
12		Waste management	Low (D)	<ul style="list-style-type: none"> Wastes are to be managed in accordance with the NSW Waste Classification Guidelines (NSW EPA 2014). All waste materials requiring off-site disposal are to be disposed of to a suitably licenced waste facility. 	Low (D)	Site Supervisor
13		Injury to fauna	Low (D)	<ul style="list-style-type: none"> If injured fauna is encountered, GHD JM or nominated Site Coordinator, and WIRES to be contacted to organise safe removal of the fauna from site. If fauna are encountered during the works and the animal is not injured the animal is to be allowed to leave the site freely. Access to site is to occur along existing roads and within the defined access areas for the rail corridor. 	Low (D)	Site Supervisor / GHD JM or nominated Site Coordinator

#	Sequence of Work Activities <i>How will the work be done?</i>	Potential Hazards <i>What harm can occur?</i>	Risk <i>High-Med-Low</i>	Safeguards/controls <i>How can the risk be minimised?</i>	Residual risk	Responsibility <i>Who will ensure that controls are in place?</i>
14		Transporting weed to and from work site	Low (D)	<ul style="list-style-type: none"> Plant are to be checked before entering and leaving sites so that weed materials are not transported on and off site area. 	Low (D)	Site Supervisor
15	Ongoing works and moving between locations	Damage to sensitive areas	Medium (B)	<ul style="list-style-type: none"> Geotechnical investigation sites are not to be relocated without the approval of the GHD JM or nominated Site Coordinator. Parking of vehicles and storage of materials will occur on public roads or within the rail corridor. 	Low (D)	Site Supervisor / GHD JM or nominated Site Coordinator
16	Conclude works in an area or end of work day	Soil left exposed with potential for runoff	Medium (B)	<ul style="list-style-type: none"> Ensure any exposed ground has suitable erosion and sediment controls to limit sediment runoff from disturbed ground. All drilling spoil is to be returned to the borehole void or disposed of at approved locations on the project/licensed facility. After completion of work at each investigation site, the area is to be stabilised. Ensure all potential contaminated materials (i.e. ACM fragments, potentially contaminated soil or disposal sampling tools) are taken away from the investigation locations and the site. All investigation locations are to be backfilled and restored to as near as practicable pre-existing conditions. Ensure the working areas are fully fenced off for follow up works or restore to the condition to the satisfaction of Sydney Trains or Sydney Light Rail as appropriate. 	Low (D)	Site Supervisor
17		Area left untidy	Medium (B)	<ul style="list-style-type: none"> General waste materials are to be collected and disposed of at licenced landfills or in project rubbish bins. Erosion and sediment controls are not to be removed until the works are complete and areas backfilled and reinstated to prevent erosion and sediment-laden runoff. There is to be no disposal or re-use of construction waste on other land outside the project boundary. Working areas are to be kept clean and tidy at the end of each day. 	Low (D)	Site Supervisor

9. Unexpected Finds Procedure

Unexpected finds (e.g. heritage items or contaminated soils) will be managed in accordance with the following procedure.



10. GHD toolbox – asset investigations

Ensure the above risk table is reviewed and all control measures are placed, ensure high risk items are prioritised

- Review of the register of approvals and conditions
- Approved EMP to be issued outlining activities that are approved.
- Erosion and sediment control measures are not to be removed until the disturbed area is backfilled and has an appropriate surface cover.
- There is to be no release of dirty water or concrete slurry into drainage lines and/or waterways.
- If rainfall is predicted consult the GHD JM or nominated Site Coordinator for approval to continue works
- If unexpected heritage items are uncovered during the works, all works must cease in the vicinity of the material/find and not recommenced until approval provided by TfNSW and GHD JM.
- If unexpected contaminated material is identified prior and/or during works, all works to cease in the vicinity of the subjected findings and the GHD JM notified. Works are not to recommence until approved by TfNSW and GHD JM.
- Ensure vehicles and plant stay on local roads unless approval provided by Sydney Trains to access rail corridor.
- Vegetation clearing is not permitted for any of the asset inspection works
- Spill kits are available and located in suitably accessible areas during works.
- Prevent pollution of waterways due to spills/leaks. No refuelling to occur on site. No fuel/chemicals to be stored onsite overnight. Report all spills to the GHD JM and supervisor and clean up immediately.
- The following noise mitigation measures should be implemented at all times:
 - Turn vehicle / plant and equipment off when not in use
 - Minimise radio noise, yelling, rowdy behaviour etc when near potentially affected receivers
 - Plan works and design vehicle accesses to minimise reversing beepers
 - Ensure equipment is adequately maintained
 - Undertake tunnel coring works during times of pedestrian inactivity.
- If an injured animal is found, advise the GHD JM or nominated Site Coordinator, and site supervisor immediately.
- Ensure site remains in a tidy condition and all wastes are disposed of at licensed landfills or the project waste bins (if available)
- Report any complaints to the GHD JM or nominated Site Coordinator who will notify TfNSW.
- Exempt Development Checklist and heritage exemptions are to be complied with and available on site at all times.
- OOH Works approval is to be understood and complied with if applicable.

11. Signoff

We the undersigned, confirm that the EMP nominated above has been explained and its contents are clearly understood. We also clearly understand the controls in this EMP must be applied. These documents will be revised as required to reflect site conditions or to reflect advice received from relevant experts. Works will not proceed without changes being incorporated onto these documents.

Name	Position	Employer	Signature	Induction No.	Date

Appendices

Appendix A – TfNSW Risk Matrix

Risk criteria

Table 1 – Risk assessment consequence criteria

Descriptor / Impact area	Insignificant (rating – C6)	Minor (rating – C5)	Moderate (rating – C4)	Major (rating – C3)	Severe (rating – C2)	Catastrophic (rating – C1)
GHD Rating	1 – No impact	2 - Minor	2 - Minor	3 - Major	3 - Major	4 - Catastrophic
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 or 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 or 10-20 major injuries/permanent disabilities/chronic diseases, or both.	Multiple fatalities or >20 major injuries/permanent disabilities/chronic diseases, or both.
Environment	No appreciable changes to environment or highly localised event or both.	Change from normal conditions within environmental regulatory limits and environmental effects are within site boundaries.	Short term or well-contained environmental effects or both. 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.
Customer experience and operational reliability	Short duration disruptions affecting part of one transport mode.	Minor disruptions affecting several parts of one transport mode.	Serious disruptions affecting operation of one complete transport mode.	Major disruptions affecting operations of one transport mode with network-wide effects on one or more modes of transport.	Short duration shutdowns or substantial disruptions affecting multiple transport modes with sector wide cascading effects.	Extensive shutdowns or extended disruptions with economy wide effects.

Table 2 – Risk assessment – Likelihood criteria

Descriptor / Impact area	Almost unprecedented (rating – L6)	Very unlikely (rating – L5)	Unlikely (rating – L4)	Likely (rating – L3)	Very likely (rating – L2)	Almost certain (rating – L1)
GHD Rating	1	2	2	3	3	4
Qualitative Expectation	Not expected to ever occur during time of activity or project.	Not expected to occur during the time of activity or project.	More likely not to occur than occur during time of activity or project.	More likely to occur than not occur during time of activity or project.	Expected to occur occasionally during time of activity or project.	Expected to occur frequently during time of activity or project.
Quantitative Frequency	Less than once every 100 years.	Once every 10 to 100 years.	Once every 1 to 10 years.	Once each year.	1-10 times every year.	10 times or more every year.

Note: When assessing risks associated with new or altered assets the term 'activity' in the above table should be considered to represent the intended operational life of the asset.

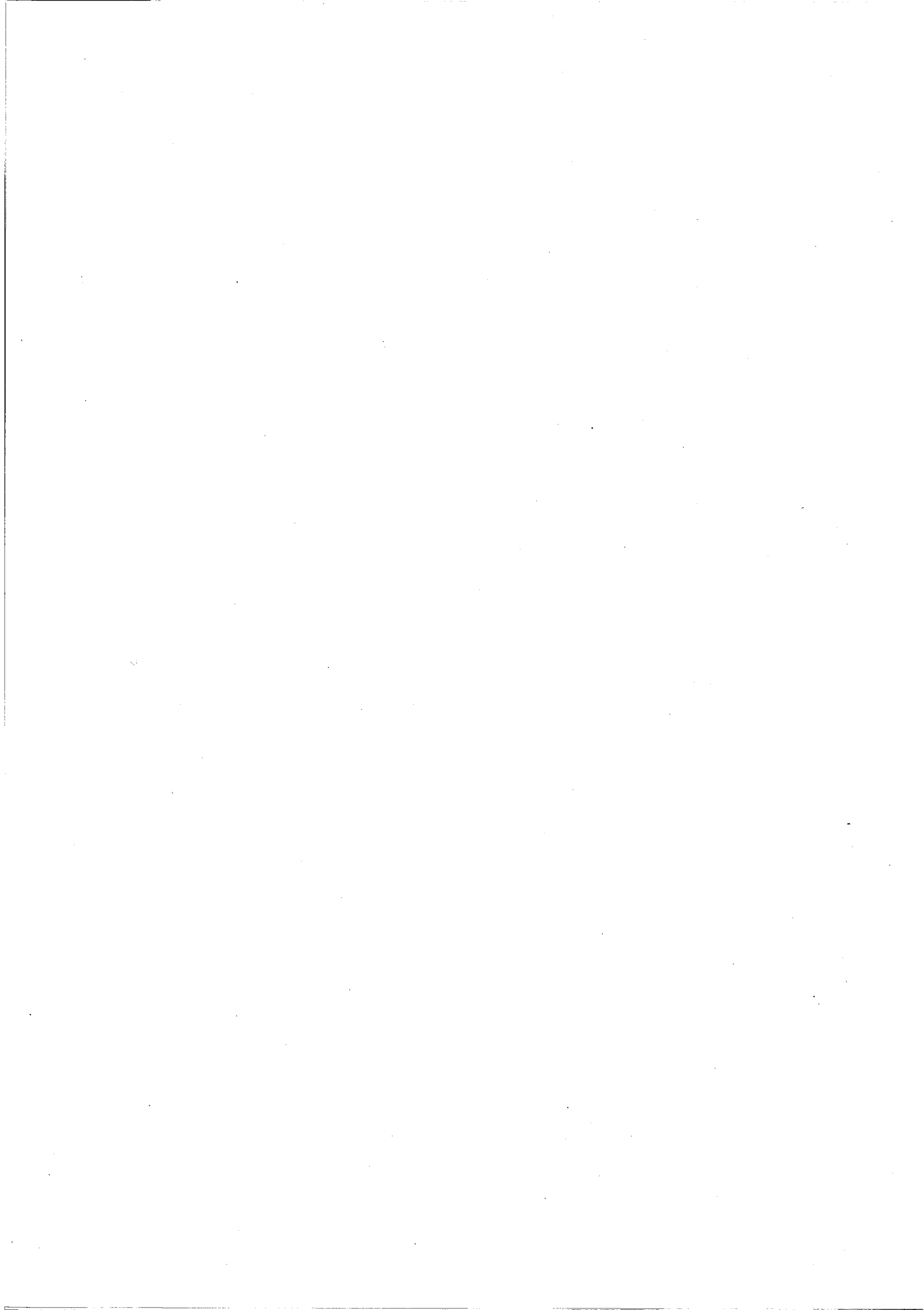
Table 3 – Risk matrix evaluation table


Likelihood	Insignificant consequence C6	Minor consequence C5	Moderate consequence C4	Major consequence C3	Severe consequence C2	Catastrophic consequence C1
Almost certain - L1	C	B	B	A	A	A
Very likely - L2	C	C	B	B	A	A
Likely - L3	D	C	C	B	B	A
Unlikely - L4	D	D	C	C	B	B
Very unlikely - L5	D	D	D	C	C	B
Almost unprecedented - L6	D	D	D	D	C	C

Risk Ratings - A – Very high, B – High, C – Medium, D – Low

Table 4 – Risk tolerance and responses

Risk rating	Risk description	Response
A	Very high - generally intolerable	Very high risks are generally intolerable and should be avoided except in extraordinary circumstances. A very high risk would not be acceptable when related to the operation or maintenance of a new or altered asset as the activity would not be permitted. An alternative solution shall be found and all necessary steps shall be taken to reduce the risk below this level.
B	High – undesirable	High risks are undesirable. It is highly unlikely that an undesirable risk would be accepted when related to the operation or maintenance of a new or altered asset. They can only be tolerated if it is not reasonably practicable to reduce the risk further, that is that SFAIRP is demonstrated and the risk is agreed as acceptable to TfNSW. High risks are considered to be on the verge of being unacceptable and all credible options to reduce or eliminate the risk shall be explicitly considered.
C	Medium – tolerable	Medium risks are tolerable if it is not reasonably practicable to reduce the risk further. It is essential that where a risk has health, safety or environmental consequences the activity should be reviewed to determine if the risk can be reduced further and whether all reasonable and practicable controls have been considered or applied, or both and a demonstration of SFAIRP is provided. Additional treatment measures should be sought if significant benefit can be demonstrated and/or there is an additional treatment measure which is recognised as good practice in other like environments.
D	Low – broadly acceptable	Low risks are considered to be broadly acceptable. Where the risk has health, safety or environmental consequences control measures should be effective, reliable and subject to appropriate monitoring. If options for further risk reduction exist and costs are proportionate to the benefits, then implementation of such measures should be considered. The risk and its treatments should be subject to appropriate degrees and forms of monitoring to ensure that it remains at this level.





Appendix B – Out-of-Hours (OOH) Work Application Form

Out of Hours (OOH) Work Application Form

This Form is to be used for formal review and approval of Sydney Metro OOH work as it may affect Residential and non-Residential receivers. For City & Southwest OOH work that is within the scope of a Construction Noise and Vibration Impact Statement, the project-specific SM ES-FT-443 C&SW Out of Hours Works Application Form is to be used. For all other OOH applications, this Form can be used. This form can be used in accordance with the SM ES-PW-317 City & Southwest Out of Hours Work Protocol. This application and all applicable appendices must be submitted to TfNSW as one PDF file at least 15 business days prior to the commencement of the proposed OOH work.

1. OOH Application	
Contractor:	
Project:	
Application Title: E.g. 'Smith St service relocation works'	
Application Number: E.g. 1, 2, 3, etc.	
Application Date: Original submission date (resubmission date in parentheses if applicable)	
2. Proposed OOH Work Details	
Description of works: Including: <ul style="list-style-type: none"> Work methodologies. List of plant/equipment to be used (worst case scenario). Map (and/or ECM) attached as Appendix 1 indicating location of works, plant/equipment locations and sensitive receivers (including distance to nearest sensitive receiver for noisiest plant/equipment). Traffic Management Plan or Traffic Control Plan if applicable as Appendix 2. Road Occupancy License and/or Road Opening Permit application or approval if applicable as Appendix 3. 	
Timing of works: Including the proposed dates and times where works are anticipated to be undertaken outside standard hours.*	
Occasions: Refer to Section 0 and state the number of occasions anticipated (worst-case).	
Justification: Explain the need for the works to be undertaken during the proposed OOH periods and justify why works cannot occur during standard hours* or extended hours as per E37 and E38.	

* Unless specified otherwise in project specific documentation, work time periods are as follows:

- Standard Hours:** 7am to 6pm weekdays and 8am to 1pm Saturdays.
- Daytime OOH:** 1pm to 6pm Saturdays and 8am to 6pm Sundays and Public Holidays.
- Evening OOH:** 6pm to 10pm every day.
- Night Time OOH:** 10pm to 7am weekday mornings and 10pm to 8am weekend and Public Holiday mornings.

3. Noise and Vibration Assessment

A quantitative noise assessment for OOH work is to be carried out in accordance with the *Interim Construction Noise Guideline* (DECC, 2009). This section allows applicants to address these requirements through the following steps:

- 1) Establishing Rating Background Levels (RBLs) and Noise Management Levels (NMLs).
- 2) Predicting the anticipated noise levels using a quantitative noise assessment:
 - a. Works that are not likely to generate high noise impacts for a significant duration may use a preliminary quantitative noise assessment (facilitated within this form). This ensures that all applications, as a minimum, include a preliminary quantitative noise assessment in accordance with the *Interim Construction Noise Guideline* (ICNG).
 - b. Works that are likely to generate high noise impacts for a significant duration may require a detailed quantitative noise assessment (i.e. Construction Noise and Vibration Impact Statement) to be undertaken.
 - c. Works that are likely to generate ground-borne or structure-borne vibration and/or noise require specialist advice and assessment.
- 3) Comparing predicted noise levels against NMLs and applying standard mitigation measures as appropriate.
- 4) Considering additional mitigation when predicted noise levels exceed NMLs.

The need for a detailed quantitative noise and vibration assessment will be considered by TfNSW, the contractor and the Acoustic Advisor or Environmental Representative (if applicable) collectively when the predicted noise levels are anticipated to:

- Exceed an RBL at a residential receiver or an NML at a non-residential receiver by more than 10dBA, **AND**
- Affect the same receiver on 10 or more occasions. An occasion is considered to be anytime works are carried out between:
 - 6pm on a weekday and the start of standard hours the next day, **OR**
 - 1pm on a Saturday and 8am on a Sunday, **OR**
 - 8am on a Sunday or public holiday and the start of standard hours the next day.

A *detailed* quantitative noise and vibration assessment should generally include:

- Derivation of RBLs for residential receivers based on noise monitoring at representative locations and/or derivation of NMLs for non-residential receivers based on sensitivities.
- Detailed prediction of noise levels for daytime, evening and night time OOH periods (as applicable) in accordance with Section 4.5 of the ICNG (including a clear outline of timing, duration and predicted noise levels during each OOH period).
- For Night Time OOH Period works, a prediction of maximum noise levels and a review of potential sleep disturbance impacts in accordance with Section 4.3 of the ICNG.
- Detailed predictions of vibration levels for sensitive receivers.

Please complete Steps 1 to 4 below.

<p>Step 1: RBLs/NMLs</p>	<p>If RBLs for residential receivers or NMLs for non-residential receivers have already been established (e.g. in an Environmental Impact Statement, Review of Environmental Factors, detailed quantitative noise assessment or Construction Noise and Vibration Impact Statement for other work activities), enter into Table 3 and attach the supporting evidence as Appendix 4.</p> <p>If no RBLs/NMLs have been established, use Table 1 to estimate RBLs/NMLs and enter into Table 3.</p>
<p>Step 2: Predicted Anticipated Noise Levels</p>	<p>If predicted anticipated noise levels have already been established (e.g. in an Environmental Impact Statement, Review of Environmental Factors, detailed quantitative noise assessment), enter the predicted anticipated noise levels into Table 3 and attach the supporting evidence as Appendix 4.</p> <p>If predicted anticipated noise levels have not already been established, use Table 2 to estimate anticipated noise aspects for the noisiest plant/equipment and enter into Table 3. In Table 3, use these values to calculate the anticipated predicted noise levels.</p>

<p>Step 3: Exceedances and Mitigation Measures</p>	<p>Compare the anticipated predicted noise levels to the applicable RBLs/NMLs, calculate the exceedances and enter into Table 3. Provide a description of the mitigation measures that are planned to be implemented in order to mitigate the noise (and vibration if relevant) impacts.</p> <p>Standard Mitigation Measures:</p>
<p>Step 4: Consideration of Additional Mitigation Measures</p>	<p>Use Table 4 and the exceedances in Table 3 to determine the applicable Additional Mitigation Measures for consideration. Use Table 6 to indicate which of these measures are applicable, which will be implemented and provide justification for any applicable measures that will not be implemented.</p>

Table 1: Estimated RBLs for Residential Receivers and NMLs for Non-Residential Receivers

Sensitive Receiver Category	Estimated RBLs (dBA)		
Residential	Daytime OOH	Evening OOH	Night Time OOH
Urban (e.g. city hubs, near busy roads, near industrial activity)	55	50	45
Suburban	45	40	35
Quiet, rural or isolated	40	35	30
Non-Residential	ICNG NMLs (dBA)		
Industrial facilities	75 (only applicable when in use)		
Offices or retail	70 (only applicable when in use)		
Health and educational facilities	55 (only applicable when in use)		

Table 2: Noise Aspects for Predicted Noise Levels

Noise Aspect	If anticipated predicted noise levels have not already been established, select the most applicable value for each noise aspect below and enter these values into Table 3.	dBA Value
1. Estimated predicted plant /equipment noise level at 10 metres Including +5 dBA penalty for annoying activities as per ICNG (refer to Appendix B for other predicted noise level data)	Hand-held tamper, impact sheet piling rig	105
	Rail grinder, ballast regulator, concrete/rock saw, excavator hammer, jackhammer, rock-breaker	95
	Mainline tamping machine, pin puller, dynamic track stabiliser, large bulldozer, chainsaw, large excavator, pour fill/ballast, water cart, super-sucker, front-end loader, vibratory or bored piling	85
	Asphalt paver, backhoe, small bulldozer, mulcher, concrete pump/mixer/agitator, tower/mobile crane, small excavator, grader, forklift, welder, wheeled-loader, Standard Penetration Testing	80
	Truck, spreader, whacker packer, cherry-picker, fence post driver, electric drill, drill rig	75
	Lighting tower, small generator	70
	Light vehicle, hand-tools (no impact), small cement mixer	65
2. Noise source character	Non-continuous use (plant/equipment to operate for less than half the time)	- 5
3. Local screening	Existing screening between site and receiver (buildings, cuttings, canopies, etc.)	- 5
	Temporary screening to be implemented near work site	- 10
	Acoustic shed or enclosure	- 25
4. Distance attenuation	< 10 metres	0
	10 to 20 metres	- 5
	20 to 35 metres	- 10
	35 to 60 metres	- 15
	60 to 100 metres	- 20
	100 to 180 metres	- 25
	180 to 350 metres	- 30
	350 to 1,000 metres	- 40

Table 3: Predicted Noise Levels and Exceedances of RBLs or NMLs (dBA)

Period (only complete as applicable for each period)	Noisiest Plant /Equipment (state the noisiest plant/equipment to be used during each applicable OOH period)	Receiver Type (state 'Res' or 'Non-Res' as applicable for closest receiver to noisiest plant/equipment)	Enter the most applicable values from Table 2, then add to determine the Predicted Noise Level				Predicted Noise Level (1 + 2 + 3 + 4)	RBL (for Res)	NML (for Non-Res)	Exceedance (Predicted Noise Level minus RBL for Res or NML for Non-Res)
			1. Plant/ Equipment Noise Level	2. Noise Source Character	3. Local Screening	4. Distance Attenuation				
Daytime OOH										
Evening OOH										
Night Time OOH										

Table 4: Additional Mitigation Measures (AMM) requiring Consideration for Implementation

OOH Period	Additional Mitigation Measures (AMM)* that must be considered for implementation (apply the exceedances from Table 3 to the two OOH period categories below as applicable)			
	<= 10 dBA Exceedance	10 to <= 20 dBA Exceedance	20 to <= 30 dBA Exceedance	> 30 dBA Exceedance ^
Daytime OOH Period	–	LB	M, LB	M, IB, LB, PC, RO, SN
Evening and Night Time OOH Periods	–	M, LB	M, IB, LB, PC, SN, RO	M, IB, LB, PC, SN, RO, AA*

* AA is only applicable to Night Time OOH periods.

^ Where exceedances are greater than 45 dBA under the City & Southwest Chatswood to Sydenham planning approval, Conditions E41 and E42 mandate that applicable AMMs must be offered in certain circumstances.

Table 5: List of Additional Mitigation Measures (AMM)

AMM Abbrev.	AMM	AMM Descriptions and Guidance
LB	Letterbox-drop (generic to the project)	A newsletter is produced and distributed to the local community via letterbox-drop and the project mailing list. These newsletters provide an overview of current and upcoming works across the project and other topics of interest. The objective is to engage, inform and provide project-specific messages. Advanced warning of potential disruptions (e.g. traffic changes or noisy works) can assist in reducing the impact on the community. Content and newsletter length is determined on a project-by-project basis. Most projects distribute notifications on a monthly basis. The geographic extent of letterbox-drops is generally centred on the immediate surrounding community and rarely extends beyond 100 metres from the works site.
M	Monitoring	Where it has been identified that specific construction activities are likely to exceed the relevant Rating Background Levels (RBL) and/or Noise Management Levels (NMLs), monitoring may be conducted at the affected receiver(s) or a nominated representative location (typically the nearest receiver where more than one receiver have been identified). Monitoring can be in the form of either unattended logging or operator attended surveys. The purpose of monitoring is to inform the relevant personnel when the RBL/NML has been exceeded so that additional management measures may be implemented.
IB	Individual Briefings	Individual briefings are used to inform stakeholders about the impacts of high noise activities and mitigation measures that will be implemented. Communications representatives would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project.
PC	Phone calls (and/or emails)	Phone calls and/or emails detailing relevant information would be made to identified/affected stakeholders within seven days of proposed work. Phone calls and/or emails provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and specific needs etc.
SN	Specific Notifications (specific to the OOH work)	Specific notifications would be letterbox-dropped or hand-distributed to identified stakeholders no later than seven days ahead of construction activities that are likely to exceed the RBLs/NMLs. This form of communication is used to support periodic notifications or to advertise unscheduled works. The geographic extent of specific notifications is generally centred on the immediate surrounding community and rarely extends beyond 100 metres from the works site.
RO	Respite Offer	The purpose of a project specific respite offer is to provide residents subjected to lengthy periods of noise and/or vibration impacts respite during OOH periods. Respite offers are offers made to affected receivers to provide a period of either no or limited noise impacts. This can be in the form of stopping or limiting works onsite or offering affected receivers dinner/movie vouchers. The first priority is to implement a period of no or limited noise impacts. If this cannot be achieved, dinner/movie vouchers may be offered on a case-by-case basis. Respite offers must be made in certain circumstances in accordance with Condition E38 of the Chatswood to Sydenham planning approval.
AA	Alternative Accommodation (residential only)	Alternative accommodation options may be provided for residents living in close proximity to construction works that are likely to incur unreasonably high impacts during night time OOH periods. Alternative accommodation will be considered on a case-by-case basis.



Table 6: Consideration of Additional Mitigation Measures

Additional Mitigation Measures	Applicable for Consideration? YES or NO (refer to Table 4)	To be Implemented? YES or NO	Justification (if applicable for consideration, but will not be implemented)
LB			
M			
IB			
PC			
SN			
RO			
AA			

4. Community Consultation	
What community consultation has been undertaken already?	
What community consultation is planned to be undertaken?	
If drafted already, attach applicable Community Notification as Appendix 5.	



(Uncontrolled when printed)

5. Contractor's Signature	
Contractor's Identification of Risk Level: If the work is subject to the Chatswood to Sydenham planning approval, use Section 3.1.2.3 of the Chatswood to Sydenham Out of Hours Work Protocol to identify a Risk Rating.	Circle: LOW or HIGH
Contractor's Signature:	
Name:	
Title:	
Contact Number:	
Date:	

6. Contractor's Contact Details		
Contractor Personnel	Name	Mobile
Manager Environment:		
Manager Communications:		
Contractor's Representative:		
Contractor's 24hr contact person:		



City & Southwest Determination Page (to be left blank by contractors)

	Step 1 – Endorsement from TfNSW Principal Manager Project Communications Contractor's Communications Manager	Step 2 – Endorsement from Acoustic Advisor	Step 3 – Approval from Environmental Representative OR Secretary of Department of Planning & Environment
Risk Level:	N/A	Circle: LOW or HIGH If works after 9pm are considered HIGH, TfNSW submits application to the Secretary of Department of Planning & Environment for approval.	N/A
Signature:			
Name:			
Date:			
Comments: (including Acoustic Advisor Risk Level comments)			
Conditions:			



Generic Determination Page (to be left blank by contractors)

	Step 1 – TfNSW Principal Manager Project Communications	Step 2 – Acoustic Advisor (may be optional depending on planning approval or contract requirements)	Step 3 – Environmental Representative (may be optional depending on planning approval or contract requirements)	Step 4 – TfNSW Principal Manager, Sustainability, Environment & Planning (only required if not approved already)
Action:	Endorsement	Circle: Endorsement OR Approval	Circle: Endorsement OR Approval	Approval
Signature:				
Name:				
Date:				
Comments:				
Conditions:				

Appendix 1: Map (and/or ECM)



Appendix 2: Traffic Management Plan or Traffic Control Plan

(if applicable)

Appendix 3: Road Occupancy Licence and/or Road Opening Permit

(if applicable)

Appendix 4: Supporting Evidence for Noise and Vibration Impacts

(if applicable)

Appendix 5: Community Notification

(if applicable)

City & Southwest Out of Hours Work Application Form

This Form is to be used for formal review and approval of Sydney Metro City & Southwest OOH work as it may affect Residential and non-Residential receivers in accordance with the SM ES-PW-317 City & Southwest Out of Hours Work Protocol and SM ES-ST-210 Sydney Metro City & Southwest Construction Noise & Vibration Strategy. This form allows for the findings of Construction Noise and Vibration Impact Statements (CNVIS) to be outlined into each OOH work application as applicable. If the proposed OOH work is not within the scope of a CNVIS (or is within the scope of a CNVIS that is yet to be prepared), SM ES-FT-419 Sydney Metro Out-of-Hours Work Application Form is to be used. This application and all applicable appendices must be submitted to TfNSW as one PDF file at least 15 business days prior to the commencement of the proposed OOH work.

1. OOH Application	
Contractor:	
Project:	
Application Title: E.g. 'Smith St service relocation works'	
Application Number: E.g. 1, 2, 3, etc.	
Application Date: Original submission date (resubmission date in parentheses if applicable)	
Applicable CNVIS (or section thereof):	

2. Proposed OOH Work Details	
Description of works: Including: <ul style="list-style-type: none"> • Work methodologies. • List of plant/equipment to be used (worst case scenario). • Map (and/or ECM) attached as Appendix 1 indicating location of works, plant/equipment and receivers. • Traffic Management Plan or Traffic Control Plan if applicable as Appendix 2. • Road Occupancy License and/or Road Opening Permit application or approval if applicable as Appendix 3. 	
Timing of works: Including the proposed dates and times where works are anticipated to be undertaken outside standard hours.*	
Are works proposed after 9pm? (Yes or No)	
Justification: Explain the need for the works to be undertaken during the proposed OOH periods and justify why works cannot occur during standard hours* or out of hours as per E37 and E38.	

* Work time periods are as follows:

- **Standard Hours:** 7am to 6pm weekdays and 8am to 1pm Saturdays.
- **Daytime OOH:** 1pm to 6pm Saturdays and 8am to 6pm Sundays and Public Holidays.
- **Evening OOH:** 6pm to 9pm every day.
- **Night Time OOH:** 9pm to 7am weekday mornings and 9pm to 8am weekend and Public Holiday mornings.

3. Noise and Vibration Impacts

Using the findings of the applicable CNVIS, quantitatively outline the predicted air-borne noise, ground-borne noise and vibration impacts specific to the proposed OOH work on the nearest receivers (attach CNVIS supporting evidence as Appendix 4). This should include as a minimum:

- Anticipated worst case noise level exceedances for the closest receiver to the works for each applicable OOH Period (i.e. Daytime, Evening and Night Time), and
- For Night Time OOH Period works, a prediction of maximum noise levels and a review of potential sleep disturbance impacts in accordance with Section 4.3 of the ICNG.

With reference to Conditions E41 and E42 of the Chatswood to Sydenham planning approval:

Does the proposed OOH work include 'annoying' activities that are likely to result in regenerated / ground-borne noise or a perceptible level of vibration?

YES or NO

Are residential receivers anticipated to experience internal noise levels equal to or greater than the Noise Management Level exceedances tabulated right (inclusive of a 5 dB penalty if YES answered above)?

YES or NO. If Yes, applicable Additional Mitigation Measures (Error! Reference source not found.) must be offered. Use Error! Reference source not found. to demonstrate compliance with this requirement.

	8pm - 9pm	9pm - 7am
Non-residential zones	60 dBA	45 dBA
Residential zones	45 dBA	45 dBA

4. Mitigation Measures

Outline standard noise and vibration mitigation measures that will be implemented during the proposed OOH work:

Using Error! Reference source not found. and Error! Reference source not found., indicate in Error! Reference source not found. which Additional Mitigation Measures are applicable for consideration, will be implemented and are justified not to be implemented. Refer to Section 8 of the City & Southwest Construction Noise and Vibration Strategy (CNVS) for further information on Additional Mitigation Measures. Any CNVS Addendum A mitigation measures to be implemented are to be detailed in Table 4.

Table 1: Additional Mitigation Measures (AMM) requiring Consideration for Implementation

OOH Period	Applicable Additional Mitigation Measures (AMM)			
	< 10 dBA Exceedance	10 to < 20 dBA Exceedance	20 to ≤ 30 dBA Exceedance	> 30 dBA Exceedance
Daytime OOH Period	–	LB	M, LB	M, IB, LB, PC, RO, SN
Evening and Night Time OOH Periods	–	M, LB	M, IB, LB, PC, SN, RO	M, IB, LB, PC, SN, RO, AA*

* AA is only applicable to Night Time OOH periods.

Table 2: List of Additional Mitigation Measures (AMM)

AMM Abbrev.	AMM	AMM Descriptions and Guidance
LB	Letterbox-Drop (generic to the project)	A newsletter is produced and distributed to the local community via letterbox-drop and the project mailing list. These newsletters provide an overview of current and upcoming works across the project and other topics of interest. The objective is to engage, inform and provide project-specific messages. Advanced warning of potential disruptions (e.g. traffic changes or noisy works) can assist in reducing the impact on the community. Content and newsletter length is determined on a project-by-project basis. Most projects distribute notifications on a monthly basis. The geographic extent of letterbox-drops is generally centred on the immediate surrounding community and rarely extends beyond 100 metres from the works site.
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IB	Individual Briefings	Individual briefings are used to inform stakeholders about the impacts of high noise activities and mitigation measures that will be implemented. Communications representatives would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project.
PC	Phone calls (and/or emails)	Phone calls and/or emails detailing relevant information would be made to identified/affected stakeholders within seven days of proposed work. Phone calls and/or emails provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and specific needs etc.
SN	Specific Notifications (specific to the OOH work)	Specific notifications would be letterbox-dropped or hand-distributed to identified stakeholders no later than seven days ahead of construction activities that are likely to exceed the RBLs/NMLs. This form of communication is used to support periodic notifications or to advertise unscheduled works. The geographic extent of specific notifications is generally centred on the immediate surrounding community and rarely extends beyond 100 metres from the works site.
RO	Respite Offer	The purpose of a project specific respite offer is to provide residents subjected to lengthy periods of noise and/or vibration impacts respite during OOH periods. Respite offers are offers made to affected receivers to provide a period of either no or limited noise impacts. This can be in the form of stopping or limiting works onsite or offering affected receivers dinner/movie vouchers. The first priority is to implement a period of no or limited noise impacts. If this cannot be achieved, dinner/movie vouchers may be offered on a case-by-case basis. Respite offers must be made in certain circumstances in accordance with Condition E38 of the Chatswood to Sydenham planning approval.
AA	Alternative Accommodation (residential only)	Alternative accommodation options may be provided for residents living in close proximity to construction works that are likely to incur unreasonably high impacts during night time OOH periods. Alternative accommodation will be considered on a case-by-case basis.



Table 3: Consideration of Additional Mitigation Measures (AMM)

AMM	Applicable for Consideration? YES or NO (refer to Error! Reference source not found.)	To be Implemented? * YES or NO	Justification (if applicable for consideration, but will not be implemented)
LB			
M			
IB			
PC			
SN			
RO			
AA			

* Refer to Section Error! Reference source not found. for AMMs that must be offered in certain circumstances in accordance with Conditions E41 and E42.

Table 4: CNVS Addendum Mitigation Measures

Mitigation Measure	Details of Implementation



4. Community Consultation	
What community consultation has been undertaken already?	
What community consultation is planned to be undertaken?	
If drafted already, attach applicable Community Notification as Appendix 5.	

5. Contractor's Signature	
Contractor's Identification of Risk Level: Refer to Section 3.1.2.3 of the Chatswood to Sydenham Out of Hours Work Protocol for guidance.	Circle: LOW or HIGH
Contractor's Signature:	
Name:	
Title:	
Contact Number:	
Date:	

6. Contractor's Contact Details		
Contractor Personnel	Name	Mobile
Manager Environment:		
Manager Communications:		
Contractor's Representative:		
Contractor's 24hr contact person:		



Determination Page (to be left blank by contractors)

	Step 1 – Endorsement from TfNSW Principal Manager Public Communications OR Contractor’s Communications Manager	Step 2 – Endorsement from Acoustic Advisor	Step 3 – Approval from Environmental Representative OR Secretary of Department of Planning & Environment
Risk Level:	N/A	Circle: LOW or HIGH If works after 9pm are considered HIGH, TfNSW submits application to the Secretary of Department of Planning & Environment for approval.	N/A
Signature:			
Name:			
Date:			
Comments: (including Acoustic Advisor Risk Level comments)			
Conditions:			

Unclassified

Sydney Metro – Integrated Management System (IMS)

(Uncontrolled when printed)



Appendix 1: Map (and/or ECM)

Appendix 2: Traffic Management Plan or Traffic Control Plan

(if applicable)

Appendix 3: Road Occupancy Licence and/or Road Opening Permit

(if applicable)

Appendix 4: CNVIS Supporting Evidence

Appendix 5: Community Notification

(if applicable)

Appendix C – Incident Reporting Forms

1. TfNSW Incident Report Form (NWRL QM-FT-411) for WHS incidents.
2. Sydney Metro Northwest Environmental Incident /Non-compliance Report for Environmental incidents.

Incident Report Form

This form is only intended for use within NWRL, and is not intended for use by Principal Contractors. It supports shared procedure **NWRL QM-PW-311 Incident Reporting**.

Complete the form as best as you can and send it to nwrl.safety@transport.nsw.gov.au.

Note: Requirements for **Escalation** (through line management) and **Notification** (of relevant regulators where appropriate) in the Project Safety Management Plan (PSMP) must also be complied with where relevant.

Part 1: Details of incident			
This form completed by (name & contact details):		Date:	
Person/s involved:			
Relevant Business Area:			
Witness details:			
Reported to (Responsible line manager in area of incident & contact details):			
Date/time of incident:		Date/time of reporting:	
Incident address:			
Incident location:			
Part 2: Initial details of incident			
Work undertaken at time of incident:			
Incident Description: <i>What happened?</i> <i>What were the immediate causes?</i> (attach photos if available)			

Part 2 (continued): Initial details of incident	
<p>Details of Losses: For example environmental, injury (see part 4), damage, program/budget, etc. (Consider both scope and quantity of the loss where relevant)</p>	
<p>Plant/equipment involved: For example vehicles, heavy equipment, tools, etc.</p>	
<p>Immediate actions undertaken. Whom were they undertaken by?</p>	
<p>Other actions yet to be undertaken.</p>	
<p>(C1-C6) Potential or Actual Consequence Assessment:</p>	
<p>Is Root Cause investigation warranted?</p>	<p>Yes/No If yes complete Part 3 (Consider Root Cause investigation if likely consequence levels >C6 (i.e. C5 –C1) and also if the initial details of the incident are insufficient for good quality preventive actions to be determined).</p>

Part 3: Detailed investigations (only complete if warranted from Part 2)

<p>Trained lead investigator (and team where relevant): (Names and disciplines)</p>	
<p>Immediate Causes:</p> <ul style="list-style-type: none"> • List the actions that caused or contributed to the incident, such as errors or violations • List the workplace conditions that caused or contributed to the incident. Consider work environment, such as weather, lighting, temperature, etc. 	
<p>Root Cause factors: For example, consider:</p> <ul style="list-style-type: none"> • shiftwork/fatigue • training & competence • Human Factors (group norms) • inadequate plant and equipment • inadequate leadership. 	
<p>System Inadequacies, if any;</p> <ul style="list-style-type: none"> • system missing • system shortcoming • system not implemented • etc. 	
<p>Actions (based on the above causes):</p>	

Part 3 (continued): Drugs and Alcohol – only complete if D&A testing is carried out	
Was an alcohol test taken?	<input type="checkbox"/> No <input type="checkbox"/> Pre-sign on <input type="checkbox"/> Random <input type="checkbox"/> Post-incident
If yes, what was the result?	<input type="checkbox"/> Negative <input type="checkbox"/> Positive (attach details of test)
Was a drugs test taken?	<input type="checkbox"/> No <input type="checkbox"/> Pre-sign on <input type="checkbox"/> Random <input type="checkbox"/> Post-incident
If yes, what was the result?	<input type="checkbox"/> Negative <input type="checkbox"/> Positive (attach details of test)
Comments (Was there a medical reason...):	
Part 4: To be completed only if there was an injury	
Person/s injured:	
Injured workers organisation, e.g.: <ul style="list-style-type: none"> • NWRL • Principal Contractor name • Sub contractor name • Member of public 	Organisation:
	Division:
	Business Area:
	Position:
	Manager name & contact details:
Date of birth:	Contact phone No.:
Home address and contact number:	
Treatment (first aid, medical, hospitalised): (Including name of the treating doctor/hospital, where relevant.)	
Body parts injured:	
Nature of the injury or disease:	
Permanent injury?	Yes / No – If yes, describe:
Event type that caused the injury:	
Time lost where relevant:	
Rehabilitation provider where relevant:	
Office use only:	
INX Number:	
Investigation completed?	Yes / No
Actions completed?	Yes / No
Incident closed out?	Yes / No

CONSEQUENCE TABLE

Rating	C6	C5	C4	C3	C2	C1
Descriptor/ Impact Area	Insignificant	Minor	Moderate	Major	Severe	Catastrophic
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 injuries/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.
Customer Experience/ Operational Reliability	Short duration disruptions affecting part of one transport mode.	Minor disruptions affecting several parts of one transport mode.	Serious disruptions affecting operation of one complete transport mode.	Major disruptions affecting operations of one transport mode with network-wide effects on one or more other modes of transport.	Short duration shutdowns or substantial disruptions affecting multiple transport modes with sector-wide cascading effects.	Extensive shutdowns or extended disruptions with economy-wide effects.
Government/ Stakeholder / Public Trust/ Confidence	Negative article in local media. No discernible reaction/apprehension. 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 little effort or cost. Some continuing scrutiny/attention.	Disappointment – Extended negative local/state media coverage. Confidence and trust dented but are quickly recoverable at modest cost within 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 TfNSW.	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 TfNSW 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 portion/milestone missed or final completion date missed with demonstrable mitigating external circumstances.	Severe delays with initiative, which impacts across divisions and/or significant decrease in benefits realised; or publicly announced portion/milestone missed or final completion date missed on critical path project.	Failure to realise benefits of the initiative which adversely affects the enterprise-wide operations of TfNSW; or publicly announced portion/ milestone significantly missed or final completion date significantly missed on critical path project.
Budget, Costs or Revenue	< \$100k	\$100k – \$1m	\$1m – \$10m	\$10m – \$50m	\$50m – \$100m	> \$100m

Environmental Incident and Non-Compliance Report Template

Record only factual information that you know to be correct. Do not make assumptions, be succinct and avoid speculation.

Section 1: General Details			
Contractor:			
Site:			
TfNSW ID Code: (If known)		Contractor reference: (If known)	
Date of incident/ non-compliance:		Time of incident/ non-compliance:	
Date of notification:		Time of notification:	
Method of notification:			
Notification received by – Name:			
Notification received by – Position:			
Incident Classification:		Duration	
<input type="checkbox"/> Non-compliance only (complete Section 6 and 7 only)	<input type="checkbox"/> Class 3	<input type="checkbox"/> Short term (less than 1 week)	<input type="checkbox"/> Medium term (less than 3 months)
<input type="checkbox"/> Class 2	<input type="checkbox"/> Class 1	<input type="checkbox"/> Long term (greater than 3 months)	<input type="checkbox"/> Permanent
Incident Properties: (Tick as many as appropriate, where significant off-site impacts on people or the biophysical environment occurs this incident is also notifiable to DP&E)		<input type="checkbox"/> Notifiable event (also complete Section 4) <input type="checkbox"/> Non-compliance (also complete Section 6)	
Incident type (choose one):			
<input type="checkbox"/> Air & Dust (e.g. dust or odour emission, excessive exhaust from plant or equipment)	<input type="checkbox"/> Unauthorised Works (e.g. work being carried out prior to approval or permits being obtained)	<input type="checkbox"/> Noise & Vibration (e.g. exceedances of noise and vibration limits)	
<input type="checkbox"/> Flora and Fauna (damage/harm to species /habitat/ecological community)	<input type="checkbox"/> Water Pollution (e.g. discharge to any onsite or offsite waterway)	<input type="checkbox"/> Traffic, Transport & Access (e.g. Issues regarding the management of traffic flow)	
<input type="checkbox"/> Land Contamination (e.g. events where harmful materials escape into soil)	<input type="checkbox"/> Community (e.g. events causing impacts on community amenity/property)	<input type="checkbox"/> Waste & Hazardous Materials (e.g. disposal causing environmental harm)	
<input type="checkbox"/> Systems & Documentation (e.g. Non-Compliance with project approval, or a CEMP requirement)	<input type="checkbox"/> Heritage (e.g. damage/disturbance to heritage item/object/place)		

Section 2: Circumstances and Corrective Actions

Exact location:

(address, chainage, nearest cross street, landmarks etc., attach sketch if appropriate.)

Circumstances:

(Outline the circumstances of the incident leading up to the event and detail the activity being conducted)

Corrective Actions:

(Actions taken immediately to prevent or minimise environmental harm)



Appendix D – Exempt Development Checklist Approval Form

Exempt Development Checklist Approval Form

Site Reference No:		
Co-ordinates:	Easting:	Northing:
Location:		
Investigation type:		
Borehole <input type="checkbox"/>	Seismic Survey <input type="checkbox"/>	Test pitting <input type="checkbox"/>
Standpipe <input type="checkbox"/>	Vibrating Piezometer <input type="checkbox"/>	Stress Test <input type="checkbox"/>
Exempt development:		
Will the works involve greater disturbance to the ground or vegetation than necessary?	No: <input type="checkbox"/>	Yes: <input type="checkbox"/>
Will the works increase storm water drainage or run-off from the site?	No: <input type="checkbox"/>	Yes: <input type="checkbox"/>
Will the works involve more than minimal environmental impact or impact on amenity of the surrounding area?	No: <input type="checkbox"/>	Yes: <input type="checkbox"/>
Is the site located in an area of critical habitat of an endangered species, population or ecological community (identified under the Threatened Species Conservation Act 1995 or the Fisheries Management Act 1994)?	No: <input type="checkbox"/>	Yes: <input type="checkbox"/>
Is the site located in a wilderness area (identified under the Wilderness Act 1987)?	No: <input type="checkbox"/>	Yes: <input type="checkbox"/>
Will the works contravene the relevant deemed-to-satisfy provisions of the Building Code of Australia?	No: <input type="checkbox"/>	Yes: <input type="checkbox"/>
Will the works not be carried out in accordance with all relevant requirements of the Blue Book?	No: <input type="checkbox"/>	Yes: <input type="checkbox"/>
Will the works affect a State or local heritage item conservation area? If so, would there be more than minimal impact on the heritage significance of the item or area?	No: <input type="checkbox"/>	Yes: <input type="checkbox"/>
Will the works involve the removal or pruning of a tree or vegetation?	No: <input type="checkbox"/>	Yes: <input type="checkbox"/>
Note: If the answer to all of the above questions is 'No', the investigations at the site are likely to be classified 'exempt development'.		
Exempt Development checklist completed by:		
Name:		Date:
Position:		Signature:
Justification and/or additional mitigation measures proposed:		
Exempt Development checklist approved by TfNSW:		
Name:		Date:
Position:		Signature:

Appendix E – Minor Works Approval Form

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 TfNSW/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:	
Project:	
Application Title: (e.g. Smith St trenching works)	
Application Number:	
Application Date:	
Planning 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"> 1. Survey, survey facilitation and investigations works (including road and building dilapidation survey works, drilling and excavation). 2. Treatment of contaminated sites. 3. Establishment of ancillary facilities (excluding demolition), including construction of ancillary facility access roads and providing facility utilities. 4. Operation of ancillary facilities that have minimal impact on the environment and community. 5. Minor clearing and relocation of vegetation (including native). 6. Installation of mitigation measures, including erosion and sediment controls, temporary exclusion fencing for sensitive areas and acoustic treatments. 7. Property acquisition adjustment works, including installation of property fencing and utility relocation and adjustments to properties. 8. Utility relocation and connections. 9. Maintenance of existing buildings and structures. 10. 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. 11. 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?	<i>If 'Yes', this completed form must be endorsed by an Environmental Representative, approved by TfNSW and submitted to the applicable planning authority to determine that the works are not defined as 'construction'.</i>

Part 2: Details

<p>Describe the proposed Minor Works: Including work methodologies, site location(s) and site description(s) (e.g. landscape type, waterways, etc.).</p>	
<p>Planned Commencement Date:</p>	
<p>Local Sensitivities: Describe the presence (if any) of local sensitive environmental areas and community receptors</p>	

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>	
--	--

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>	
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Part 5: Community Consultation

<p>What community consultation has been undertaken already?</p>	
<p>What community consultation is planned to be undertaken?</p>	

If drafted already, attach applicable Community Notification as Appendix 3.

(Uncontrolled when printed)

Part 6: Contact Details

Nominate contractor's project manager, environmental and communications contact(s).

Name:		Position:		Phone:	

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:			
Signature:		Date:	

Determination Page

(TfNSW/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).

	TfNSW Principal Manager, Communication & Engagement – Endorsement (required for all applications)	TfNSW Principal Manager, Sustainability, Environment & 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:			
Comments:			<i>Supporting letter attached as Appendix 4 if necessary.</i>
Conditions:			<i>Supporting letter attached as Appendix 4 if necessary.</i>
<input type="checkbox"/>	Approved (by TfNSW)		
<input type="checkbox"/>	Endorsed (by Environmental Representative)		

<input type="checkbox"/>	Rejected
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Appendix 1: Cover Page

Environmental Risk Assessment and Environmental Control Map.

Appendix 2: Cover Page

Environmental Management Documentation.

Appendix 3: Cover Page

Community Notification.

Appendix 4: Cover Page

Environmental Representative Supporting Letter.

GHD

133 Castlereagh St Sydney NSW 2000






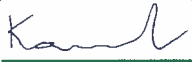

T: +61 2 9239 7100 F: +61 2 9239 7199 E: sydmail@ghd.com.au

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Rev 1	A Robinson R Russell	Mike Dean T Mulherin		Greg Bowyer		19 May 2016
Rev 2	Ashley Robinson	Mike Dean		Greg Bowyer		6 July 2016
Rev 3		Mike Dean		Kamal Kamalarasa		13 July 2016
Rev 4	Hoda Alameddine	Mike Dean		Greg Bowyer		11 Oct 2016
Rev 5		Mike Dean		Greg Bowyer		17 Oct 2016
Rev 6	Michael Tran	Mike Dean		Greg Bowyer		2 Jun 2017
Rev 7	Mike Dean	K Kamalarasa		Greg Bowyer		19 Jun 2017
Rev 8	Kamal Kamalarasa	Greg Bowyer		Greg Bowyer		7 Aug 2017
Rev 9	Henry Liu	Kamal Kamalarasa		Greg Bowyer		4 September 2017

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Appendix 3: Cover Page

Community Notification.

Appendix 4: Cover Page

~~Environmental Representative Supporting Letter.~~

DP & E Approval letter dated 15/9/17.



Nicole Williams
Environmental Planning Manager
Safety, Sustainability and Environment
Sydney Metro
Transport for NSW
PO Box K659, HAYMARKET NSW 1240

Our ref: SSI 7400

Dear Ms Williams

**Sydney Metro City and Southwest (SSI 7400)
Low impact works in heritage areas – contamination sampling at Central Station**

Thank you for your correspondence of 14 September 2017 seeking a determination that certain additional low impact works at Central Station are not construction activities, for the purposes of the definition in the infrastructure approval.


I understand the proposed works comprise thirteen contamination boreholes, as shown in *Sydney Metro & SouthWest Central Station, Golder Associates & Douglas Partners JV, proposed site investigations (June 2017) (attached)* and identified as: SRT_CBH001; SRT_CBH002; SRT_CBH003; SRT_CBH004; SRT_CBH005; SRT_CBH006; SRT_CBH007; SRT_CBH008; SRT_CBH009; SRT_CBH010; SRT_CBH011; SRT_CBH012; and SRT_CBH085

I note receipt of the Office of Environment and Heritage's (OEH) letter of 14 September 2017 and further email of 15 September 2017, confirming its position that there is little or no archaeological potential in this area and no significant heritage fabric would be affected by the proposed works. Based on the limited nature of the works and the lack of heritage impacts, OEH considers that the proposed investigation works for contamination testing at Central Station are acceptable.

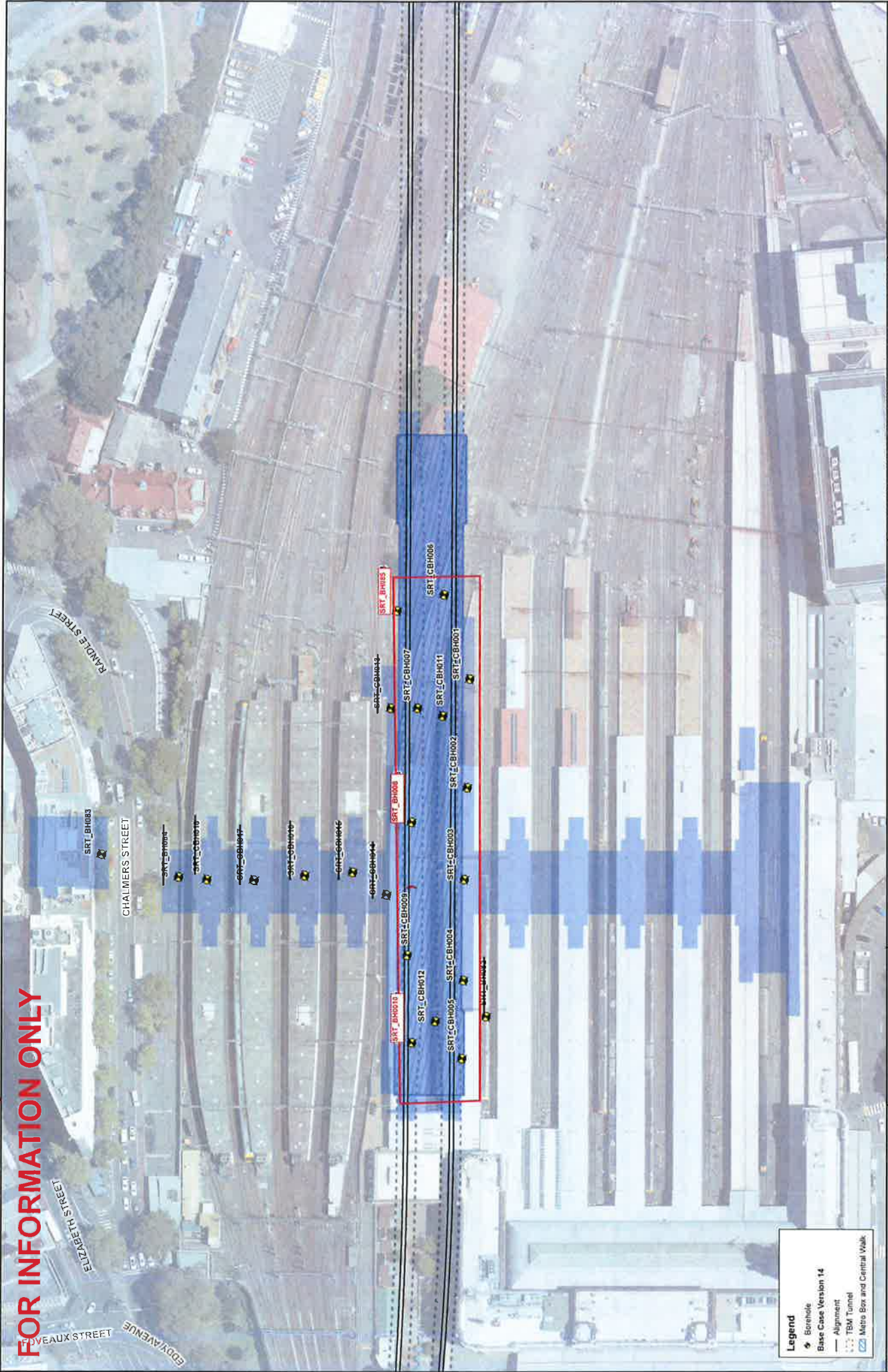
On this basis, I approve the above low-impact works described in your letter of 14 September 2017 (and updated by your later email of 14 September 2017) as non-construction activities. You are reminded of the need to carefully implement the methodology and mitigation measures for these works, as described.

If you have any queries, please contact Jacqueline McLeod, Team Leader, Infrastructure Management on 02 9274 6454 or Jacqui.mcleod@planning.nsw.gov.au

Yours sincerely

 15/9/17
Stacy Warren
Director
Infrastructure Management
as delegate of the Secretary.

FOR INFORMATION ONLY



Legend

- Borehole
- Base Case Version 14
- Alignment
- TBM Tunnel
- Metro Box and Central Walk

SCALE

0 25 50
Meters

1:600

Scale ratio correct when printed at A1

CLIENT

NSW GOVERNMENT

Transport for NSW

PROJECT

sydney METRO | city & southwest

CONTRACTOR

AECOM
HASSELL

SYDNEY METRO CITY & SOUTHWEST
CENTRAL STATION
GOLDER ASSOCIATES AND DOUGLAS PARTNERS JV
PROPOSED SITE INVESTIGATIONS (JUNE 2017)

NAME: A. LAMBERT
WORKING TITLE: WMR-SRT-PBA-SCS-EN-DWG-305851
APPROVED BY: [Signature]

DATE: 10/06/2017