Sydney Metro City and Southwest Central Station Main Works Project

Construction Air Quality Management Plan

Central Station Main Works Project
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Project name	Central Station Main Works
Client	Sydney Metro City & South West – Sydney Metro)
Client contract number	CSMW
Laing O'Rourke contract number	K51

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Terms and definitions

The following terms, abbreviations and definitions are used in this plan.

Terms	Explanation
Assurance Application	Laing O'Rourke's Online Tool to manage Non-Conformances
CAQMP	Construction Air Quality Management Plan
CBD	Central Business District
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
CSSI	Critical State Significance Infrastructure
CSMW	Central Station Main Works
CSMP	Construction Spoil Management Plan
CSWMP	Construction Soil and Water Management Plan
CTMP	Construction Traffic Management Plan
CWMP	Construction Waste Management Plan
DPE	Department of Planning & Environment
ECM	Environmental Control Map
EIS	Environmental Impact Statement (Sydney Metro City and Southwest Chatswood to Sydenham) Determined on 09 January 2017 under the EP&A Act)
EPL	Environment Protection Licence
ER	Environmental Representative
ISO	International Standardization Organisation
Laing O'Rourke	Laing O'Rourke Australia Construction Pty Limited
Minister	NSW Minister for Planning
MOD 2	Modification 2 – Central Walk Environmental Impact Statement (Sydney Metro City and Southwest Chatswood to Sydenham determined 21 December 2017) under the EP&A Act to modify SSI15_7400.
OHHWMP	Occupation Health Hygiene Wellbeing Management Plan
PEM	Project Environmental Manager
REMM	Revised Environmental Mitigation Measures
SM	Sydney Metro (Transport for NSW)

1. Introduction

1.1 Purpose

This Construction Air Quality Management Plan (CAQMP) outlines the Central Station Main Works (CSMW) Project's (the Project) approach to managing air quality in accordance with Laing O'Rourke Construction Pty Limited's (Laing O'Rourke) legal, planning and contractual requirements and Laing O'Rourke's environmental management system. This CAQMP has been developed in compliance with Sydney Metro's requirements, Laing O'Rourke's environmental management system and the Minister's Conditions of Approval (CoA). The Plan incorporates the requirements of the Air Quality Management Plan (as detailed in the Construction Environmental Management Framework). Refer also to the Occupation Health, Hygiene, and Wellbeing Management Plan for management of air quality within the Metro Box excavation and the Safety Management Plan for the safety requirements for the management of asbestos and contamination.

1.2 Background

Sydney Metro City & Southwest – Chatswood to Sydenham Project is a new 30km metro line extending metro rail from the end of Sydney Metro Northwest at Chatswood under Sydney Harbour, through new CBD stations and southwest to Bankstown. It is due to open in 2024 with the capacity to run a metro train every two minutes each way through the centre of Sydney. The Project forms part of the Sydney Metro City & Southwest – Chatswood to Sydenham Project and includes the construction of new underground platforms at Central Station and new related pedestrian access ways. The works will be undertaken by Laing O'Rourke. The Project consists of the Metro Station Works, the Central Station Works and the Central Walk Works which are described in the sections below.

1.3 Planning Approval

The Project has been assessed by the Department of Planning Industry and Environment under Section 115ZB of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as Critical State Significant Infrastructure (CSSI). The Project, its impacts, consultation and mitigation were documented in the following suite of documents:

- Critical State Significant Infrastructure Application SSI 15_7400;
- Sydney Metro – Chatswood to Sydenham –Environmental Impact Statement (Jacobs/Aracadis/RPS, 2016);
- Sydney Metro – Chatswood to Sydenham –Response to Submissions and Preferred Infrastructure Report (Jacobs/Aracadis/RPS 2016); and

The Planning Assessment Commission granted Approval for the Project on 9 January 2017 and the Laing O'Rourke scope of works is subject to the Minister's Conditions of Approval.

Following approval of the Sydney Metro City and Southwest – Chatswood to Sydenham Project, a modification (SSI Mod 2: Central Walk) was assessed by the Department of Planning Industry and Environment and subsequently approved on 21 December 2017 under section 115ZI of the EP&A Act.

The consolidated Conditions of Approval's for the Sydney Metro City and Southwest have been defined from the following approval modification documents.

- CSSI 7400 MOD 1 – Victoria Cross and Artarmon Substation (determined 18 October 2017)

- CSSI 7400 MOD 4 – Sydenham Station and Metro Facility South (determined 13 December 2017)
- CSSI 7400 MOD 2 – Central Walk (determined 21 December 2017)
- CSSI 7400 MOD 3 – Martin Place Metro Station (determined 22 March 2018).
- CSSI 7400 MOD 5 – Blues Point Acoustic Shed (determined 02 November 2018).
- CSSI 7400 MOD 6 – Administrative Changes (determined 21 February 2019).
- CSSI 7400 MOD 7 – Administrative Changes (determined 29 June 2020)
- CSSI 7400 MOD 8 – Blues Point Access Site (determined 25 November 2020)
- CSSI 7400 MOD 9 – Construction hours (determined 30 June 2022)

1.4 Overview of the Project

The Metro Station Works include the installation of new platforms that will be constructed using sophisticated excavation techniques to create a cavern with an island platform, beneath Central Station's existing heavy-rail platforms 12, 13, 14 and 15.

The Central Station Works include new infrastructure and the adjustments to existing infrastructure at Central Station to construct, operate and maintain the Metro Station Works. The key features of the Central Station Works include:

- a new north-south concourse for Central Station which will link the new metro station with the existing northern entrance and north concourse, a new concourse entitled 'Central Walk', and the existing southern baggage tunnel; and
- adjustments to the existing Paid Intercity Concourse, Olympic Tunnel, north concourse and northern entrance to Central Station.

The Central Walk Works include the provision of other infrastructure to provide improved connectivity and other operational enhancements throughout Central Station. The key features of the Central Walk Works include:

- a new eastern entrance for Central Station at Chalmers Street;
- a new eastern concourse for Central Station beneath existing platforms 16 to 23 (the 'Central Walk'), which will link the new eastern entrance, the new north south concourse, existing platforms 16 to 23 and the existing Eastern Suburbs Railway (ESR) concourse; and
- provisions to enable the future construction (by others) of an extension of the Central Walk through a new west concourse and a new western entrance for Central Station.

1.5 Project Scope of Works

1.5.1 Permanent Works

The permanent new infrastructure to be constructed includes:

- Shortening of platforms 9 to 14 at the northern end, and a corresponding lengthening at the southern end;
- Demolition of platforms 13 to 15 and re-instatement of platforms 13 to 14 to accommodate the construction of the new metro station;
- Reinforcement of Platform 12 and demolition of exiting canopies of Platform 12;

- Minor existing canopy modifications for Platform 14 for lift risers
- Suburban platforms refreshing;
- Platform reinforcement works and relevelling.
- Suburban track slab construction
- Station excavation requiring the removal of approximately 230,000 cubic metres of spoil;
- Demolition of the 'Bounce Hostel'
- Excavation of the Advanced adit perpendicular between the Metro Box and the Eastern Entrance; allowing for the removal of spoil from above ground works on the Suburban Rail lines.
- Construction of the new eastern pedestrian portal, the Central Walk and related station access arrangements to existing platforms.
- Construction of a padmount substation in Sydney Yard and associated feeders to Lee Street Substation.

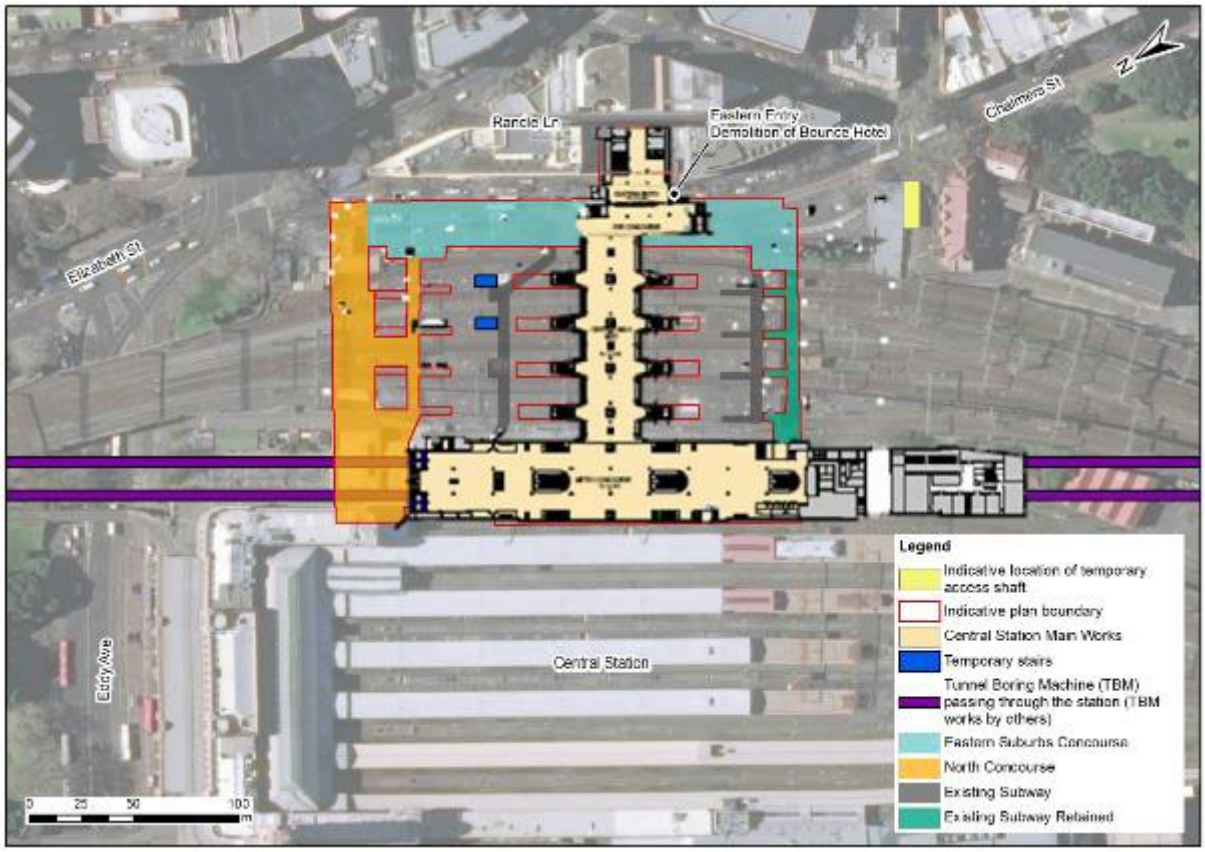

Figure 1.1 CSMW Project Works

1.5.2 Ancillary works

Ancillary works include fencing, maintenance access, utilities works, drainage, noise barriers, road and transport network works and construction of temporary site office, laydown and work sites to support construction.

1.5.3 Combined Service Route (CSR)

The CSR for Central Station will provide for Communications (Comms) services (voice, data and IT connectivity, requiring 6 to 8 cables) and High Voltage electrical (HV) services that will service the whole site, both existing and the new infrastructure installations that are being introduced as part of the Central Station Main Works. It will extend as a circular route around the site, utilising existing service infrastructure where this is available and providing new installations as required to complete the system.

The CSR was included in the Environmental Impact Statement that was approved under SSI 15_7400 as part of the concept design (refer EIS Chapter 7, Project Description – Construction, Part 7.10.9, p231) and has progressed through a detailed design process. Figure 1.2 shows the location of works for the CSR route around central station since adaptation from the EIS (see figure 1.2). The CSR will be delivered in two phases. Phase A occurs in areas, 2, 3 and 4 and is restricted to the Western Baggage Tunnel, Northern Baggage Tunnel and Platform 1. Phase B occurs in all other areas and extends to the Darling Harbour Goods Line, Mortuary Tunnel, Sydney Yard, Water Mains tunnel, Prince Alfred Substation, Railway Institute driveway and Sydney Network Base

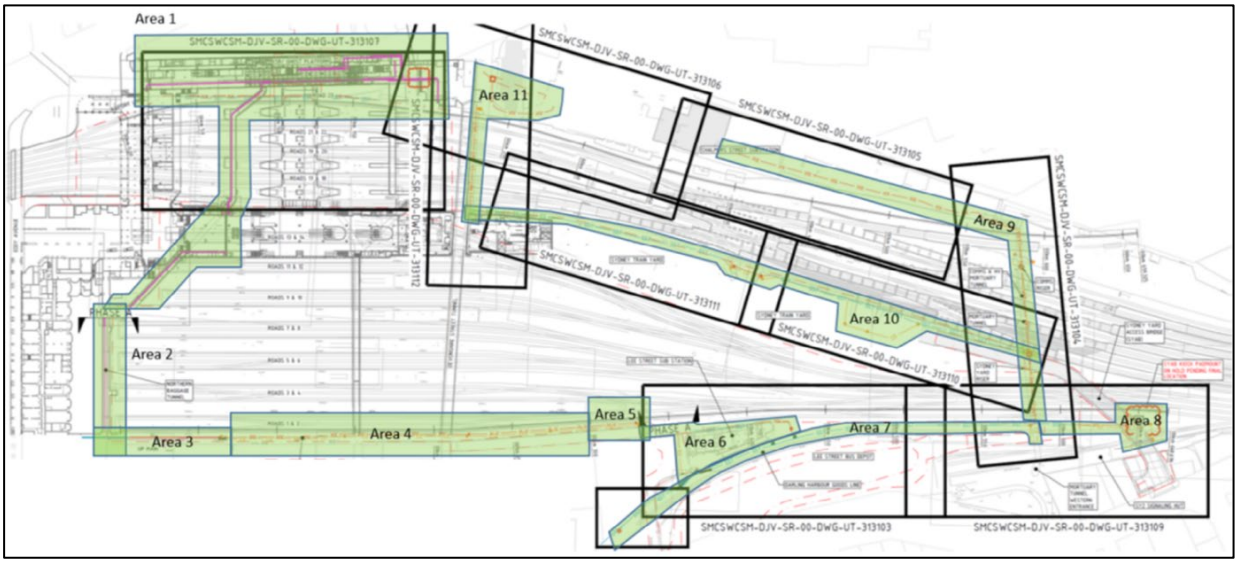

Figure 1.2 CSR route around Central Station

1.5.4 Works Location and Site Layout

A total of 11 trees occur within the CSMW rail corridor have all been removed due to the highly constrained nature of the site. The Project location and site layout is highlighted in Figure 1.3 below.

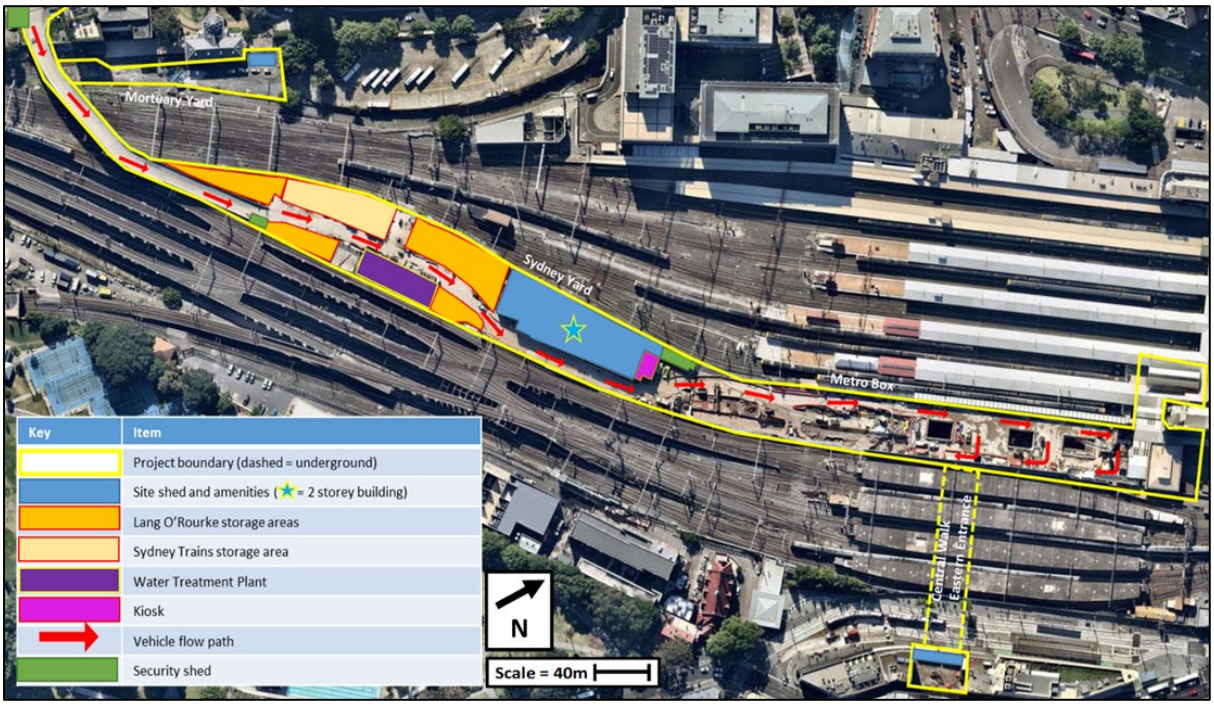

Figure 1.3: CSMW Site

1.5.5 Construction Hours

In accordance with Condition of Approval (CoA) – E36 - Construction, except as allowed by Conditions E47 and E48 (excluding cut and cover tunnelling), must only be undertaken during the following standard construction hours:

- 7:00am to 6:00pm Mondays to Fridays, inclusive;
- 8:00am to 6:00pm Saturdays; and
- at no time on Sundays or public holidays.

CoA E37 places further restriction on the hours that 'high noise impact' generating activities may occur where internal noise levels are greater than Leq(15min) 60dBA at nearest sensitive receivers. Construction works and activities with the potential to exceed internal criteria will be scheduled to occur between the hours of 7am and 8pm. CoA E37 provides for an extended daytime period as it may be preferred by commercial (or residential) receivers for high noise generating activities to occur after 5pm. As required in CoA E38, the relevant receivers have been identified throughout the Construction Noise and Vibration Management Plan (CNVMP) regarding the determination of hours of respite so that construction noise (including ground-borne noise) does not exceed the Highly Noise Affected Management Level (HNAML) outlined within the Interim Construction Noise Guideline (ICNG).

Conditions E44 and E45 also allows construction outside of scheduled hours under a range of conditions such as emergency works, where a negotiated agreement has been reached with a

substantial majority of sensitive receivers who are within the vicinity of and may be potentially affected by the particular construction, etc.

Condition E47 requires an out of hours work protocol be developed and implemented for work outside of the above standard construction hours. Condition E48 specifies that the following activities may occur 24 hours per day seven days a week, subject to Condition E47:

(a) tunnelling and associated support activities (excluding cut and cover tunnelling);
(b) excavation within an acoustic enclosure;
(c) excavation at Central without an acoustic enclosure (excluding Central Walk works at 20-28 Chalmers Street, Surry Hills);
(d) station and tunnel fit out; and
(e) haulage and delivery of spoil and materials.

1.6 Objectives and Targets

This CAQMP provides the basis for the management of air quality issues and to minimise risk of impact during works. The objectives and targets of the CAQMP are outlined below and conform to Sydney Metros objectives as described in the Construction Environmental Framework:

Objectives

- Prevent visible emissions of dust from the Site;
- Minimise gaseous and particulate pollutant emissions from construction activities as far as feasible and reasonable;
- Identify and control potential dust and air pollutant sources;
- The identification and control of hazardous substances associated with contaminated land.

Targets

- No pollution incidents resulting in environmental harm or regulatory action;
- No formal warnings or Penalty Infringement Notices arising from the works;
- No non-compliances with Section 132 of the Protection of the Environment Operations Act (i.e. no incidents of "pollution");
- No nuisance complaints; and
- Ensure appropriate controls and procedures are implemented during construction activities to address the relevant CoA and EIS management measures.

2. Legal and Other Requirements

Table 2-1 below details the applicable legislation and planning instruments considered during development of this Plan.

Table 2-1: Legislation and Planning Instruments

Legislation	Description	Relevance to this CAQMP
Environmental Planning and Assessment Act 1979	This Act establishes a system of environmental planning and assessment of development proposals for the State.	The approval conditions and obligations are incorporated into this CAQMP.

Legislation	Description	Relevance to this CAQMP
Protection of the Environment Operations Act 1997	This Act includes all the controls necessary to regulate pollution and reduce degradation of the environment, provides for licensing of scheduled development work, scheduled activities and for offences and prosecution under this Act.	This plan defines how Laing O'Rourke will manage works to comply with this Act. The works will be conducted in accordance with the requirements of the EPL. The Project early works were completed under the Sydney Trains EPL (Licence number 12208). The project EPL was obtained 28 November 2018, which covers all works outlined in the CEMP and sub plans.
Protection of the Environment Operations (Clean Air) Regulation 2010.	This regulation contains provisions to regulate emissions from industry, outlining specific maximum emissions of air pollutants permitted from industrial, agricultural and commercial scheduled and non-scheduled activities.	Motor vehicles and fuels, plant and equipment must be maintained in accordance with relevant sections of this regulation

Sydney Trains EPL 12208 was applicable to pre-construction and minor works. In relation to this CAQMP, condition O3.1 that states 'Dust generating activities on the premises must be managed to minimise the generation of dust and prevent it going offsite as far as reasonably practicable.' No specific air discharge limits, monitoring and recording requirements or reporting conditions were outlined for air quality within EPL 12208.

The project EPL 21148 was obtained on 28 November 2018 and prescribes the following air quality management objectives:

- Condition M4.1 States 'The licensee must monitor forward weather forecast for wind velocity and rainfall at either the project weather station, or through analysis of equivalent weather information obtained from the Australian Bureau of Meteorologyto enable proactive implementation of dust and soil and sediment controls measures'.
- Condition O3.1 states 'The licensee must minimise the emission of dust from the premises to the greatest extent practicable'
- Condition O5.8 states 'All stockpiled material must be stabilised as soon as practicable if the stockpile has been left in-situ for greater than 5 days.'

No specific air discharge limits, monitoring and recording requirements or reporting conditions are outlined for air quality within EPL 21148.

2.1 Guidelines and Standards

Additional guidelines and standards relating to the management of air quality include:

- AS 3570 – Automotive Diesel Fuels;
- NSW Department of Primary Industry (April 2008) "Guideline for the Management of Diesel Engine Pollutants in Underground Environments" (MDG 29);
- Safe Work Australia 2011 – Workplace Exposure Standards for Airborne Contaminants;
- National Environment Protection Council 1998 – Ambient Air: National Environment Protection Measure for Ambient Air Quality;
- AS 2922 Ambient Air – Guide for the Siting of Sampling Units;

- AS 3580.10.1-1991 Methods for sampling and analysis of ambient air – Determination of particulates – Deposited matter - Gravimetric method;
- AS 2724.3-1984 Ambient Air – Particulate Matter – Determination of Total Suspended Particulates (TSP) – High Volume Sampler Gravimetric Method;
- National Environment Protection Measure (NEPM) (Diesel Vehicle Emissions);OEH's Smokey Vehicles Program under the NSW Protection of the Environment and Operations Act 1997 and NSW Protection of the Environment and Operations Regulations 2010;
- NSW WHS Regulation 2017;
- Sydney Metro Principal Contractor Health and Safety Standard SM PS-ST-221; and
- AS 4323.3-2001 - Stationary source emissions - Determination of odour concentration by dynamic olfactometry.

2.2 ISCA

The Project will pursue a rating under the IS Rating Scheme V1.2. This plan relates to the following IS credits.

2.2.1 Dis-4 Air Quality Monitoring and Measuring

Air quality is monitored at appropriate intervals and locations, as well as in response to complaints, to minimise adverse impacts of local air quality, with guideline levels based upon the relevant regulations.

2.3 Relevance to Other Management Plans

The CAQMP has been developed in to address C2S SSI 15_7400 COA – E5, which states that all reasonably practicable measures must be implemented to minimise the emissions of dust and other air pollutants during the construction and operation of the CSSI. This is in addition to the performance outcomes, commitments and mitigation measures specified in the PIR. This CAQMP is consistent with the CEMF and the REMM.

This CAQMP should be read in conjunction with the Occupation Health Hygiene Wellbeing Management Plan (OHHWMP) that outlines the procedures to minimise impacts to human health, in particular, monitoring and minimising particulate emissions resulting from the Metro Box excavation and general underground excavations.

The CAQMP also complies with the relevant requirement of the Sydney Metro Construction Environmental Management Framework 'SM ES-ST-204', as indicated in Table 1.1 of Annexure A of 'Management Requirements – Environment – Central Station Main Works DOCUMENT NUMBER: SM-17-00000461'.

2.4 Roles and Responsibilities

The roles and responsibilities of key Project personnel with respect to air quality are as follows in Table 2-2.

Table 2-2: Roles and Responsibilities

Project Director	Managing the delivery of the Project including overseeing implementation of air quality management measures. Act as Contractor's Representative.

Project Environment Manager	Oversee the implementation of all air quality management initiatives. Responsible for managing ongoing compliance with the CoA and environmental document requirements.
Commercial Manager	Ensure that relevant air quality management requirements are considered in procuring materials and services.
Construction Managers **Site Superintendent**	Manage the delivery of the construction process, in relation to air quality management across all sites in conjunction with the Project Environment Manager.
Environment Coordinator	Manage the on-ground application of air quality management measures during construction. Monitor and report on air quality management during construction.
Project Engineer	Implement air quality management activities during construction works.
Environmental Representative (ER)	Provide a review and endorsement role to this plan Conduct fortnightly inspections, to review implementation of the air quality mitigation measures and review the performance of the air quality monitoring. Assist to resolve conflict between the Proponent and community by following the Community Consultation Strategy. Review any draft consistency assessment and provide advice of any additional mitigation measures. Assess the impacts of minor ancillary facilities Prepare and submit to the Secretary a monthly Environmental Representative Report.
Stakeholder and Community Relations Manager	Assist in complaint handling activities related to dust and / or air quality.
TfNSW	Provide a review and endorsement role to this plan
Equipment calibration	Specialist suppliers as required by manufacturer's instructions
Nominated NATA-accredited laboratories	For the analyses of samples as required
Certified Occupational Hygienist	Provide governance over the performance of all occupational health and hygiene activities

3. Existing Environment

The following information has been drawn from the Chatswood to Sydenham EIS and Central Walk: Modification 2 document.

3.1 Existing Site Characteristics

The Project is located primarily within the operational area of Central Station and railyards and is in close proximity to commercial and residential use areas located on the surrounding road network, being; Eddy Avenue to the north; Chalmers St to the east; and Regent St to the west.

3.2 Local Emission Sources

Local emission sources include:

- Vehicle exhaust emissions from the road and rail networks and transport hubs;
- Commercial businesses, such as food and beverage industries;
- Landscaping activities, such as large scale lawn mowing and gardening; and
- Other construction projects.

3.3 Existing Air Quality Condition

Air quality data for the Chatswood to Sydenham EIS was sourced from monitoring stations at Lindfield, Rozelle, Randwick and Earlwood. The data shows that the concentrations of air pollutants were generally below the applicable air quality criteria during the 2012, 2013 and 2014 reporting periods, with the exception of occasional days when the maximum 24-hour average concentration levels of particulate matter with an aerodynamic diameter less than 10 microns (PM10) exceeded the applicable criterion of 50 micrograms per cubic metre. These occurrences are generally the result of natural events including dust storms, bushfires and sea spray arising from on-shore winds.

The Project is surrounded by a variety of different receivers and may be sensitive to all wind conditions. Morning winds from the west may blow dust towards receivers along Chalmers Street and Elizabeth Street. The multi-storey accommodation at Railway Square has the greatest risk of being affected during afternoons due to its proximity to the Project and prevailing winds.

3.4 Potentially Sensitive Receivers

In the immediate areas surrounding the Project, north of the station is Belmore Park, to the west is Haymarket (including the University of Technology Sydney and Chinatown), to the south is Prince Alfred Park and to the east is Surry Hills. Additionally, multi-storey hotels and apartment buildings are located along George, Little Regent and Quay streets.

Key buildings in close proximity to the Project include the Sydney Dental Hospital at the junction of Chalmers Street and Elizabeth Street, the Railway Square Youth Hostel Australia (YHA) building immediately west of the station off Ambulance Avenue.

4. Aspects and Potential Impacts

The main potential air quality impacts during construction of the Metro Box excavation, eastern concourse, eastern entry, northern concourse and other minor ancillary facilities will be associated with the generation of dust. There is potential to uncover former gasworks tanks throughout construction of CSM, which could result in workers and the public being exposed to potentially offensive or harmful odours. Construction activities with the greatest potential to generate dust or expose potential gasworks will include:

- Excavation, handling, stockpiling, loading and unloading, and transport of spoil;
- Demolition of buildings and other structures and the handling, stockpiling and transport of demolition material;
- Transport, loading and unloading, stockpiling and handling of imported construction materials;

- Creation of exposed surfaces through the clearing of vegetation, stripping of topsoil and other overlying structures (such as rail and footpath pavements), which would increase the potential generation of dust emissions by wind erosion; and
- General earthworks.

Construction activities with lesser potential to affect quality relate to gaseous emissions include vehicle and plant exhaust emissions, which may be excessive if vehicles and plant are poorly maintained.

4.1 Potential Impacts

The key aspects and potential impacts associated with the management of air quality during the Project are listed in Table 4-1. Management measures to address these identified risks are contained in Appendix B. Refer also to the Quantitative Risk Assessment in Appendix C of the CEMP.

These identified risks have been taken into account in the development of the CAQMP and site-specific procedures for the works.

Table 4-1 Aspects and Potential Impacts

Aspects	Potential impacts/opportunities
Dust from the construction works (including; site establishment and clearing, demolition, stockpiling, excavations, piling)	• Dust activity in close proximity to residential and commercial premises, complaints received. • Potential pollution of waterways and air
Exhaust from plant and equipment.	• Emissions resulting in air pollution
Dust generation due to asbestos or contaminated soil removal	• Potential human health hazard
Odour and disturbance of gasworks contaminated land	• Potential human health hazard • Offensive odours experienced by site staff, rail commuters or members of the community.

5. Air Quality Management Measures

The Project will be constructed in a manner that minimises dust emissions from the site, including wind-blown and traffic-generated dust, as well as tracking of material onto public roads. All activities on the site will be undertaken with the objective of minimising dust and exhaust emissions through the use of paved haul roads and ongoing road sweeping activities. Should visible dust emissions occur at any time, Laing O'Rourke will identify and implement all feasible and reasonable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust cease.

Adjacent sensitive receivers include passengers on Central Station Platforms, and residents and businesses on Chalmers Street during the demolition of the Bounce Hotel. Table 3.1 and Figure 3.1-3.5 of the CNVMP outlines in detail the sensitive receivers and land uses in the Central Station precinct, with Figures 1.2 and 1.3 of this plan outlining the work sites associated with the CSM Project.

5.1 Air Quality and Dust Mitigation Measures

To ensure Project construction works do not result in significant additional detrimental air quality impacts, the following management and mitigation measures will be implemented.

Project Design:

- Concrete all truck access routes to the Metro Box excavation
- Ensure surface excavation footprints are minimised to limit potential dust creation from exposed areas.
- Utilise water for suppression purposes for dust generating activities where applicable.
- Utilise street sweepers with water misters on hardstand areas.
- The traffic deck of the Metro Box excavation will act as a roof to minimise dust from exiting the below-ground operational area into the atmosphere.
- Rock breaking and other similar potentially dusty activities would mostly be undertaken within the constructed Metro Box and minimised on the surface where reasonable and feasible.
- Undertake asbestos monitoring or other monitoring (i.e. gaseous levels) if required in accordance with the Construction Asbestos Management Plan.
- Install adequate ventilation to provide air that is of sufficient volume, velocity and quality to ensure, so far as is reasonably practicable, the health and safety of workers and other persons.

Pre-construction:

- Identify sensitive land uses/sensitive receivers in the Environmental Control Map (ECM) prior to works commencing.
- Incorporate information on dust sources, impacts and mitigation measures and methods of managing emissions into site Inductions, training and on-going toolbox talks.
- Dust minimisation measures will be implemented prior to commencement of specific construction activities, and revised as required.

Site establishment:

- Construction site layout and placement of plant will consider air quality impacts to nearby receivers.
- Waste or any other material must not be burnt on construction sites.
- Temporary soil stockpiles during site establishment are to be maintained, e.g. compacted, hosed down or covered if left in-situ for $\geq$ 5 days, or if foreseeable weather conditions impose an erosion or sediment risk.
- Wind breaks, which may include site hoardings, may be constructed where construction works are in close proximity to sensitive receivers (where feasible and reasonable).
- Boundary fencing that incorporates screening would act as a dust shield will be erected around all ancillary facilities that are directly adjacent and in close proximity to sensitive receivers for the duration of construction unless otherwise agreed with relevant Council(s), and affected residents, business operators or landowners.

Demolition:

- Whilst it was not specifically identified within the EIS that asbestos is present within buildings to be demolished, a Hazmat report would be carried out on the buildings on the site to identify if any asbestos is present prior to demolition.
- Any asbestos found would be managed under a site specific Asbestos Removal Control Plan prepared by a licenced asbestos removal contractor.
- Water suppression to be used during demolition to minimise dust generation as required.
- The insides of buildings to be stripped where feasible and reasonable, before demolition.
- Boundary fencing / hoarding would act as debris screens / sheeting and would be used to screen buildings and the general public where dust-producing activities are taking place.

General construction:

- Regular visual monitoring of dust generation will be undertaken by Site Supervisors.
- Water suppression will be used for active earthwork areas, stockpiles, unsurfaced haul roads (prior to application of hardstand) and loads of soil/quarried material being transported to reduce wind-blown dust emissions.
- Working face and areas of open excavation to be kept to a minimum, where feasible and reasonable.
- Provide dust mitigation measures through water sprays / misting on hoardings / sensitive areas as required.
- Reprogram dust generating work during periods of high wind or when fugitive dust emissions cannot be controlled.
- Hard surfaces will be installed on all haul routes and regularly cleaned.
- Any unsurfaced work areas would be regularly damped down in dry and windy conditions.
- All vehicles carrying loose or potentially dusty material to or from the site will be fully covered.
- The engines of all on-site vehicles and plant would be switched off when not in use for an extended period.
- Plant would be well maintained and serviced to minimise emissions. Emissions from plant will be considered as part of pre-acceptance checks.
- Respirable dust, respirable crystalline silica, diesel particulate matter will be monitored as part of the Occupation Health Hygiene Wellbeing Management Plan (OHHWMP).
- Dust extraction and filtration systems will be installed for mining excavation works and deep excavations with limited surface exposure

5.2 Air Quality Inspection and Monitoring Program

5.2.1 Monitoring Dust Generating Activities

Monitoring the impact of dust generating activities will be undertaken by the Site Supervisor, Site and Project Engineers, and the Environmental Coordinators on a regular periodic basis and in accordance with EPL 21148. Monitoring will be conducted through visual inspection of the onsite activities to ensure that excessive amounts of dust are not generated nor impacting receivers in close proximity to the Project. Visual assessments would be undertaken in addition to a review of

local wind conditions captured and detailed by the BOM – Observatory Hill station. The visual inspections and observations relevant to air quality are outlined in Table 5-1, with Appendix B providing detailed control measures.

Table 5-1: Air Quality Inspection and Weather Monitoring Requirements

Item	Frequency	Description	Records	Responsibility
Inspection				
Site inspection	Daily	Dust generating activities on the premises must be managed to minimise the generation of dust from the premises to the greatest extent practicable. Minimise gaseous emissions Awareness of impending weather	Mobile phone photos as relevant	Environmental Manager and or Environmental Team
		All dust controls are being implemented and are working effectively. No mud tracking off-site; check main exit/entry points and material on public roads	Mobile phone photos as relevant	Environmental Manager Site Manager and Supervisors
Site inspection	Weekly	Dust generating activities on the premises must be managed to minimise the generation of dust from the premises and prevent material tracking on local roads to the greatest extent practicable. No continuous visible vehicle/plant/equipment emissions for longer than 10 seconds (POEO (Clean Air) Regulation 2010, Division 2, Clause 15). No detectable odours and gases (e.g. inspections of freshly disturbed areas, open stockpiles, water treatment plants, waste skips will occur more often at periods of activity with higher risk).	Environmental Inspection Checklist accompanied by photos where possible.	Environmental Manager and or Environmental Team
Plant / equipment inspections including maintenance and emissions	Regularly and prior to use	Mechanical maintenance standards (e.g. Original Equipment Manufacturers (OEM) manuals) POEO Act. No continuous visible vehicle/plant/equipment emissions for longer than 10 seconds (POEO (Clean Air) Regulation 2010). Diesel particulate matter monitoring Conducted as part of a Level 3 Health Risk Assessment in accordance with the Exposure Assessment Strategy	Plant and vehicle inspection logs	Plant Manager
Observations by Management	Monthly	Compliance with the requirements of this Plan	Mobile phone photos as relevant	Management
Weather Monitoring				
Prevailing wind conditions and weather forecast from	Daily	In accordance with the project EPL 21148. Monitoring based on closest BOM site (Observatory Hill Station) Winds >25 km/hr	Weather records including notifications of trigger events / warnings.	Environmental Manager, Environmental

Item	Frequency	Description	Records	Responsibility
Bureau of Meteorology (Observatory Hill station – 2.5km north of the Site).		Rain >20mm per day in which erosion and sediment controls will be inspected Temperature/Humidity Extreme weather	Environmental Inspection Checklist Emails	Team and Site Management

5.2.2 Monitoring Dust

Visual assessment of dust generation will occur throughout construction and particularly during windy periods with appropriate management controls implemented as required.

Typical responses to unacceptable dust generation include the suspension or modification of an activity to prevent dust leaving site.

5.2.3 Monitoring Particulate Emissions

Monitoring the impact of particulate emissions will be undertaken during the construction phase with its primary focus for health purposes for construction workers within and around the Metro Box excavation. Particulate emissions monitoring will be conducted in accordance with the requirements outlined within the OHHWMP.

5.2.4 Monitoring Plant and Vehicle Emissions

Prior to being used on site plant and vehicles will undergo an inspection performed by the Plant Manager. This will include a mechanical inspection to ensure that the plant or vehicle is in good working order and the appropriate emission controls are in place.

Site supervisors, Site Engineers and the Environmental Team will undertake visual inspections of the construction activities to ensure that plant and vehicles are not producing excessive smoke or emissions and reducing idling of plant or vehicles when not in use for extended periods.

5.2.5 Monitoring of Odours

The requirements for monitoring odours would be detailed in activity specific Construction Work Method Statements. Procedures to manage the risk from vapour exposure (including rail commuters or the community) and direct contact during the excavation of contaminated soils is addressed in the OHHWMP.

EPL 21148 Condition L5.1

No condition of this licence identifies a potentially offensive odour for the purposes of section 129 of the Protection of the Environment Operations Act 1997.

Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

Given the potential to uncover parts of the former gasworks, there is a likelihood that workers, rail commuters or the public could be exposed to offensive and or harmful odours. If odours are detected it will be reported to the Environmental Manager for mitigation and potential reporting. Contamination Specialists may be engaged, and should provide odour mitigation and

management guidance through specialists reports including, but not limited to; Remediation Action Plans, Quantitative Risks Assessments and other Investigative Reports.

6. Training, Reporting and Review

6.1 Training

All personnel working on the site will undertake a site induction, which will provide initial training on various environmental aspects including Air Quality.

Additional training will be provided to the workforce during toolbox talks or targeted email, which will explain the aspects of dust management in further detail. A toolbox will be presented and / or email to relevant personnel when seasonal weather increases the risk of poor air quality.

Personnel directly involved in implementing air quality control measures on site will be given specific training in the various measures to be implemented where required.

Records of all training are to be filed in accordance with the project filing system.

6.2 Compliance and Reporting

Monitoring events and inspections will be recorded on the Weekly Environmental Inspection Form. The weekly environmental inspection form will be used as an instrument to record the weather conditions, the construction activities and comments about general air-quality impacts.

The Occupational Health, Safety and Environment Team will inspect the site regularly and will inspect any air quality control measures.

Typical Compliance records would consist of:

- Inspections undertaken in relation to air quality management measures;
- Environmental Inspection forms;
- Toolbox training records;
- Plant Induction forms;
- Records of any meteorological condition monitoring;
- Records of any management measures implemented as a result of adverse, windy weather conditions; and

Results and outcomes of inspections, monitoring and auditing will be reported internally on a monthly basis. Quarterly construction compliance tracking reports will be prepared validate compliance with the Project Approval.

Environmental reporting will be undertaken in accordance with the project EPL and Conditions Approval. Additional reporting requirements are included in Sections 16 and 17 of the CEMP.

Any non-compliances arising out of the above monitoring, inspections and audits would be made aware to Sydney Metro as soon as practicable. A review of the appropriate documentation would be undertaken by LOR management to determine the corrective actions to ensure the non-compliance does not happen again. A register would also be kept, identifying any non-compliances and documenting the corrective and preventative actions.

6.3 Review and Improvement

It is noted that some plans may require the approval of the Department of Planning Industry and environment prior to construction commencing. The Project Environmental Manager has ensured that this plan and monitoring components have been forwarded for review and endorsement and ultimate approval by the Secretary. This CAQMP does not require additional government agency review as outlined in CoA-C3.

Any of the CEMP sub-plans may be submitted to the Secretary along with, or subsequent to, the submission of the CEMP but in any event, no later than one month before commencement of construction. Construction must not commence until the CEMP and all the CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER, must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage will not commence until the relevant CEMP and sub-plans have been approved by the Secretary.

This CAQMP will be reviewed and updated at least annually. Audits will be conducted in accordance with the requirements outlined in Section 18 of the CEMP. Laing O'Rourke will undertake the ongoing development, amendment and updating of the CAQMP to ensure it remains consistent with Project priorities, risk management, client requirements and Project objectives, taking into account:

- The status and progress of Laing O'Rourke's activities;
- Changes in the design, delivery and operations processes and conditions;
- Lessons learnt during delivery and operations;
- Changes in other related Management Plans;
- Requirements and matters not covered by the existing Management Plans;
- Changes to Management Plans as directed by Sydney Metro's Representative under the Deed; and
- Where deemed appropriate in relation to items raised within inspections or audits.

7. Complaints Handling and Incident Response

The Community Consultation Strategy defines the policies, protocols, procedures and processes for identifying and managing community specific issues arising from design and construction activities, including complaints relating to environmental issues. Environmental incidents and complaints are to be investigated, reported, documented, actioned and closed out as per the details provided in the Community Consultation Strategy (once this has been finalised) and the CEMP.

The Environment Manager will assist the Communications and Stakeholder Manager in responding to environmental complaints and maintain a register of Environmental Complaints for reporting to the Environment Protection Authority (EPA) and other relevant agencies.

In the event a complaint is received regarding air quality, the Environment Manager will conduct an investigation to determine the potential parameters of influence that could have led to the complaint and potential exceedance.

The investigation will examine the following aspects as required:

- The quantity of exposed areas, which may potentially generate dust;
- The nature and volume of the materials being moved;

- Whether there is potential to revegetate or cover these areas;
- Whether there were any identified days of excessive high wind during the monitoring period;
- The number of dust suppression devices within the area during the monitoring period;
- An examination of construction activities conducted during this period;
- If road sweeping was sufficient;
- The potential for contaminated material to become air borne; and
- Recorded weather conditions for the day.

Corrective actions will be managed in accordance with Section 16.2 of the CEMP.

Incident management and classification will be managed in accordance with the CEMP.

Should any significant air quality-related environmental incident occur that causes, or threatens to cause, material harm to the environment, community or any member of the community, being actual or potential harm to the health or safety of human beings or to threatened species, endangered ecological communities or ecosystems that is not trivial, the EPA, ER and Sydney Metro would be notified immediately. Sydney Metro would report such events to the Secretary of DPE as required by Conditions A41 to A44 as soon as possible within 24 hours of the incident occurring and include the time and date, details of the incident and any non-compliance with the Project's approval. Incident reporting would be undertaken in accordance with the Project's Pollution Incident Response Management Plan (PIRMP).

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Appendix A: Construction Air Quality Management Compliance Matrix

No.	Measure	Timing	Requirement	Responsibility	Reference
Project Approval – Specific Management Plan Requirements					
1.	Where the terms of this approval require consultation with identified parties, details of the consultation undertaken, matters raised by the parties, and how the matters were considered must accompany the strategies, plans, programs, reviews, audits, protocols and the like submitted to the Secretary.	Prior Construction / During Construction	C2S SSI 15_7400 COA – A9	Project Environment Manager	This Plan Section 2.4.
2	From commencement of construction until completion of construction, the approved ER must: a) receive and respond to communications from the Secretary in relation to the environmental performance of the CSSI; b) consider and inform the Secretary on matters specified in the terms of this approval; c) consider and recommend any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community; d) review documents identified in Conditions C1, C3 and C9 and any other documents that are identified by the Secretary, to ensure they are consistent with requirements in or under this approval and if so: i. make a written statement to this effect before submission of such documents to the Secretary (if those documents are required to be approved by the Secretary), or ii. make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Secretary for information or are not required to be submitted to the Secretary); e) regularly monitor the implementation of environmental management related documents to ensure implementation is being carried out in accordance with what is stated in the document and the terms of this approval; f) review the Proponent's notification of incidents in accordance with Condition A41 of this approval; g) as may be requested by the Secretary, help plan, attend or undertake Department audits of the CSSI, briefings, and site visits; h) if conflict arises between the Proponent and the community in relation to the environmental performance of the CSSI, follow the procedure in the Community Communication Strategy	Prior Construction / During Construction	C2S SSI 15_7400 COA – A24	Project Environment Manager	This plan. Section 2.4.

No.	Measure	Timing	Requirement	Responsibility	Reference
	approved under Condition B3 of this approval to attempt to resolve the conflict, and if it cannot be resolved, notify the Secretary; i) review any draft consistency assessment that may be carried out by the Proponent, and provide advice on any additional mitigation measures required to minimise the impact of the work; j) consider any minor amendments to be made to the documents listed in Conditions C1, C3 and C9 and any document that requires the approval of the Secretary (excluding noise and vibration documents) that comprise updating or are of an administrative or minor nature, and are consistent with the terms of this approval and the documents listed in Conditions C1, C3 and C9 or other documents approved by the Secretary and, if satisfied such amendment is necessary, approve the amendment. This does not include any modifications to the terms of this approval; k) assess the impacts of minor ancillary facilities as required by Condition A18 of this approval; and l) prepare and submit to the Secretary and other relevant regulatory agencies, for information, a monthly Environmental Representative Report detailing the ER's actions and decisions on matters for which the ER was responsible in the preceding month (or other timeframe agreed with the Secretary). The Environmental Representative Report must be submitted within seven (7) days following the end of each month for the duration of works and construction of the CSSI, or as otherwise agreed with the Secretary.				
3	The Secretary must be notified as soon as possible and in any event within 24 hours of any incident.		C2S SSI 15_7400 COA – A41	Project Manager / Project Environment Manager	This plan. Section 6. Refer also to the PIRMP
4	Notification of an incident under Condition A41 of this approval must include the time and date of the incident, details of the incident and must identify any non-compliance with this approval.	During construction	C2S SSI 15_7400 COA – A42	Project Manager / Project Environment Manager	This plan. Section 6. Refer also to the PIRMP

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No.	Measure	Timing	Requirement	Responsibility	Reference
5	Any requirements of the Secretary or Relevant Public Authority (as determined by the Secretary) to address the cause or impact of an incident reported in accordance with Condition A41 of this approval, must be met within the timeframe determined by the Secretary or relevant public authority.	During construction	C2S SSI 15_7400 COA – A43	Project Environment Manager	This plan. Section 6. Refer also to the PIRMP
6	If statutory notification is given to the EPA as required under the POEO Act in relation to the CSSI, such notification must also be provided to the Secretary for information within 24 hours after the notification was given to the EPA.	During construction	C2S SSI 15_7400 COA – A44	Project Environment Manager	This plan. Section 6. Refer also to the PIRMP
7.	A Construction Environmental Management Plan (CEMP) must be prepared in accordance with the Construction Environmental Management Framework (CEMF) included in the PIR and the Department's Guideline for the Preparation of Environmental Management Plans to detail how the performance outcomes, commitments and mitigation measures specified in Chapter 11 of the PIR, as amended by the documents listed in A1, will be implemented and achieved during construction.	Before Construction	C2S SSI 15_7400 COA – C1	Project Environment Manager	This Plan. Refer to Construction Environmental Management Plan
8	The following CEMP sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP sub-plan and be consistent with the CEMF and CEMP referred to in Condition C1.	During construction	C2S SSI 15_7400 COA – C3	Project Environment Manager	Section 7 Refer also to the Construction Environmental Management Plan
9	The CEMP sub-plans must state how: a) the environmental performance outcomes identified in the EIS as amended by the documents listed in A1will be achieved; b) the mitigation measures identified in the EIS as amended by documents listed in A1 will be implemented; c) the relevant terms of this approval will be complied with; and d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.	During construction	C2S SSI 15_7400 COA – C4	Project Environment Manager	This Plan. Refer also to Construction Environmental Management Plan.

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No.	Measure	Timing	Requirement	Responsibility	Reference
10	The CEMP sub-plans must be developed in consultation with relevant government agencies. Where an agency(ies) request(s) is not included, the Proponent must provide the Secretary justification as to why. Details of all information requested by an agency to be included in a CEMP sub-plan as a result of consultation and copies of all correspondence from those agencies, must be provided with the relevant CEMP sub-plan.	During construction	C2S SSI 15_7400 COA – C5	Project Environment Manager	Section 7 Refer also to Construction Environmental Management Plan.
11	Any of the CEMP sub-plans may be submitted to the Secretary along with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before commencement of construction.	During construction	C2S SSI 15_7400 COA – C6	Project Environment Manager	Section 7 Refer also to Construction Environmental Management Plan
12	The CEMP must be endorsed by the ER and then submitted to the Secretary for approval no later than one (1) month before the commencement of construction or within another timeframe agreed with the Secretary.	During construction	C2S SSI 15_7400 COA – C7	Project Environment Manager	Section 7 Refer also to Construction Environmental Management Plan
13	Construction must not commence until the CEMP and all CEMP sub-plans have been approved by the Secretary. The CEMP and CEMP sub-plans, as approved by the Secretary, including any minor amendments approved by the ER (or AA in regards to the Noise and Vibration sub-plan), must be implemented for the duration of construction. Where the CSSI is being staged, construction of that stage is not to commence until the relevant CEMP and sub-plans have been approved by the Secretary.	During construction	C2S SSI 15_7400 COA – C8	Project Environment Manager	Section 7 Refer also to Construction Environmental Management Plan
Project Approval – Administrative Conditions					
14	Boundary fencing that incorporates screening must be erected around all ancillary facilities that are adjacent to sensitive receivers for the duration of construction unless otherwise agreed with Relevant Council(s), and affected residents, business operators or landowners.	Before Construction	C2S SSI 15_7400 COA – A19	Project Environment Manager	Section 5.1 Refer also to Construction Visual Amenity and Landscape

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No.	Measure	Timing	Requirement	Responsibility	Reference
					Management Plan.
15.	Boundary screening required under Condition A19 of this approval must minimise visual, noise and air quality impacts on adjacent sensitive receivers.	Before Construction	C2S SSI 15_7400 COA – A20	Project Environment Manager	Section 5.1 Refer also to Construction Visual Amenity and Landscape Management Plan.
Project Approval – Key Issue Conditions					
16.	In addition to the performance outcomes, commitments and mitigation measures specified in Condition E5 PIR, all reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants during the construction and operation of the CSSI	During construction	C2S SSI 15_7400 COA – E5	Project Environment Manager	Section 5.1
17	A Site Contamination Report, documenting the outcomes of Phase 1 and Phase 2 contamination assessments of land upon which the CSSI is to be carried out, that is suspected to be, or known to be, contaminated must be prepared by a suitably qualified and experienced person in accordance with guidelines made or approved under the Contaminated Land Management Act 1997 (NSW).	During Construction	C2S SSI 15_7400 COA – E66	TfNSW	Refer to the Construction Soil and Water Management Plan
18	If a Site Contamination Report prepared under Condition E66 finds such land contains contamination, a site audit is required to determine the suitability of a site for a specified use. If a site audit is required, a Site Audit Statement and Site Audit Report must be prepared by a NSW EPA Accredited Site Auditor. Contaminated land must not be used for the purpose approved under the terms of this approval until a Site Audit Statement is obtained that declares the land is suitable for that purpose and any conditions on the Site Audit Statement have been complied with.	During Construction	C2S SSI 15_7400 COA – E67	Project Environment Manager	Refer to the Construction Soil and Water Management Plan
19	A copy of the Site Audit Statement and Site Audit Report must be submitted to the Secretary and Council for information no later than one (1) month before the commencement of operation.	During Construction	C2S SSI 15_7400 COA – E68	Project Environment Manager	Refer to the Construction Soil and Water

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No.	Measure	Timing	Requirement	Responsibility	Reference
					Management Plan
20	An Unexpected Contaminated Land and Asbestos Finds Procedure must be prepared and must be followed should unexpected contaminated land or asbestos be excavated or otherwise discovered during construction.	During Construction	C2S SSI 15_7400 COA – E69	Project Environment Manager	Refer to the Construction Soil and Water Management Plan
21	The Unexpected Contaminated Land and Asbestos Finds Procedure must be implemented throughout construction.	During Construction	C2S SSI 15_7400 COA – E70	Project Environment Manager	Refer to the Construction Soil and Water Management Plan
EIS Environmental Management Measures and Environmental Performance Outcomes					
22.	The engines of all on-site vehicles and plant would be switched off when not in use for an extended period.	During Construction	AQ1	Site Supervisor	Section 5.1
23.	Plant would be well maintained and serviced to minimise emissions. Emissions from plant would be considered as part of pre-acceptance checks.	During Construction	AQ2	Site Supervisor	Section 5.1
24.	Construction site layout and placement of plant would consider air quality impacts to nearby receivers.	During Construction	AQ3	Site Supervisor	Section 5.1
25.	Hard surfaces would be installed on long term haul routes and regularly cleaned.	During Construction	AQ4	Site Supervisor	Section 5.1
26.	Unsurfaced haul routes and work area would be regularly damped down in dry and windy conditions.	During Construction	AQ5	Site Supervisor	Section 5.1
27.	All vehicles carrying loose or potentially dusty material to or from the site would be fully covered.	During Construction	AQ6	Site Supervisor	Section 5.1

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No.	Measure	Timing	Requirement	Responsibility	Reference
28.	Stockpiles would be managed to minimise dust generation.	During Construction	AQ7	Site Supervisor	Section 5.1
29.	Demolition would be managed to minimise dust generation.	During Construction	AQ8	Site Supervisor	Section 5.1
30.	Ventilation from acoustic sheds would be filtered.	During Construction	AQ9	N/A	N/A – acoustic sheds not required for the CSMW works
Contractual Requirements					
31.	The Construction Environmental Management Framework (a) The Contractor must comply with the relevant requirements of the Sydney Metro Construction Environmental Management Framework (CEMF) SM ES-ST-204, as indicated in Table 1.1 of Annexure A. (b) Where the CEMF requires the Contractor to submit a document for review, the Contractor must submit those Documents to the Principal's Representative for review in accordance with the Contract.	During Construction	MR-E Environmental Requirements – 2.1	Project Environment Manager Project Engineer Site Superintendent	Section 2.3 Section 7.2
32.	Environmental Reporting (a) The Contractor must provide a monthly report, using the Sydney Metro City & Southwest Environmental Reporting Template SM ES-FT-421. (b) Within 5 Business Days of each Calendar Quarter Date, a register of Environmental Compliance Requirements (ECRs), which identifies progress, and evidence of compliance against each ECR, must be submitted to the Principal's Representative for review in accordance with the Contract. (c) The register of ECRs must classify each ECR as: (i) Ongoing or Complete, to indicate their progress; and (ii) Compliant or Non Complaint, to indicate compliance.	During Construction	MR-E Environmental Requirements – 2.2	Project Environment Manager Project Engineer Site Superintendent	Section 7.2

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No.	Measure	Timing	Requirement	Responsibility	Reference
33	The Contractor must provide an inventory of non-road diesel powered vehicles to be used for the Contractor's Activities within 1 month of the date of the Contract and subsequently, annually using TfNSW's Air Emission Data Collection Workbook 9TP-FT-439.	1 month from construction commencement of construction or as otherwise agreed with TfNSW	MR-E Sustainable Requirements – 9.E	Project Environment Manager Site Superintendent	Refer to Carbon and Energy management Plan
Revised Environmental Performance Outcomes (Chatswood to Sydenham Submissions and Preferred Infrastructure Report)					
34.	Dust and exhaust emissions during construction would be minimised	During Construction	Table 11-2	Construction Manager	Section 5.1
Construction Environmental Management Framework					
35.	Key NSW Legislative Requirements The following legislative requirements should be adhered to throughout construction works with regular reviews to be undertaken by TfNSW and its contractors. • Contaminated Land Management Act (1997) - Sydney Metro must follow the process where contaminated land is identified. • Environmental Planning and Assessment Act (1979) - Sydney Metro must adhere to mitigation measures and conditions within the planning approval documentation. The proponent and their contractors must endeavour to deliver in a consistent manner within the assessed scope of works. • Protection of the Environmental Operations Act (1997) - Where Sydney Metro projects are scheduled activities under Schedule 1 of the Act an Environment Protection Licence (EPL) must be obtained.	During construction	2.1	Project Environment Manager Project Manager	Section 2
36	Construction Environmental Management Sub-Plans a) Subject to Section 3.3(c) and Section 3.2(c) the Principal Contractor will prepare issue-specific environmental sub-plans to the CEMP and SMP which address each of the relevant environmental impacts at a particular site or stage of the project. Issue specific sub-plans will include: • Air Quality management.		3.4	Project Environment Manager	This Plan.

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No.	Measure	Timing	Requirement	Responsibility	Reference
	b) Additional detail on the minimum requirements for these sub plans is provided in Sections 6-17 of this CEMF.				
37	Register of Hold Points a. Principal Contractors will identify hold points, beyond which approval is required to proceed with a certain activity. Example activities include vegetation removal and water discharge. Hold points will be documented in relevant CEMPs.		3.8	Project Environmental Manager	This Plan. NA as there are no outlined hold points within the CEMF
38	Training, Awareness and Competence a) Principal Contractors will be responsible for determining the training needs of their personnel. As a minimum this will include site induction, regular toolbox talks and topic specific environmental training as follows: The site induction will be provided to all site personnel and will include, as a minimum: • Training purpose, objectives and key issues. • Contractor's environmental policy and key performance indicators. • Due diligence, duty of care and responsibilities. • Relevant conditions of any environmental licence and/or the relevant conditions of approval. • Site specific issues and controls including those described in the environmental procedures. • Reporting procedure for environmental hazards and incidents. • Communication protocols. b) Toolbox talks will be held on a regular basis in order to provide a project or site wide update, including any key or recurring environmental issues. c) Topic specific environmental training, eg erosion and sediment control training will be undertaken for relevant site personnel as determined by the Principal Contractor. d) Principal Contractors will conduct a Training Needs Analysis which: • Identifies the competency requirements of staff that hold environmental roles and responsibilities documented within the Construction Environmental Management Plan and sub-plans. • Identifies appropriate training events and the frequency of training to achieve and/or maintain these competency requirements.	During Construction	3.9	Project Environmental Manager Project Manager	This plan. Refer to Section 6 and refer also to the Construction Environmental Management Plan

No.	Measure	Timing	Requirement	Responsibility	Reference
	• Implements a documented training schedule which plans attendance at training events, provides mechanisms to notify staff of their training requirements, and identifies staff that fail to attend scheduled training events or who have overdue training requirements. • Identifies that all staff are to receive an environmental induction and undertake environmental incident management training.				
39	Emergency and Incident Response a) Principal Contractors will develop and implement a Pollution Incident Response Management Plan, in accordance with the requirements of the POEO Act. Contractors' emergency and incident response procedures will also be consistent with any relevant TfNSW procedures and will include: • Categories for environmental emergencies and incidents. • Notification protocols for each category of environmental emergency or incident, including notification of TfNSW and notification to owners / occupiers in the vicinity of the incident. This is to include relevant contact details. • Identification of personnel who have the authority to take immediate action to shut down any activity, or to affect any environmental control measure (including as directed by an authorised officer of the EPA). • A process for undertaking appropriate levels of investigation for all incidents and the identification, implementation and assessment of corrective and preventative actions; • Depending on the nature of the incident the EPA, DPE or OEH will be notified by the Principal Contractor or TfNSW as appropriate. b. The Contractor will make all personnel aware of the plan and their responsibilities.	During Construction	3.10	Project Environmental Manager Project Manager	This plan. Refer to Section 7 and refer also to the Construction Environmental Management Plan
40	Independent Environmental Representatives a) TfNSW will engage Independent Environmental Representatives (ERs) to undertake the following, along with any additional roles as required: • Review, provide comment on and endorse (where required) any relevant environmental documentation to verify it is prepared in accordance with relevant environmental legislation, planning approval conditions, relevant standards and this CEMF. • Monitor and report on the implementation and performance of the above mentioned documentation and other relevant documentation. • Provide independent guidance and advice to TfNSW and the Contractors in relation to environmental compliance issues and the interpretation of planning approval conditions.	During Construction	3.11	Project Environmental Manager	This plan. Refer to Section 2.4 and refer also to the Construction Environmental Management Plan

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No.	Measure	Timing	Requirement	Responsibility	Reference
	• Be the principal point of advice for the DPE in relation to all questions and complaints concerning the environmental performance of the project. • Ensure that environmental auditing is undertaken in accordance with all relevant project requirements. Recommend reasonable steps, including 'stop works', to be taken to avoid or minimise adverse environmental impacts.				
41	Roles and Responsibilities a) In relation to Roles and Responsibilities the CEMP will: • describe the relationship between the Principal Contractor, TfNSW, key regulatory stakeholders, the independent environmental representative and the independent certifier. • Describe the Principal Contractors environment, sustainability, and approvals team structure. • For each role that has environmental accountabilities or responsibilities provide a tabulated description of the role, accountabilities, responsibilities, lines of communication, minimum skill level requirements and their interface with the overall project organisation structure. • Provide details of each specialist environment, sustainability or planning consultant who is employed by the Principal Contractor including the scope of their work. • Provide an overview of the role and responsibilities of the Independent Environmental Representative, the Independent Certifier and other regulatory stakeholders. b) All sub-contractors engaged by the Principal Contractor will be required to operate within the EMS documentation of that Principal Contractor.	During Construction	3.12	Project Environmental Manager	This plan. Refer to Section 2.4 and refer also to the Construction Environmental Management Plan
42	Environmental Monitoring, Inspections and Auditing a) Issue specific environmental monitoring will be undertaken as required or as additionally required by approval, permit or licence conditions. b) The results of any monitoring undertaken as a requirement of the EPL will be published on the Principal Contractor's, or a project specific, website within 14 days of obtaining the results. c) Environmental inspections will include: • Surveillance of environmental mitigation measures by the Site Foreman • Periodic inspections by the Principal Contractor's Environmental Manager (or delegate) to verify the adequacy of all environmental mitigation measures. This will be documented in a formal inspection record.	During Construction	3.13	Project Environmental Manager	This plan. Refer to Section 6 and refer also to the Construction Environmental Management Plan

No.	Measure	Timing	Requirement	Responsibility	Reference
	d) Regular site inspections by the ERs and TfNSW representatives at a frequency to be agreed with the Principal Contractor. e) Principal Contractors will be required to undertake internal environmental audits. Internal audits will include: • Compliance with approval, permit and licence conditions • Compliance with the E&SMS, CEMP, SMP, sub-plans and procedures • Community consultation and complaint response • Environmental training records. • Environmental monitoring and inspection results. f) TfNSW (or an independent environmental auditor) will also undertake periodic audits of the Principal Contractor's E&SMS and compliance with the environmental aspects of contract documentation, including the Construction Environmental Management Framework.				
43	Environmental Non-compliances a) Principal Contractors will document and detail any non-compliances arising out of the above monitoring, inspections and audits. TfNSW will be made aware of all non-compliances in a timely manner. b) Principal Contractors will develop and implement corrective actions to rectify the non-compliances and preventative actions in order to prevent the re-occurrence of the non-compliance. Contractors will also maintain a register non compliances, corrective actions and preventative actions. c) TfNSW or the Environmental Representative may raise non-compliances against environmental requirements.	During Construction	3.14	Project Environmental Manager Project Manager	This plan. Refer to Section 6
44	Environmental Records and Compliance Reporting a) Principal Contractors will maintain appropriate records of the following: • Site inspections, audits, monitoring, reviews or remedial actions. • Documentation as required by performance conditions, approvals, licences and legislation • Modifications to site environmental documentation (eg CEMP, sub-plans and procedures) • Other records as required by this Construction Environmental Management Framework. b) Records will be retained onsite for the duration of works.	During Construction	3.15	Project Environmental Manager Project Manager	This plan. Refer to Section 6and refer also to the Construction Environmental Management Plan

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No.	Measure	Timing	Requirement	Responsibility	Reference
	c) Additionally, records will be retained by the Principal Contractor for a period of no less than 7 years n total. Records will be made available in a timely manner to TfNSW (or their representative) upon request. d) Compliance reports detailing the outcome of any environmental surveillance activity including internal and external audits (refer to Section 3.13) will be produced by the Principal Contractors Environmental Manager or delegate. These reports will be submitted to TfNSW at an agreed frequency.				
45	Review and Improvement of the E&SMS a) Principal Contractors will ensure the continual review and improvement of the E&SMS. This will generally occur in response to: • Issues raised during environmental monitoring, inspections and audits. • Significant environmental incidents. • Environmental non-conformances. b) A formal review of the E&SMS by the Principal Contractor's Senior Management Team will also occur on an annual basis, as a minimum. This review will generate actions for the continual improvement of the E&SMS and supporting management plans.	During Construction	3.16	Project Environmental Manager Project Manager	Construction Environmental Management Plan
46	Air Quality Management Objectives The following air quality management objectives will apply to construction: • Minimise gaseous and particulate pollutant emissions from construction activities as far as feasible and reasonable. Identify and control potential dust and air pollutant sources	During Construction	16.1(a)	Project Environment Manager	Section 1.7
47.	Air Quality Management Implementation Principal Contractors will develop and implement an Air Quality Management Plan which will include, as a minimum: • The air quality mitigation measures as detailed in the environmental approval documentation. • The requirements of any applicable EPL conditions. • Site plans or maps indicating locations of sensitive receivers and key air quality / dust controls. • The responsibilities of key project personnel with respect to the implementation of the plan • Air quality and dust monitoring requirements.	During Construction	16.2(a)	Project Environment Manager	This Plan This Table Section 4.1 Section 5.1 Section 5.2 Section 6.2

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No.	Measure	Timing	Requirement	Responsibility	Reference
	• Compliance record generation and management				Refer also to the CEMP (included in the ECM)
48.	Air quality and dust monitoring will involve the following as a minimum: • Meteorological conditions will be monitored and appropriate responses will be organised and undertaken periodically by the Principal Contractor. • Regular visual monitoring of dust generation from work zones. • Monitoring emissions from plant and construction vehicles to ensure they have appropriate emission controls and are being maintained correctly.	During Construction	16.2(b)	Project Environment Manager	Section 5.3
49.	The following compliance records will be kept by the Principal Contractor: • Records of any meteorological condition monitoring. • Records of any management measures implemented as a result of adverse, windy weather conditions. • Records of air quality and dust inspections undertaken	During Construction	16.2(c)	Project Environment Manager	Section 6 & 7
50	Air Quality Mitigation. Examples of air quality mitigation measures include: • Plant and equipment will be serviced and maintained in good working order to reduce unnecessary emissions from exhaust fumes. • Water suppression will be used for active earthwork areas, stockpiles, unsurfaced haul roads and loads of soil being transported to reduce wind-blown dust emissions. • Wheel-wash facilities or rumble grids will be provided and used near the site exit points, as appropriate. • Dust extraction and filtration systems will be installed for mining excavation works and deep excavation with limited surface exposure.	During Constriction	16.3(a)	Project Environment Manager Site Manager	Section 5.2

Appendix B: Construction Air Quality Risk Assessment

The full project-wide environmental risk assessment in included within Appendix C of the CEMP. All environmental issues have been assessed in accordance with the table below:

Probability:	**Consequence:**
5 = Certain **4** = Likely **3** = Possible **2** = Unlikely **1** = Rare	**5** = Severe **4** = Major **3** = Moderate **2** = Minor **1**= Incidental

1- 4 Acceptable 5 - 9 Acceptable with control measures 10 - 16 Requires the implementation of best practice 17 and Above = UNACCEPTABLE

The risks must be reassessed following the consideration of control measures. Issues or activities that represent an Extreme risk after the application of control measures are not to be undertaken.

Aspect	Potential Environmental Impact	Initial Risk Rating			Control Measures	Residual Risk Rating		
		P X	C =	Risk		P X	C =	Risk
Air Quality								
Dust from the construction works (including; site establishment, excavations, piling, general site surface activities)	Potential pollution of waterways and air Dust activity in close proximity to residential and commercial premises, complaints received.	**3**	**2**	**6**	Toolbox training on Dust and Air Quality Management. Provide dust mitigation measures through water sprays/misting as required. If required (i.e. visual assessment or complaint indicates high dust levels), dust monitoring will be completed to assess total suspended particulates in conjunction with Occupational Health, Hygiene and Wellness Management Plan. Erosion and Sediment Control Plans approved before works commence. Use of sweeper/watercart	**2**	**2**	**4**
Exhaust from plant and equipment.	Emissions resulting in air pollution.	**3**	**2**	**6**	Inductions and toolbox training on Dust and Air Quality Management.	**2**	**2**	**4**

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Aspect	Potential Environmental Impact	Initial Risk Rating			Control Measures	Residual Risk Rating		
		P X	C =	Risk		P X	C =	Risk
					Well maintained plant/ equipment and pre-start checks and servicing. Non-compliant vehicles removed from site / repaired. Construction Traffic Management Plan. No idling of plant. Monitoring through the Level 3 HRA			
Dust generation due to asbestos or contaminated soil removal	Potential human health hazard	**4**	**3**	**12**	A Hazmat report would be carried out on the buildings on the site to identify if any asbestos is present. Conduct a contamination assessment to identify asbestos in soils. Any asbestos found would be managed under a site specific Asbestos Removal Control Plan prepared by a licenced asbestos removal contractor. Air monitoring would be carried out during removal works. Dust suppression would be used to minimise the generation of airborne asbestos fibres. Any asbestos material stockpiled on site would be wetted and down and covered. All major excavations including Metro Box works are complete.	**2**	**2**	**4**
Dust from mined tunnelling	Potential human health hazard Visible dust off site	**3**	**2**	**6**	Provide ventilation system to ensure dust emissions do not emit from the Metro Box. Carry out verification and testing to ensure the ventilation system is effective in managing dust emissions from the Metro Box.	**2**	**2**	**4**

Aspect	Potential Environmental Impact	Initial Risk Rating			Control Measures	Residual Risk Rating		
		P X	C =	Risk		P X	C =	Risk
					Implement an inspection program to verify the effectiveness of the control. Conducted a Level 3 Health Risk Assessment in accordance with the Exposure Assessment Strategy, To include determining the risk of respirable dust, respirable crystalline silica, diesel particulate matter Include activity specific monitoring requirements into Construction Work Method Statements (eg demolition of Bounce Hotel, Construction of Metro Box) to be developed 4 weeks prior to commencement of construction of the activity for the endorsement of the ER.			
Odour	Offensive odours experienced by site staff, rail commuters and community members offsite. Offensive odours as a result of uncovering former gasworks residing within the Central Station Rail precinct.	**3**	**2**	**6**	The potential for odours to be identified in contamination assessments AS 4323.3-2001 - Stationary source emissions - Determination of odour concentration by dynamic olfactometry. Appropriate PPE as required. Cover temporary stockpiles if there is a potential for odour. Use odour controls as required. Controls to be detailed in the activity specific Construction Work Method Statements. Adhere to the odour control methodologies detailed in Remediation Action Plans, Quantitative Risk Assessments and Data Gap Analysis	**2**	**2**	**4**

HBI Healthy Buildings International Pty Ltd
A.C.N. 003 270 693 A.B.N. 39 003 270 693

Suite 2.06, Level 2
29-31 Solent Circuit
Norwest NSW 2153

Tel: 61 (02) 9659 5433
e-mail: hbi@hbi.com.au
Web:

www.hbi.com.au

Carolyn Riley
Director Environment Sustainability and Planning
Sydney Metro
Transport for NSW
PO Box K659
HAYMARKET NSW 1240

22 May 2023

Ref: CSMW AQMP Rev 13

Dear Carolyn

RE: Endorsement of Construction Air Quality Management Plan (Rev 13): Central Station Main Works

Thank you for providing the following document for Environmental Representative (ER) review and approval as required by the Condition of Approval A24 (j) of the Sydney Metro City & Southwest project (SSI – 15_7400 January 9 2017).

- Sydney Metro City & Southwest- Central Station Main Works – Construction Air Quality Management Plan Revision 13 dated April 2023 (the Plan).

The Plan was originally developed to address Condition of Approval C3(c) and CEMF, Sec. 3.4. Revision 13 includes updates as part of regular planned reviews conducted by LOR. Updates in the Plan were administrative in nature.

As an approved ER for the Sydney Metro City & Southwest project, and as required by Condition A24(j) of the Infrastructure Approval, I have had the opportunity to review the revised document. The updates are considered to represent a "minor" amendment hence the revised document (Revision 13 dated April 2023) is approved.

Yours sincerely

Michael Woolley
Environmental Representative – Sydney Metro – City and South West