19 Air quality

This chapter assesses the potential impacts on air quality associated with the Project.

19.1 Introduction

Air quality is listed under 'Other issues' in the SEARS, and includes reference to the commitments in the Scoping Report (TfNSW, 2019d) for the Project. **Table 19-1** presents the SEARs relevant to air quality and identifies where the requirements have been addressed in this Chapter.

Table 19-1 SEARs – Air quality

SEARs	Where addressed in this EIS
Other issues	
(Address) The following issues in accordance with the commitments made in Chapter 9 of the Scoping Report: *(d) air quality.* The Scoping Report (TfNSW, 2019d) makes the following commitments: The EIS will include an air quality assessment which will assess the impacts of the Project on air quality. The assessment will:	
• identify and describe the background air quality environment based on a desktop review	**Section 19.3.2**
• identify potential sensitive receivers likely to be impacted by sources of air emissions	**Section 19.3.3**, **Section 19.4.1**
• identify potential sources of air emissions during construction and operation of the Project and qualitatively assess them	**Section 19.4**
• identify appropriate mitigation and management measures.	**Section 19.5**

19.2 Method of assessment

A qualitative air quality impact assessment was completed and involved:

- a desktop review of the background air quality environment based on 2015, 2016 and 2017 data, which was sourced from the NSW Government Environment, Energy and Science Group's (former Office of Environment and Heritage's) air quality monitoring station at Rozelle (i.e. the closest air quality monitoring station to the Project area with data available; note that the Cook and Phillip monitoring station in the Sydney CBD is the closest monitoring station, however as it was only commissioned in 2019 long term monitoring data is not yet available)
- a desktop review of the Commonwealth Department of Agriculture, Water and the Environment's National Pollutant Inventory data to identify projects or facilities that may be contributing to local air quality conditions
- the identification of air quality sensitive receivers with the potential to be adversely affected by the Project
- a review of construction and operational aspects of the Project with the potential to generate air pollutant emissions (including dust and exhaust emissions)
- a qualitative assessment of potential air quality impacts at surrounding sensitive receivers
- the identification of mitigation measures to address potential air quality impacts.

19.3 Existing environment

Ambient air quality throughout the Sydney Basin is influenced by a number of factors, including topography, prevailing meteorological conditions (such as wind and temperature, which vary seasonally) and local and regional air pollution sources (such as motor vehicles, aircraft, industrial facilities and bushfires). Consequently, air quality in the Sydney Basin can be highly variable and impacted by events occurring a significant distance away.

19.3.1 Local emission sources

A search of the Commonwealth Department of Agriculture, Water and the Environment's National Pollutant Inventory (2019) and a desktop review of nearby land uses identified air emission sources which are likely to influence local air quality around the Project area. These sources include:

- industrial facilities at Camperdown, Leichardt, Alexandria and Roseberry that reported air emissions under the National Pollutant Inventory reporting program during the 2016-2017 reporting period. These facilities include:
  - Malt Shovel Brewery (Camperdown)
  - Origin LNG Pipelines (Leichardt)
  - Australian Refined Alloys (Alexandria)
  - Monroe Springs Alexandria (Alexandria)
  - Alexandria Asphalt Plant (Alexandria)
  - Spotless Facility Services Rosebery (Roseberry)
- vehicle exhaust emissions from road and rail networks
- commercial businesses, such as service stations and smash repairs
- domestic activities, such as wood-fired home heaters and lawn mowing
- other construction projects.

19.3.2 Background air quality

Air quality data sourced from the monitoring station at Rozelle is summarised in **Table 19-2**. The data shows that the concentrations of air pollutants were generally below the applicable air quality criteria during the 2015, 2016 and 2017 reporting periods, with the exception of occasional days when the maximum 24-hour average concentration of particulate matter with an aerodynamic diameter less than 10 microns (PM_{10}) 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.

Table 19-2 Background air quality data

Pollutant	Averaging period	Rozelle 2015	Rozelle 2016	Rozelle 2017
PM_{10} (g/m^3)	Maximum 24 hour	16.7	16.8	18.1
Carbon monoxide - CO (g/m^3)	Maximum 1 hour	0.3	0.2	0.2
Nitrogen dioxide - NO_2 (g/m^3)	Maximum 1 hour	1.1	1.1	1.1
Sulfur dioxide - SO_2 (g/m^3)	Maximum 1 hour	0.1	0.1	0.1

19.3.3 Sensitive receivers

The Project is located within a well-established urban environment that contains a wide range of sensitive receivers including residential properties, community facilities (such as educational facilities

and medical facilities), recreational areas and commercial and retail premises. A number of these receivers (in particular residential properties), are located next to the Project area boundary. The nearest hospital is the Royal Prince Alfred located around 1.35 kilometres from the Project area.

A detailed description of the existing land use patterns and sensitive receivers close to the Project is provided in **Chapter 10** and **Chapter 11** of this EIS.

19.4 Impact assessment

19.4.1 Construction

Construction of the Project would require the excavation and the management of soils and other materials. The excavation, handling and management of soils, and certain other construction materials (e.g. loose material) could potentially create dust and odour which in turn could adversely affect people and property in the local area. The use of construction plant, machinery and equipment would release exhaust emissions.

Dust

The main potential air quality impacts during construction would be associated with the generation of dust, which would include total suspended particulates (TSP) and particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}), and 2.5 microns or less ($PM_{2.5}$).

Construction activities with the greatest potential to generate dust would include:

- excavation, handling, stockpiling, loading and unloading, and transport of soil, spoil and fill, including imported fill and other construction materials
- demolition/modification to parts of buildings and other structures, and the handling, stockpiling and transport of demolition material
- creation of exposed surfaces through the clearing of vegetation, stripping of topsoil and other overlying structures (such as road and footpath pavements), which would increase the potential generation of dust emissions by wind erosion.

In addition, dust arising from construction of the Project could also contain contaminants of potential concern. As discussed in **Chapter 17** of this EIS, contamination investigations have indicated that contamination in the Project area is limited. However, concentrations of copper and zinc above Ecological Investigation Levels (EILs) and benzo(a)pyrene above Ecological Screening Levels (ESLs) were identified at discrete locations within the Project area. No contaminants were identified at levels above a human health investigation level. If soils containing these contaminants are managed poorly then there is potential risk that dust containing contamination could leave the site, although it is unlikely to affect ecological values given the distance to nearby sensitive ecological receptors.

Given the historical context of the Project area and the age of some of the buildings being demolished, it is possible that other contaminants and hazardous materials could also be present, such as asbestos, lead and biological material. For these contaminants of potential concern, the release of dust from the Project area during demolition potentially creates a pathway for these contaminates to adversely affect onsite or offsite receptors.

Without the implementation of adequate mitigation measures, dust emissions from the above activities would result in reduced local air quality and dust deposition at nearby sensitive receivers due to the close proximity of these receivers to the construction works in the Project area.

The volume of dust generated during a typical work day would vary depending on the types of activities occurring and prevailing weather conditions (for example, dry windy conditions increase the potential for wind erosion) and the controls that are implemented to reduce these emissions.

Sensitive receivers with the greatest potential to be adversely affected by dust from the Project area (due to their location and magnitude of dust-generating activities) are identified in **Section 19.3.3**. The close proximity of residential receivers around the Project area means that there would be a high sensitivity to potential dust impacts from the Project. The scale of the works (involving demolition, excavation of fill and soils and construction) when compared to the sensitivity of the receivers around

the Project area means that, unmitigated, there is a high risk of dust adversely affecting the local community.

Overall however dust emissions would be comparable to other similar infrastructure projects and the risk of dust impacting on receivers would be readily manageable through standard mitigation measures, such as wetting stockpiles and exposed surfaces, and minimising dust-generating works during adverse weather conditions. Specific measures to manage contaminants of potential concern are also available and have been successfully used to control the movement of these materials. Appropriate mitigation and management measures are discussed further **Section 19.5**.

Odour

Total petroleum hydrocarbons and BTEXN compounds were not identified above the limit of reporting in the contamination assessment (refer **Appendix G** of this EIS). As such no potential impacts relating to odour are likely from exposure of contaminated soils.

Odours from paint and adhesive applications would be released during construction (e.g. during concourse and building fit out works), which may pose a hazard to construction workers and potentially adjacent sensitive receivers.

Exhaust and other emissions

Exhaust emissions during construction would generally be restricted to minor localised emissions of carbon monoxide, oxides of nitrogen, sulfur dioxide and volatile organic compounds. These pollutants would be generated during the combustion of fuel in construction plant, machinery and equipment, as well as from the handling and/or on-site storage of fuel and other chemicals. Welding activities would also release welding fume emissions.

Given the existing air quality around the Project area, the minor emissions of carbon monoxide, oxides of nitrogen, oxides of sulfur, volatile organic compounds and welding fume from construction plant, machinery and equipment would be unlikely to significantly affect local air quality at the nearest sensitive receivers. Mitigation and management measures are available to manage this potential impact as described in **Section 19.5**.

19.4.2 Operation

Overall impacts to air quality during the operation of the Project would be negligible to minor, as apart from various gas emissions released during normal operation (and testing) of the padmount transformers, no changes to existing land uses are proposed, and additional mechanical plant proposed to be operated (e.g. new services building and facilities at 125-127 Little Eveleigh Street) would not involve fuel burning equipment or release of air emissions under normal operating conditions. It is noted that a diesel pump for a fire hydrant would be utilised during emergencies only. As the Project would improve the customer experience by providing improved access to station facilities and increased capacity of the Station, the Project may contribute to a transport mode shift from private vehicles to public transport, which would reduce emissions in the long-term.

19.5 Management and mitigation

19.5.1 Overview

A CEMF (refer **Appendix D** of this EIS) describes the approach to environmental management, monitoring and reporting during construction. Specifically, it lists the requirements to be addressed by the construction contractor in developing the CEMP, sub-plans, and other supporting documentation for each specific environmental aspect.

An Air Quality Management Sub-Plan would be developed for the Project as identified by Section 6.7 of the CEMF.

The chapter includes a compilation of the performance outcomes as well as mitigation measures, including those that would be included in the Air Quality Management Sub-Plan.

19.5.2 Performance outcomes

The performance outcomes for the Project in relation to air quality are as follows:

- during construction, dust is managed to minimise the release beyond the site boundaries so that dust complaints are avoided
- during construction, tracking or spilling of soil/spoil from the Project onto offsite areas is minimised, and offsite road surfaces are cleaned at the end of each day so that they are free of visible, loose soil/spoil material (which may be washed away in runoff or otherwise cause complaints)
- dust impacts from soil waste stockpiles are prevented by removing these stockpiles as soon as practicable by an appropriately licenced contractor.

As there are no potential impacts to air quality during operations, no operation performance outcomes are required.

The Project would be designed and constructed to achieve these performance outcomes.

19.5.3 Mitigation measures

A list of mitigation measures which would be implemented during the construction of the Project are provided in **Table 19-3**. Note that mitigation measures for the management of potential contaminants and hazardous materials during construction (such as asbestos fibres and lead dust) is addressed in **Chapter 17** and **Chapter 20** of this EIS.

Table 19-3 Mitigation measures

ID	Mitigation measure	Applicable location(s)
Construction		
AQ1	An Air Quality Management Sub-Plan would be developed to manage the potential air quality impacts relevant to the construction of the Project. This sub-plan would be part of the CEMP. The sub-plan would identify potential dust and exhaust emission sources and outline appropriate mitigation measures to ensure that the performance objectives noted in the EIS are achieved. Locations within the Project area with contaminants of potential concern at unacceptable levels would be identified within the Air Quality Management Sub-Plan and specific measure put in place to manage risks associated with this material.	Project area
AQ2	The Air Quality Management Sub-Plan would include contingency measures to address air quality complaints if received.	Project area
AQ3	Work activities would be reviewed if the air quality management measures are ineffective in minimising dust or other emissions.	Project area
AQ4	The Air Quality Management Sub-Plan would include measures to manage dust emissions. These would include the following: • when using machinery to handle dusty/dust-generating materials, minimise the distance between where the material is stored and its final location • vehicles carrying loose or potentially dusty material to or from the Project area would be adequately covered • water would be sprayed on unsealed access roads and open areas during conditions conducive to dust generation • a wheel cleaning/washing system would be established for vehicles entering and leaving the Site • on-site vehicle speed limits would be established and enforced to prevent dust emissions • water-assisted dust sweepers would be used on internal access tracks and local roads, to remove material tracked out of the Project area • stockpiled material would be appropriately managed and shaped to reduce wind erosion and covered as appropriate	Project area

ID	Mitigation measure	Applicable location(s)
	• stockpiles containing contaminated material would be bunded and covered when not being actively managed, and removed from site as soon as possible in accordance with contaminated waste procedures • during extreme weather events where dust generation cannot be effectively minimised (such as high winds), dust generating works would cease until adequate controls can be implemented or until adverse weather conditions subside • demolition of buildings and structures would be carried out using techniques and practices that minimise dust generation. This may include soft stripping inside buildings before demolition.	
AQ5	Measures to manage exhaust emissions would include the following: • plant, machinery and vehicles would be turned off while not in use, where safe to do so • equipment (including all internal combustion engines) would be properly maintained and would run efficiently to ensure exhaust emissions are minimised, where practicable • construction plant, machinery or vehicles producing excessive visual exhaust would be turned off, tagged 'out of order' and not used • all emission controls used on vehicle and equipment would comply with standards listed in Schedule 4 of the *Protection of the Environment Operations (Clean Air) Regulation 2010* • emissions from plant would be considered as part of pre-acceptance checks.	Project area
AQ6	Construction site layout and placement of plant would consider air quality impacts to nearby receivers.	Project area
AQ7	In the event that odour emissions are generated, work would cease until the source and nature of the odour can be determined and an appropriate course of action carried out. This may include further assessment to determine potential impacts on the nearest sensitive receptors.	Project area

Provided recommended mitigation measures are implemented, residual air quality impacts as a result of the construction of the Project are unlikely. Nevertheless, they have been considered in the cumulative assessment in **Chapter 23** of the EIS.