Macquarie Capital

# Metro Martin Place

## Stage 1 Amending DA - Air Quality Assessment

CSWSMP-MAC-SMA-ES-REP-999908

Rev A | 4 July 2018



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# 1 Introduction

## 1.1 Introduction

This report supports a State Significant Development (SSD) Development Application (DA) submitted to the Minister for Planning (Minister) pursuant to Part 4 of *the Environmental Planning and Assessment Act 1979* (EP&A Act) on behalf of Macquarie Corporate Holdings Pty Limited (Macquarie), who is seeking to create a world class transport and employment precinct at Martin Place, Sydney.

The SSD DA seeks approval for an amended Concept Proposal (otherwise known as a Stage 1 DA) relating to the Martin Place Metro Station Precinct ('the Precinct'). An existing development consent (SSD 17_8351) for a Concept Proposal is in place for the Precinct, which approved the concept for two Over Station Development (OSD) commercial towers above the northern (North Site) and southern (South Site) entrances of Martin Place Metro Station. The Concept Proposal approved building envelopes, land uses, Gross Floor Areas (GFA) and Design Guidelines with which the detailed design (otherwise known as a Stage 2 DA) must be consistent.

This Stage 1 Amending DA is a concept development application made under Section 4.22 of the EP&A Act. It seeks to align the approved South Site building envelope with the new planning controls established for the precinct as a result of a site specific amendment to Sydney LEP 2012. The new controls permit greater building height (over a portion of the South Site only) and additional floor space (North Site and South Site).

Whilst the approved Concept Proposal related to the entire Precinct, this Amending DA relates principally to the building envelope of the **South Site**, in terms of amending the approved height and floor space.

This application does not seek approval for elements of the Martin Place Station Precinct which relate to Stage 2 of the Sydney Metro infrastructure project, which is subject to a separate Critical State Significant Infrastructure (CSSI) approval. These include:

- Demolition of buildings on the North Site and South Site;
- Construction of rail infrastructure, including station platforms and concourses;
- Ground level public domain works; and
- Station related elements in the podium of the North Site and South Site building.

The approved Stage 1 Concept Proposal approved conceptual OSD areas in the approved Martin Place Station Structure, above and below ground level, which are classified as SSD as they relate principally to the OSD. These components are within the Metro CSSI approved station envelope that will contain some OSD elements not approved in the CSSI consent. Those elements include the end of trip facilities, office entries, office space and retail areas, along with other office/retail plant and back of house requirements that are associated with the proposed OSD and not the rail infrastructure. This Amending DA does not propose to modify this.

Accordingly, this report address the air quality issues considered for the project. The report reviews the baseline conditions, assesses the air quality impacts of vehicles and fugitive dust emissions and provides mitigations for minimisation of the impacts.

## 1.2 Context

The New South Wales (NSW) Government is implementing Sydney's Rail Future (Transport for NSW, 2012), a plan to transform and modernise Sydney's rail network so that it can grow with the city's population and meet the needs of customers in the future.

Sydney Metro is a new standalone rail network identified in Sydney's Rail Future. The Sydney Metro network consists of Sydney Metro Northwest (Stage 1) and Sydney Metro City & Southwest (Stage 2).

Stage 2 of the Metro entails the construction and operation of a new Metro rail line from Chatswood, under Sydney Harbour through Sydney's CBD to Sydenham and onto to Bankstown through the conversion of the existing line to Metro standards. The project also involves the delivery of seven (7) new Metro stations, including Martin Place.

This step-change piece of public transport infrastructure once complete will have the capacity for 30 trains an hour (one every two minutes) through the CBD in each direction catering for an extra 100,000 customers per hour across the Sydney CBD rail lines.

On 9 January 2017 the Minister approved the Stage 2 (Chatswood to Sydenham) Metro application lodged by Transport for NSW (TfNSW) as a Critical State Significant Infrastructure (CSSI) project (reference SSI 15_7400). Work is well underway under this approval, including demolition of buildings at Martin Place.

The OSD development is subject to separate applications to be lodged under the relevant provisions of the EP&A Act.

## 1.3 Site Description

The Sydney Metro Martin Place Station Precinct project relates to the following properties (refer to **Figure 1**):

- 50 Martin Place, 9 – 19 Elizabeth Street, 8 – 12 Castlereagh Street, 5 Elizabeth Street, 7 Elizabeth Street, and 55 Hunter Street (North Site);
- 39 – 49 Martin Place (South Site); and
- Martin Place (that part bound by Elizabeth Street and Castlereagh Street).

This Stage 1 Amending DA relates principally to the building envelope of the South Site, being land at 39 – 49 Martin Place, Sydney (refer to **Figure 1**).


**Figure 1** – Aerial Photo of the North and South Site of the Martin Place Metro Station Precinct

## 1.4 Background

Sydney Metro Stage 2 Approval (SSI 15_7400)

On 9 January 2017, the Minister approved Stage 2 of the Sydney Metro project, involving the construction and operation of a metro rail line between Chatswood and Sydenham, including the construction of a tunnel under Sydney Harbour, links with the existing rail network, seven metro stations (including a station at Martin Place), and associated ancillary infrastructure. The project approves the demolition of existing buildings at Martin Place, excavation and construction of the new station (above and below ground) along with construction of below and above ground structural and other components of the future OSD, although the fit-out and use of such areas are the subject of separate development approval processes.

Modification 3 to the Sydney Metro consent, approved 22 March 2018, enabled the inclusion of Macquarie-owned land at 50 Martin Place and 9-19 Elizabeth Street within

the Martin Place Station footprint, and other associated changes (including retention of existing MLC pedestrian link).

Planning Proposal (PP_2017_SYDNE_007_00) – Amendment to Sydney LEP 2012

The Planning Proposal (PP_2017_SYDNE_007_00) sought to amend the development standards applying to the Sydney Metro Martin Place Station Precinct through the inclusion of a site-specific provision in the Sydney LEP 2012. This site-specific provision reduced the portion of the South Site that was subject to a 55 metre height limit from 25 metres from the boundary to Martin Place, to 8 metres, and applies the Hyde Park North Sun Access Plane to the remainder of the South Site, forming the height limit of the tower. It also permitted a revised FSR of 22:1 on the South Site and 18.5:1 on the North Site (resulting in a combined permissible overall GFA of 153,141m$^2$). These amendments were gazetted within Sydney LEP 2012 and reflect the new planning controls applying to the precinct.

Concept Proposal (SSD 17_8351)

On 22 March 2018, the Minister approved a Concept Proposal (SSD 17_8351) for the Precinct. The Concept Proposal established the planning and development framework through which to assess the detailed Stage 2 applications.

The approved Concept Proposal specifically encompassed:

- building envelopes for OSD towers on the North Site and South Site (see **Figure 3**) comprising:
    - 28+ storey building on the South Site, with a 25m setback to Martin Place above 55m in height, and a 40+ storey building on the North Site.
    - Concept approval to integrate the North Site with the existing/retained 50 Martin Place building (the former Government Savings Bank of NSW).
- predominantly commercial land uses on both sites, comprising office, business and retail premises;
- a maximum total GFA of 125,437m$^2$ across both sites;
- consolidated Design Guidelines to guide the built form and design of the future development.
- a framework for achieving design excellence.
- strategies for utilities and services provision, managing drainage and flooding, and achieving ecological sustainable development.
- conceptual OSD areas in the approved Martin Place Metro Station structure, above and below ground level[1].

[1] *Refers to those components within the Metro CSSI approved station envelope that will contain some OSD elements not approved in the CSSI consent. Those elements include the end of trip facilities, office entries, office space and retail areas, along with other office/retail plant and back of house requirements that are associated with the proposed OSD and not the rail infrastructure.*

The Concept Proposal was prepared and determined prior to the site specific Sydney LEP 2012 amendment being gazetted and was developed based on the height development standards that applied to the South Site at the time. As a result, the approved Concept Proposal allows for a tower on the South Site that is now inconsistent with the building envelope envisaged through the Sydney LEP 2012.

**Figure 2 –** North Site and South Site Approved OSD Building Envelopes

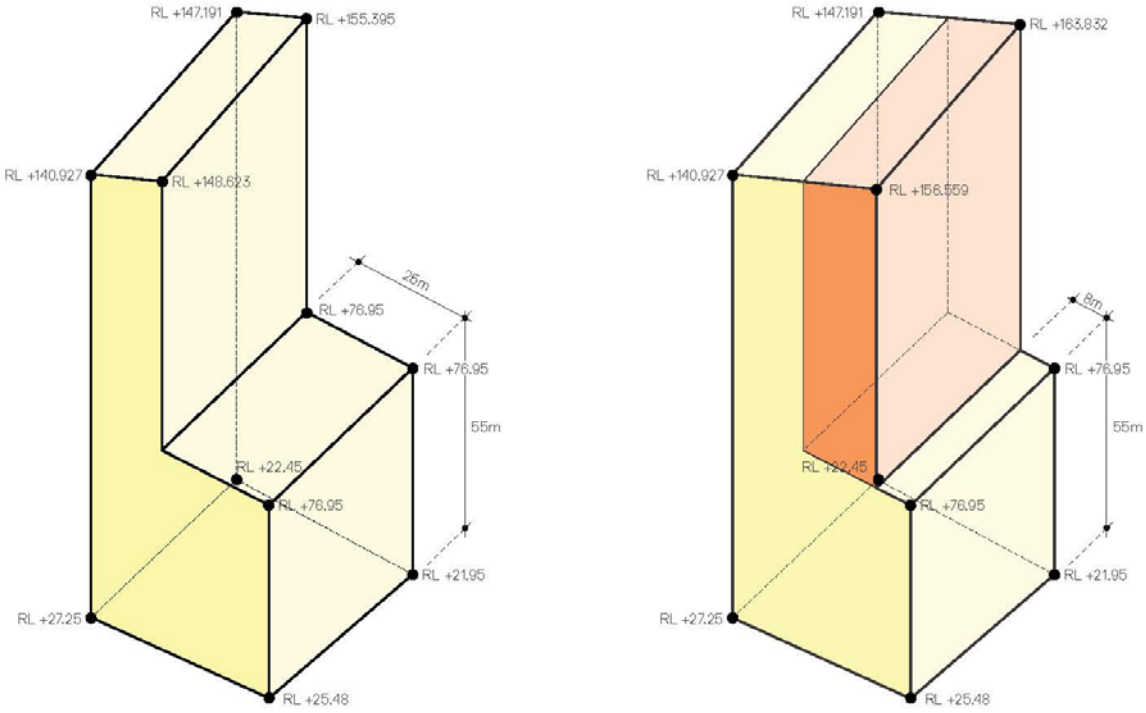
## 1.5 Overview of the Proposed Development

The Stage 1 Amending DA seeks approval for an amended Concept Proposal for the Martin Place Metro Station Precinct, specifically a larger building envelope for the South Site compared to the building envelope approved by the Minister through SSD 17_8351. The amended South Tower envelope will reflect a building envelope that aligns with the new controls applying to the precinct under Sydney LEP 2012, including increased height and FSR limits. It is proposed to amend the South Tower building envelope, through:

- a tower setback to Martin Place of 8 metres above the 55m podium height (reduced from 25 metres as approved within the Concept Proposal);
- a tower height that is consistent with the Hyde Park North Sun Access Plane beyond the 8m setback to Martin Place (constituting a generally taller tower than approved within Concept Proposal); and
- an increase in GFA/FSR for the South Site from approximately 23,700m$^2$ (12.5:1) up to approximately 41,700m$^2$ (22:1) - inclusive of all CSSI Station components.

**Figure 3** below illustrates these proposed amendments to the South Site building envelope.

It is proposed that a condition be imposed on the Stage 1 Amending DA development consent pursuant to Section 4.17(1)(b) of the EP&A Act, requiring the modification of the original consent (SSD 17_8351) upon the commencement of the Stage 1 Amending DA Consent, in accordance with the procedures under Clause 97 of the *Environment Planning and Assessment Regulation 2000* (EP&A Regulation). This condition would address any inconsistency between the approved Concept Proposal and the Stage 1 Amending DA (and any subsequent detailed consents, i.e. the Stage 2 South Site DA).




*Approved South Site Building Envelope Proposed Amended South Site OSD Envelope (aligning with site specific amendment to Sydney LEP 2012)*

**Figure 3 –** Relationship between the approved and proposed amended South Site building envelope

## 1.6 Planning Approvals Strategy

*State Environmental Planning Policy (State and Regional Development) 2011* (SEPP SRD) identifies development which is declared to be State Significant. Under Schedule 1 and Clause 19(2) of SEPP SRD, development within a railway corridor or associated with railway infrastructure that has a capital investment value of more than $30 million and involves commercial premises is declared to be State Significant Development (SSD) for the purposes of the EP&A Act.

The proposed amendment (involving commercial development that is both located within a rail corridor and associated with rail infrastructure) is therefore SSD.

Submitted separately to this SSD DA are detailed proposals for the South Site (Stage 2 South Site DA) and North Site (Stage 2 North Site DA), which follow the approval of the

Concept Proposal for the Precinct under Section 4.22 of the EP&A Act (formerly Section 83B). The Stage 2 detailed DA for the South Tower includes a design which is consistent with the envelope envisaged with this subject Stage 1 Amending DA and where it must only be determined following approval of the subject Stage 1 Amending DA.

**Figure 4** below is a diagrammatic representation of the suite of key planning applications undertaken or proposed by Macquarie and their relationship to the subject application (the subject of this report).

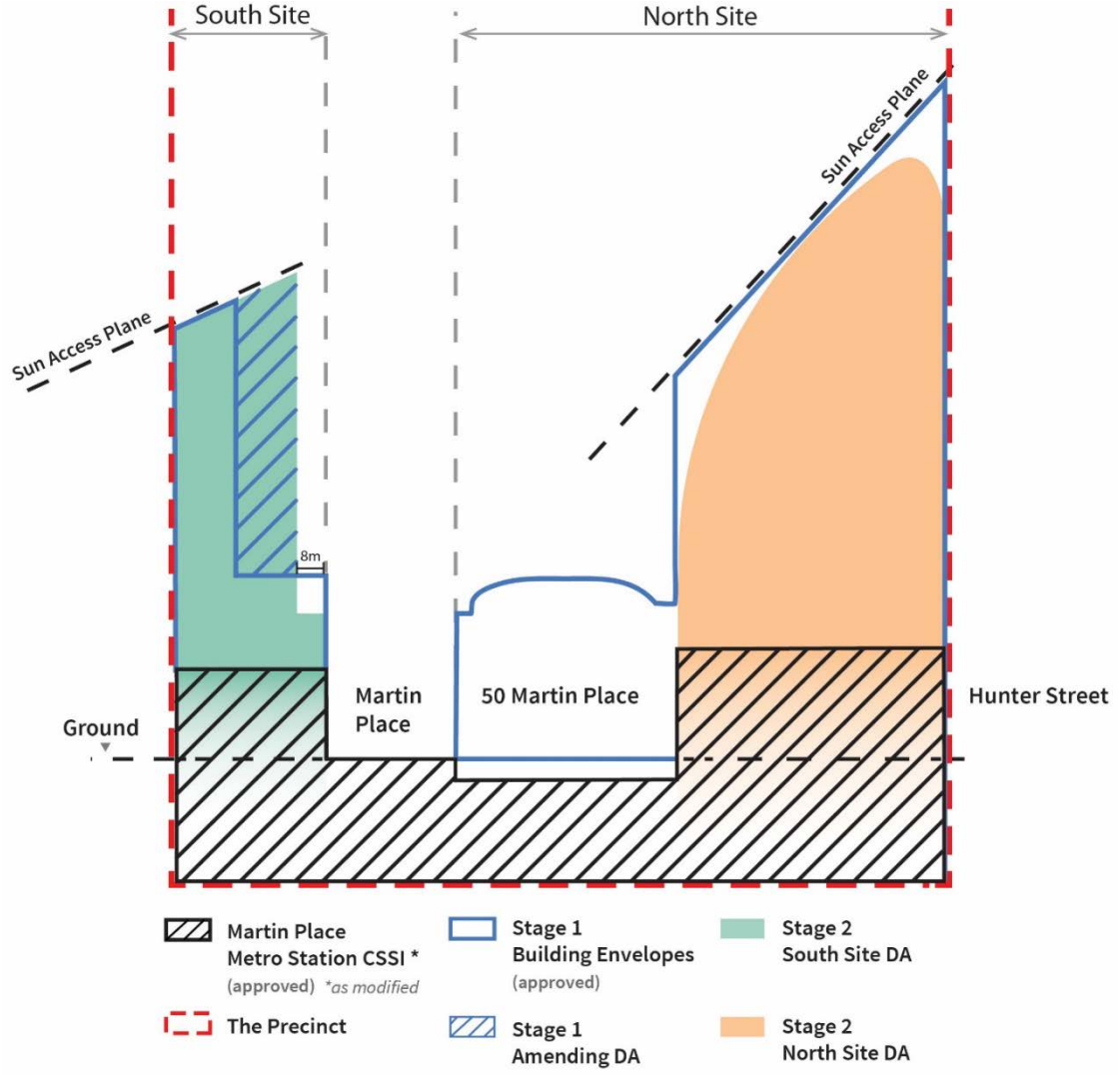



**Figure 4** – Relationship of key planning applications to the **Stage 1 Amending DA** (this application)

The Department of Planning and Environment have provided Secretary's Environmental Assessment Requirements (SEARs) to the applicant for the preparation of an Environmental Impact Statement for the proposed development. This report has been prepared having regard to the SEARs as follows:

The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the *EP&A Regulation 2000*. Provide these as part of the EIS rather than as separate documents.

In addition, the EIS must include the following:
- Air quality assessment (where relevant).

# 2 Baseline Conditions

To determine the baseline air quality conditions and evaluate the potential air quality impacts from the proposed construction works, measured ambient pollutant concentrations can be compared to the NSW EPA impact assessment criteria relevant to this study.

## 2.1 Air Quality Criteria

The NSW EPA Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (NSW DEC, 2005) specifies air quality assessment criteria relevant for assessing impacts from air pollution. These criteria are health-based (i.e. they are set at levels to protect against health effects).

Table 1 summarises the air quality criteria for concentrations of particulate matter that are relevant to this study.

**Table 1: NSW EPA Impact Assessment Criteria for Pollutants of Potential Concern (NSW DEC, 2005)**

| Pollutant | Averaging Period | Concentration (µg/m$^3$) |
|---|---|---|
| Total suspended particles (TSP) | Annual | 90 |
| $PM_{10}$ | 24 hour | 50 |
| | Annual | 30 |

## 2.2 Existing Environment

No physical measurements or predictions of background ground level concentrations were undertaken for this assessment. The existing background concentration of particulate matter in the Sydney CBD air-shed was characterised using ambient air data recorded by the Office of Environment and Heritage.

### 2.2.1 Particulate Matter – $PM_{10}$

The NSW Office of Environment and Heritage (OEH) monitors air quality at several urban background locations around Sydney. The closest OEH urban background monitoring stations to the proposed works are at Randwick (8.3 km to the south east), Rozelle (4.2 km to the west), and Earlwood (8.9 km to the south west).

Given that the air quality observations at Rozelle are closest to the development area, the observations recorded at this site were considered to be the most representative of the existing air quality in the study area.

A summary of recent $PM_{10}$ monitoring results at these stations is presented in Table 2. The maximum 24 hour average concentrations at Rozelle exceeded the criterion of 50 $\mu g/m^3$ in 2014 and 2015. Though these short-term peaks events are likely to have been a result of highly localised events in close proximity to the monitoring station or broader natural events, such as bushfires.

As shown, the annual average of all monitoring locations is well below the NSW EPA criteria of 30 $\mu g/m^3$.

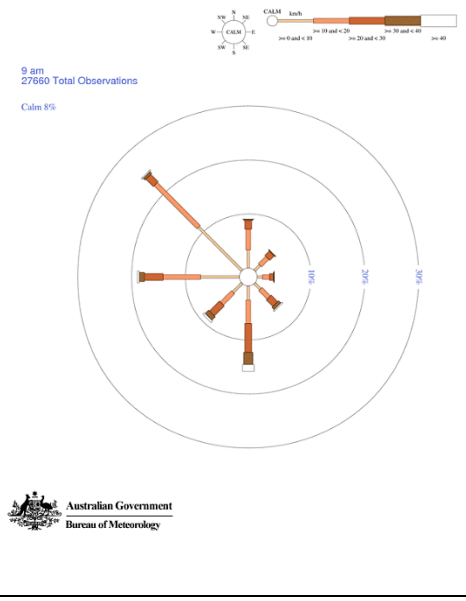
**Table 2: Summary of $PM_{10}$ Concentrations at OEH Monitoring Sites in 2013-2016 (OEH, 2017)**

| Averaging Period | Year | $PM_{10}$ Concentration ($\mu g/m^3$) | | |
|---|---|---|---|---|
| | | Randwick | Rozelle | Earlwood |
| Maximum 24-hour average | 2014 | 46.1 | 43.8 | 45.2 |
| | 2015 | 77.4 | 60.3 | 66.5 |
| | 2016 | 44.1 | 58.8 | 42.9 |
| Annual average | 2014 | 18.2 | 17.8 | 18.3 |
| | 2015 | 18.6 | 16.7 | 17.2 |
| | 2016 | 17.9 | 16.8 | 17.5 |

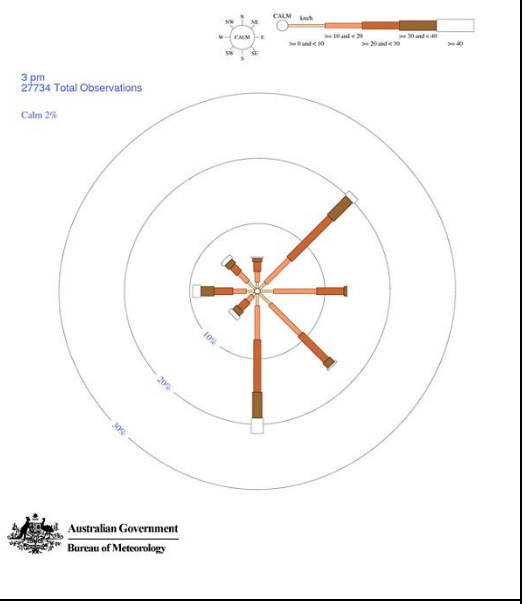
## 2.3 Meteorology

The closest Bureau of Meteorology meteorological station is located at Sydney Airport, located approximately 9 km south-south west of the proposed works.

Long term wind roses during the 9 am and 3 pm time periods from the Sydney Airport meteorological station are presented in Figure 1.




Sydney Airport 9 am (1939 – 2016)




Sydney Airport 3 pm (1939 – 2016)

**Figure 6:** Long Term Wind Roses Recorded at Sydney Airport (BOM, 2017)

The windroses indicate that night-time and early morning winds are best represented by the 9 am windrose. The windrose identifies that the winds during these periods are typically light, dominated by north-westerly, westerly, and southerly components. The 3 pm windrose best represents the daytime and afternoon winds. As expected, there is a much lower percentage of calms (wind speeds less than 0.5 m/s) during this period. That is, the winds are generally stronger and are dominant from the north-east and south.

While the Sydney Airport windroses show a long-term diurnal wind pattern, the development is located within existing high-rise buildings, therefore it is anticipated that the wind conditions at the site will be highly variable.

# 3 Assessment of Impacts

It is very difficult to quantify dust emissions from demolition and construction activities. However in a general, the listed emissions should be controlled to minimise the potential for adverse environmental effects:

- Exhaust emissions from site plant, equipment and vehicles; and
- Fugitive dust emissions from site activities.

Weather conditions are highly variable, and hence, it is difficult to predict what the conditions may be when specific construction activities are undertaken. Any effects of construction activities on airborne particle concentrations are generally temporary and relatively short-lived. Moreover, mitigation procedures should be straightforward, as most of the necessary measures are routinely employed as 'good practice' on construction sites. Therefore in most cases, a qualitative assessment of potential dust impacts is provided, as outlined in the sections to follow.

## 3.1 Vehicle Exhaust Emissions

The pollutant oxides of nitrogen ($NO_x$), particulate matter ($PM_{10}$), volatile organic compounds (VOCs) and carbon monoxide (CO) are generated by internal combustion engines in vehicles and equipment. The amount emitted by these sources is dependent upon such factors including: engine type, service history, pattern of usage and composition of fuel.

The equipment fleet required for the works will result in these pollutants being emitted into the atmosphere, at relatively unquantified levels. Given the existing road traffic in the Sydney CBD, the increase in combustion emissions from the project is not expected to result in a discernible difference to background air quality.

There is a potential for traffic generated from the works to impact receptors located in close proximity to the traffic routes. The primary construction activities with potential transportation implications are:

- Removal of materials;
- Delivery of materials for new development; and
- Movement of heavy plant.

A small increase in vehicle movement is anticipated during the works, which has an insignificant impact on emissions and air quality (see Table 3)

**Table 3:** Demand flow (PCUs per hour), adopted from Table 3 of *19 Sydney Metro C2S SPIR Appendix F Traffic and Transport*

| Demand flow (PCUs per hour) | Base | With project* | Increase |
|---|---|---|---|
| Total AM | 11,930 | 12,168 | 238 |
| Total PM | 11,276 | 11,514 | 238 |
| *including O'Connell Street construction site | | | |

With the exception of PM10, combustion emissions are generally considered to be minor and insufficient to affect any sensitive off-site receptors. Therefore, NOx, VOC and CO emissions were considered further in this assessment.

## 3.2 Fugitive Dust Emissions

Dust (particulate matter) is the principal pollutant emitted during demolition and construction activities. Any fugitive dust emissions from the works would be variable and depend upon the period of the activity, the soil type and moisture content, road surface conditions and weather conditions.

During the summer periods, soils are typically drier, and when combined with higher than average winds, there is the potential that greater amounts of dust can be generated. The following activities on site have the potential to produce significant dust emissions:

- Additional clearing and local excavation associated with construction;
- Haulage and heavy plant equipment; and
- Wind erosion.

Although the surrounding land uses are predominately commercial, if not controlled effectively, fugitive dust emissions can become a nuisance for the impacted receptors. The activities outlined above can be controlled by mitigation measures to reduce the risks of any impacts.

### 3.2.1 Particulate Matter – TSP and $PM_{10}$

Particulate matter has the capacity to affect health and to cause nuisance effects, and is categorised by size and/or by chemical composition. The potential for harmful effects depends on both. The particulate size ranges for TSP and $PM_{10}$ are commonly described as:

- TSP –refers to all suspended particles in the air. In practice, the upper size range is typically 30 µm to 50 µm.
- $PM_{10}$ – refers to all particles with equivalent aerodynamic diameters of less than 10 µm, that is, all particles that behave aerodynamically in the same way as spherical particles with diameters less than 10 µm and with a unit density. $PM_{10}$ are a sub-component of TSP.

Evidence suggests that health effects from exposure to airborne particulate matter are predominantly related to the respiratory and cardiovascular systems (WHO, 2011). The human respiratory system has in-built defensive systems that prevent larger particles from reaching the more sensitive parts of the respiratory system. Particles larger than approximately 10 µm, while not able to affect health, can soil materials and generally degrade aesthetic elements of the environment. For this reason, air quality criteria make reference to measures of the total mass of all particles suspended in the air. This is referred to as TSP. In practice, particles larger than 30 to 50 µm settle out of the atmosphere too quickly to be regarded as air pollutants.

Particulate matter emissions from the works at the site may have the potential to contribute to short-term local particulate matter concentrations if not adequately managed and mitigated.

# 4 Mitigation

The predicted dust emissions from the works at Martin Place Metro are expected to be minor and transient. Although the land surrounding the development is predominantly commercial, during worst-case meteorological conditions and high-intensity activities on site, there is the possibility of dust generation causing nuisance and potential health impacts.

Therefore the standard construction dust mitigation methods listed should be implemented where practical to avoid dust generation:

**Site general works:**

- Identify person responsible for upholding mitigation methods;
- Erect appropriate barriers around dusty activities and site boundary;
- If practical, ensure machinery, fuel and chemical storage and dust generating activities are not located in close proximity to site boundaries and sensitive receptors (such as pedestrian walkways, air conditioning intakes and businesses);
- Ensure communication is established with neighbouring properties prior to undertaking works in proximity to their premises; and
- Establish a complaints register to record details on the time and extent of any reasons for air quality based complaints.

**Construction traffic:**

- All vehicles to switch off engines when not in use (i.e. no idling);
- Ensure all vehicles have satisfactory exhaust systems and emission control technologies;
- Where practical, clean or wash all vehicles effectively before they leave a site; and
- Ensure that all loads entering and leaving site are covered.

**Use of stockpiles:**

- Ensure that stockpiles are enclosed or securely sheeted and kept on-site for the shortest possible period;
- Avoid building steep sided stockpiles or mounds or those that have sharp changes in shape; and
- Whenever possible, keep stockpiles or mounds away from the site boundary, sensitive receptors, watercourses and surface drains.

**Cutting and grinding:**

- All equipment should use water suppressant or suitable local exhaust ventilation systems;
- Use dust extraction techniques where available;
- All other equipment should be fitted with water suppressant systems;
- Use local exhaust ventilation; and
- Service all fans and filters regularly to ensure they are properly maintained.

**Use of chutes and skips:**

- Securely cover skips;
- Minimise drop heights to control the fall of materials;
- Regularly damp down surfaces with water;
- Completely enclose skips whenever possible; and
- If possible, reduce drop heights by using variable height conveyors or chutes.

# 5 Residual Impacts

The potential for adverse air quality impacts from the proposed works has been outlined in Section 4, where it is anticipated that at times, there may be intermittent impacts on sensitive receptors around the development area. However with the implementation of the outlined mitigation measures, it is expected that any potential impacts will be transient in nature and not result in any long term effects on the surrounding environment or air shed.

# 6 Conclusion

The existing air quality, relevant air quality criteria and likely air quality impacts arising from the future works at the Martin Place Metro Precinct development have been investigated in this study. It is considered that construction related activities are expected to have limited, and transient impacts on air quality. Further, any impacts will only occur as short-term peak events. The best-practice mitigation measures proposed will act to reduce any potential dust emissions from the activities on site.

It is anticipated that with the application of the mitigation measures, sensitive receptors in the vicinity of the development will not experience significant air quality impacts as a result of the proposed works.

# 7 References

Bureau of Meteorology (2015). “Wind speed and direction rose”. http://www.bom.gov.au/cgi-bin/climate/cgi_bin_scripts/windrose_selector.cgi?period=Annual&type=3&location=66037, accessed 24 January 2017.

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