



Air Quality Management Guideline

SD-107

Supporting Document – Applicable to Infrastructure and Place

Divisional Management System

Status:	Approved
Version:	5.0
Section:	Planning, Environment & Sustainability
Business unit:	Environmental Management
Date of issue:	29 May 2019
Review date:	29 May 2020
Audience:	Project Delivery/External TSR
Asset classes:	<input checked="" type="checkbox"/> Heavy Rail; <input checked="" type="checkbox"/> Light Rail; <input checked="" type="checkbox"/> Multi Sites; <input checked="" type="checkbox"/> Systems; <input checked="" type="checkbox"/> Fleets
Project delivery model:	Projects/Alliance/Novo Rail
Project type:	Not Applicable
Project lifecycle:	<input type="checkbox"/> Feasibility; <input type="checkbox"/> Scoping; <input type="checkbox"/> Definition; <input checked="" type="checkbox"/> Construction readiness; <input checked="" type="checkbox"/> Implementation; <input checked="" type="checkbox"/> Finalisation; <input type="checkbox"/> Not applicable
Process owner:	Director Planning, Environment & Sustainability

Document history

Version	Date of approval	Doc. control no.	Summary of change
1.0	30 Jul 14	3145234_5	First issue
2.0	14 Apr 15	3145234	Updated to be published to TfNSW website
3.0	4 May 15	3145234_12	Rebranded from TPO to I&S.
4.0	20 Jun 18	3145234_19	Updated reference documents.
4.1	26 Nov 18		Re-branded to Planning, Environment & Sustainability.
5.0	29 May 19	3145234_27	Minor updates to legislation, guidelines and management measures

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1. Purpose

The purpose of this document is to provide guidance with regard to managing air quality and emissions on Infrastructure and Place (IP) project sites. The inappropriate management of emissions has the potential to result in health impacts, loss of amenity and community dissatisfaction and environmental degradation. Such impacts are primarily associated with dust from construction activities and exhaust emissions from vehicles, plant and equipment.

In New South Wales there are strict laws to prevent air pollution. In addition, planning approvals for projects and other authorisations (such as Environment Protection Licences) may contain specific requirements relating to air emissions. Appropriate air quality management measures need to be implemented to minimise air pollution, and minimise the risk of penalties to individuals, TfNSW and its contractors.

2. Scope

This guideline applies to management and mitigation of dust generation and emissions from vehicles, plant and equipment on IP project sites. It does not apply to emissions from chemicals (refer to Chemical Storage and Spill Response Guidelines –SD-066).

This guideline includes references to relevant legislative and regulatory requirements but is not intended to replace them. It is not intended to replace any requirements for air quality management identified as part of the environmental impact assessment process.

3. Definitions

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

DDG	Dust deposition gauge
EIA	Environmental impact assessment
EPA	NSW Environment Protection Agency
IP	Infrastructure and Place
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
PES	Planning, Environment & Sustainability
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
TfNSW	Transport for NSW
TSR	TfNSW Standard Requirement

4. Accountabilities

The Director Planning, Environment & Sustainability (PES) is accountable for this Supporting Document. Accountability includes authorising the document, monitoring its effectiveness and performing a formal document review.

Project directors are accountable for ensuring the requirements of this document are implemented within their area of responsibility.

Project directors who are accountable for specific projects/programs are accountable for ensuring associated contractors follow this document to the extent they are required under the transport Standard Requirements (TSR).

Contractors are accountable for following this document, where this guideline forms a part of their contract.

5. Legislative requirements

Table 1 lists the relevant legislation/regulations for the management of air quality in NSW. Significant penalties can result in breaches of the listed legislation as a result of air pollution incidents.

To avoid breaches of legislation, it is important that IP Infrastructure and its contractors are aware of their legislative requirements and that appropriate management measures are in place to minimise dust emissions and air quality impacts during construction.

Table1: Legislation and guidelines for management of air quality

Relevant requirement	Objectives and offences
<i>POEO Act</i> Part 5.4 Air Pollution	<p>Under the POEO Act it is an offence to:</p> <ul style="list-style-type: none"> (i) operate any plant in such a manner as to cause air pollution, if the air pollution so caused, or any part of the air pollution so caused, is caused by the occupier's failure: <ul style="list-style-type: none"> (a) to maintain the plant in an efficient condition, or (b) to operate the plant in a proper and efficient manner. (ii) undertake maintenance work on any plant in such a manner as to cause air pollution, if the air pollution so caused, or any part of the air pollution so caused, is caused by the occupier's failure to carry out that work in a proper and efficient manner. (iii) deal with materials in such a manner as to cause air pollution, if the air pollution so caused, or any part of the air pollution so caused, is caused by the occupier's failure to deal with those materials in a proper and efficient manner. <p><i>air pollution</i> means the emission into the air of any air impurity <i>air impurity</i> includes smoke, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, mists, odours and radioactive substances <i>deal with materials</i> means process, handle, move, store or dispose of the materials <i>materials</i> includes raw materials, materials in the process of manufacture, manufactured materials, by-products or waste materials Air pollution is a Tier 2 offence attracting penalties up to \$1 million for a corporation and \$250,000 for individuals.</p>
<i>Protection of Environment Operation (Clean Air) Regulation 2010</i>	Schedule 6 of the regulation (Standards of concentration of non-scheduled premises) applies to construction activity in NSW and sets out concentration limits for solid particulates and smoke emissions.
Approved Methods for the Modelling and Assessment of Air Pollutants in NSW 2016	Lists the statutory methods for modelling and assessing emissions of air pollutants from stationary sources in NSW. Section 7 outlines the impact assessment criteria for common pollutants.

Relevant requirement	Objectives and offences
Approved Methods for the Sampling and Analysis of Air Pollutants in NSW 2007	Lists the statutory methods that are to be used to model and assess emissions of air pollutants from stationary sources in NSW.

6. Air quality management

Construction activities that typically result in the generation of dust include:

- site preparation including clearing of vegetation, removal of topsoil and demolition
- earth works, particularly rock hammering, cutting, profiling and breaking, crushing and grinding, movement and stockpiling of materials
- surface grading and compaction
- vehicle and plant movement on unsealed haul roads
- hard and soft landscaping, including cutting pavers

Disturbed and exposed areas including haul roads, embankments and cuttings and stockpiles also have the potential to generate dust during windy conditions.

Excessive emissions from vehicles, plant and equipment typically result from poor maintenance and are more likely to occur when the engine is operating at or near capacity.

6.1. Planning and pre-construction

Prior to the commencement of construction the following management measures should be considered when planning the works:

- Incorporate specific management measures identified in the EIA into the Construction Environmental Management Plan and environmental control maps (refer to the Guide to Environmental Control Map – SD-015)
- Incorporate specific management measures identified in the EIA into the site induction, toolbox talk and pre-start meetings
- Minimise and stage land clearing to retain existing vegetation where possible (refer to the Vegetation Management (Protection and Removal) Guideline – SD-111)
- Where possible schedule construction activities that may generate dust to avoid periods with unfavourable wind conditions
- Plan deliveries to site and plant movements on site to minimise idling times and avoid vehicles idling in close proximity to adjacent residents and businesses
- Consult neighbouring stakeholders regarding their sensitivity to dust and schedule works accordingly, where feasible (e.g. avoid delivering materials during peak lunch service where there is outdoor dining, minimise dust-generating works during school sport days)
- Develop a monitoring regime and protocols to respond quickly to unfavourable weather conditions, including restricting activities, covering exposed surfaces / stockpiles and increasing watering
- Ensure relevant construction plant has effective watering mechanisms to damp down during works, particularly for rock hammering, cutting, profiling and breaking, and crushing, grinding and sorting

Select appropriately sized plant for the scope of works planned to ensure engines are not overworked.

6.2. During construction

During construction the following air quality management measures should be implemented:

- Regularly water all exposed surfaces, including haul roads, using water sprays or sprinkler systems
- Minimise the number of stockpiles onsite, avoid stockpiling in exposed areas and ensure long term stockpiles are covered or stabilised
- Progressively rehabilitate exposed areas on completion of different work stages, including providing temporary cover and commencing permanent landscaping as early as possible
- Ensure exposed areas are appropriately covered or sealed prior to periods of no work (eg. long weekends, picnic day weekends, holiday periods)
- Ensure vehicles and mobile plant use designated haulage and access routes and restrict traffic speeds on site
- Provide temporary sealing of roads and other exposed areas on site such as spray sealing or applying a crusting or binding agent
- Ensure that all vehicles transporting soils, rock or other materials are covered when entering or exiting the site
- Wash and remove soil from vehicle and mobile plant undercarriage and wheels
- Provide stabilised site access and clean roads and access points as required
- Maintain all vehicles and plant in accordance with manufacturer specifications.

7. Monitoring

7.1. Visual observations

Visual observations of air quality should be undertaken and documented daily on site in order to identify construction activities, vehicles, plant or equipment that are generating excessive air emissions. Additional mitigation strategies should be implemented where necessary.

Operation of vehicles, plant and equipment with excessive exhaust emissions (generally when visible continuously for more than 10 seconds) should cease until maintenance is undertaken and performance improved.

7.2. Weather and wind monitoring

Daily monitoring of weather forecasts should be undertaken to determine when adverse weather conditions are predicted. Provision of a weather station is also recommended, or a wind speed gauge as a minimum. Weather monitors can provide an alert when wind reaches a set velocity, indicating high risk conditions when activities may need to be restricted or additional mitigation implemented.

7.3. Dust monitoring

Dust monitoring may be required and is typically undertaken using a DDG to assess deposited matter over a fixed period, usually 30 days. Alternatively, high volume air samplers

may be used to provide data over 24 hour periods or in real time.

Monitoring must be undertaken in accordance with the applicable guidelines and industry standards, including the following:

- EPA Approved Methods for the Sampling and Analysis of Air Pollutants (January 2007)
- EPA Approved Methods for the Modelling and Assessment of Air Pollutants (August 2016)
- AS/NZS 3580.1.1:2016: Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment
- AS/NZS 3580.10.1:2016 : Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter- Gravimetric method
- AS/NZS 3580.9.6:2015 : Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM10 high volume sampler with size-selective inlet – Gravimetric method

8. Related documents and references

Document title and number
<u>Environmental Incident Classification and Reporting – PR-105</u>
<u>Guide to Environmental Control Map – SD-015</u>
<u>Vegetation Management Guidelines – SD-111</u>
<u>Chemical Storage and Spill Response Guidelines – SD-066</u>
EPA Approved Methods for the Sampling and Analysis of Air Pollutants (January 2007)
EPA Approved Methods for the Modelling and Assessment of Air Pollutants (2016)
Australian and New Zealand Standard AS/NZS 3580.1.1:2016: Methods for sampling and analysis of ambient air- – Guide to siting air monitoring equipment
AS/NZS 3580.10.1:2016 Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter- Gravimetric method
AS/NZS 3580.9.6:2015 Methods for sampling and analysis of ambient air Determination of suspended particulate matter – PM10 high volume sampler with size-selective inlet – Gravimetric method