



## Appendix 11: Dust Management Plan



# Plan

## Dust management plan

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### Environment

17 September 2024

IO-PL-EN-0001

Rev: 2



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# 1 PURPOSE

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This *Dust Management Plan* outlines the mandatory minimum requirements to ensure that the generation of dust from Fortescue activities in combination with naturally occurring background levels does not adversely impact environmental or social surrounds values.

## 1.1 Background

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Fortescue employees and contractors are obliged to comply with all relevant environmental Commonwealth and State legislation. Environment legislation directly relevant to this procedure is provided in Appendix A.

Definitions of terms and acronyms used throughout this procedure are provided in the *Definitions and Acronyms Guideline* (IO-GU-EN-0002).

## 1.2 Application

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This Plan shall be implemented at all Fortescue Iron Ore project and operational mine and rail work areas.

### 1.2.1 Exclusions

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Dust emissions associated with:

- Port Operations are addressed in the *Anderson Point Materials Handling Facility – Dust Management Plan* (P-PL-EN-0010).
- The Iron Bridge Concentrate Handling Facility are addressed in the *Iron Bridge Concentrate Handling Facility Dust Management Plan* (IB-0000-PL-EN-0003).
- Exploration activities are addressed in *Exploration Environmental Management Plan* (E-PL-EN-0002).
- Human health is addressed by the *Fibrous Management Procedure* (45-PR-SA-0024) and the *Dust Management Procedure* (200CO-00000-PR-SA-0006).



## 2 REQUIREMENTS

The minimum mandatory requirements for dust management are outlined in Table 1. In the event that regulatory and legal requirements contradict the requirements in this document, then the relevant regulatory or legal requirement will take precedent.

**Table 1: Minimum requirements**

| Requirement  | Accountable   |
|--|---|
| <b>Pre-approval</b>  |   |
| Undertake baseline dust monitoring in accordance with AS 3580.10.1 to quantify background dust levels prior to construction.   | Manager Primary Environmental Approvals   |
| Undertake dust dispersion modelling to determine potential impacts of dust emissions on sensitive receptors and vegetation.  | Manager Primary Environmental Approvals   |
| <b>Design</b>  |   |
| The design of facilities shall comply with the requirements specified in <i>Environment Basis of Design</i> (IO-ST-EN-0001).   | Project Manager / Mining Manager / Manager Rail Operations / Manager OPF  |
| Minimise vegetation clearing and disturbance during the design phase.  | Manager Operations Planning   |
| <b>Dust management</b>   |   |
| All dust related environmental obligations shall be captured in the Business Management System (BMS) and accountabilities against each obligation shall be assigned.   | Manager Environment Governance  |
| Undertake risk reviews to identify high risk areas where mitigation measures and dust suppression measures need to be implemented in accordance with <i>Environment Risk Assessment Procedure</i> (IO-PR-EN-0001).   | Manager Environment Projects & Closure / Manager Environment Australian Operations  |
| Conduct vegetation clearing in accordance with the <i>Land Use Certification Procedure</i> (100-PR-TA-0001) and <i>Ground Disturbance and Topsoil Management Procedure</i> (IO-PR-EN-0010).  | Project Manager / Mining Manager / Manager Rail Operations  |
| Ensure maintenance of dust suppression systems on ore processing facilities and associated infrastructure (e.g., conveyors, stockpiles).   | Project Manager / Manager OPF   |
| Implement measures for dust suppression as required. This may include, but is not limited to: <ul style="list-style-type: none"> <li>• Use of water carts</li> <li>• Application of a dust suppression agents in high traffic areas</li> <li>• Changes to material handling process</li> </ul> | Project Manager / Mining Manager / Manager Rail Operations / Manager OPF  |
| Undertake visual inspections, as required and at an appropriate frequency during high dust risk works particularly in vicinity of areas with known environmental or social surrounds values.   | Manager Environment Projects & Closure/ Manager Environment Australian Operations/ Project Manager/ Mining Manager/ Manager OPF |
| Conduct rehabilitation of disturbed areas, particularly in vicinity of areas with known environmental or social surround values, no longer required for operations.  | Project Manager / Mining Manager / Manager Rail Operations / Manager Operations Planning  |
| <b>Incident Response and Investigation</b>   |   |



|  |  |
|--|--|
| Investigate and address any dust related environmental incidents, including complaints or exceedances of dust trigger levels in accordance with the <i>Incident Event Reporting Procedure</i> (45-PR-SA-0080). | All  |
| <b>Documentation and Data Collection</b>   |  |
| Develop and implement a dust monitoring program, as required, as outlined in Appendix B – Monitoring Guidelines.   | Manager Environment<br>Projects & Closure/<br>Manager Environment<br>Australian Operations |
| Site specific procedures and plans will be developed where required, to ensure compliance, accountability and internal processes relating to dust management are maintained.                                   | Manager Environment<br>Australian Operations   |
| <b>Training and Communication</b>  |  |
| Ensure employee and contractor inductions outline requirements in relation to dust management.   | Manager Environment<br>Governance  |
| Poor dust management practices or improvement ideas shall be communicated to the area supervisor or site environment team.   | All  |



### 3 REFERENCES

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This Plan and all internal supporting documents will be managed as per Fortescue Document Governance Standards. The following may be read in conjunction with this Plan.

- [1] AS 3580.1.1: Methods for sampling and analysis of ambient air: Guide for siting air monitoring equipment.
- [2] AS 3580.9.3 - Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – Total Suspended Particulate matter (TSP) – High volume sampler gravimetric method.
- [3] AS 3580.10.1 – Methods for sampling and analysis of ambient air – Determination of particulate matter - Deposited matter – Gravimetric method.
- [4] AS 3580.9.11 Determination of suspended particulate matter - PM10 beta attenuation monitors
- [5] AS 3580.9.12 Determination of suspended particulate matter - PM2.5 beta attenuation monitors.
- [6] *A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities* (Department of Environment and Conservation 2011).
- [7] *Dust Deposition Monitoring Procedure* (45-PR-EN-0032)
- [8] *Environment Basis of Design* (IO-ST-EN-0001)
- [9] *Environment Risk Assessment Procedure* (IO-PR-EN-0001)
- [10] *Incident Event Reporting Procedure* (45-PR-EN-0080)
- [11] *Ground Disturbance and Topsoil Management Procedure* (IO-PR-EN-0010)
- [12] *Land Use Certification Procedure* (100-PR-TA-0001)



## DOCUMENT CONTROL

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| Dust management plan                     |  |                    |
|--|--|--------------------|
| Status                                   | IFU - Issued for Use   | 17-Sep-24          |
| Summary of Changes                       | <ul style="list-style-type: none"><li>- Included <i>Iron Bridge Concentrate Handling Facility Dust Management Plan</i> as an exclusion.</li><li>- Included Appendix B: Dust Monitoring Guidelines (supersedes 45-GU-EN-0004)</li></ul> |                    |
| Author                                   | Lewis Tosney   | _____<br>Signature |
| Checked or Squad Review# (if applicable) | Jane Humphrey  | _____<br>Signature |
| Approved                                 | Scott Poole  | _____<br>Signature |
| Next Review Date (if applicable)         | 17-Sep-28  |                    |



## APPENDIX A RELEVANT LEGISLATION

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### Act / regulation

*Environmental Protection Act 1986*

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*Environment Protection and Biodiversity Conservation Act 1999 (Cth)*

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*Environmental Protection Regulations 1987*

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*National Environment Protection Council (Western Australia) Act 1996 (WA)*

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## APPENDIX B MONITORING GUIDELINES

### B.1 Monitoring Site Selection

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#### B.1.1 General

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Selection of monitoring sites should be based on AS 3580.1.1 *Methods for the sampling and analysis of ambient air – Guide to siting air monitoring equipment*.

In the selection of a particular sampling site, it is essential that the sampling unit be situated to obtain data which are representative of the location. It should not be influenced by immediate surroundings, unless those influences are specifically being monitored e.g. ore processing facility.

#### B.1.2 Site Considerations

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After review of the risk assessment outcomes and the key monitoring dependencies the following considerations should be used to select the location of monitoring sites:

- Wherever possible, monitoring should be initiated in the pre-construction phase (i.e. prior to any mining related impacts) to obtain a baseline record.
- Monitoring sites should be established within development approved areas (i.e. permitted for clearing under the Land Use Certificate) and can be mobile and temporary or fixed and permanent.
- All sites should be a minimum of 10 metres from the nearest object or dripline of trees (that are higher than 2 metres from the height of the sample inlet).
- Avoid sites that have restricted airflows in the vicinity of the sampling inlet, such as sites adjacent to buildings, trees, walls, etc. As a general rule, a sampling inlet should be located away from any nearby structure to the extent that the sampling inlet has a minimum clear sky angle of 120°.
- Avoid sites which are adjacent to objects which may alter pollutant concentrations by adsorption or absorption, such as those near some building surfaces or near leafy vegetation.
- Avoid sites where chemical interference with the pollutant being measured may occur, e.g. emissions from diesel generator.
- Avoid sites where physical interference may produce atypical results, e.g. electrical interference to sampling equipment from nearby high voltage power lines.
- Ground level sampling sites (sample inlet less than 5 m above ground level) are generally preferable in low or sparsely built-up areas.
- Avoid sites that could be prone to natural disasters, such as flooding.
- Seek sites that have adequate access for transporting equipment, e.g. instruments, cylinders of calibration gas.



- Seek sites that have adequate and reliable electricity and communications supply.
- Seek sites where personnel will be able to perform their activities in a safe and secure environment in accordance with WHS requirements.
- Ideally, sites should be located at least 1 km from stock water points, to minimise variation in data due to cattle activity.
- A GPS location (MGA coordinates) for each monitoring site must be taken and recorded in a geospatial processing program.

## B.2 Monitoring Parameters

Monitoring parameters that should be considered are included in Table 2. Secondary parameters can be selected as required.

When selecting secondary monitoring parameters the following aspects should be considered:

- Parameter selection should demonstrably contribute to meeting the monitoring program objectives.
- Parameter selection should reflect the expected amenity/vegetation response, based on available scientific knowledge. Ideally the parameter selection will enable hypothesised responses to be quantitatively tested.
- Parameter selection should be appropriately matched to the spatial and temporal scales of monitoring.
- Ensure that capacity exists (or can be obtained) for analysing and interpreting the measured parameter dataset.
- It is generally better to monitor a small number of parameters correctly than a greater number of parameters with less accuracy and/or precision.

Table 2: Monitoring Parameters

| Parameter type | Monitoring parameter          | Description  |
|----------------|-------------------------------|--|
| Primary        | Vegetation condition / health | The primary and secondary dust monitoring parameters associated with vegetation condition and health should be referred to when developing a dust monitoring program.  |
|                | Dust deposition               | <p>Dust deposition measurements help evaluate if a particle source is a nuisance to residents or affects nearby vegetation. Dust can be measured using a gauge with a glass funnel and bottle, often left for a month to gather dust. Afterwards, it's analysed in a lab. The dust-fall rate is calculated by dividing the insoluble material's weight by the funnel's area and the sampling period, measured in milligrams/metre<sup>2</sup>/day.</p> <p>In Western Australia, there are no specific guidelines for dust affecting human amenity or vegetation health, so</p> |



|           |   |   |
|-----------|---|---|
|           |   | regular monitoring and observations may assist in developing management strategies.   |
|           | Climate data  | Water availability and temperature have fundamental effects on dust generation in arid environments and therefore essential to consider the influence of climate in dust monitoring programs.   |
| Secondary | Foliar pigment (e.g. chlorophyll) analysis<br>Soil moisture<br>Erosion<br>Photographic analysis | The primary and secondary dust monitoring parameters associated with vegetation condition and health should be referred to when developing a dust monitoring program.   |
|           | Total Suspended Particulates  | TSP monitoring measures the total suspended particulate matter in the air. TSP, with aerodynamic diameters under 50µm, often impacts amenity. A high-volume air sampler draws a large volume of air through a pre-weighed filter for 24 hours to measure TSP. The filter is then re-weighed, and the difference in weight indicates the particulate mass. |

### B.3 Monitoring Methodology

Fortescue's monitoring methodologies for primary and secondary parameters are guidelines rather than strict rules. It is crucial to standardise methods across all operations to ensure consistent data analysis, comparisons, and reporting. During the design phase of a monitoring program, review the relevancy and suitability of these methods.

#### B.3.1 Passive Sampling Methods

##### Dust Deposition Gauges

The dust deposition gauge is a basic and affordable tool for monitoring dust, capturing particles in a funnel and bottle setup. It measures dust deposition rates as mass per area per day. Easy to install in remote locations, it does not require power and can be left out for extended periods. However, results are hard to interpret due to the long field exposure (typically 30 days) and its inability to link dust levels to weather events like wind direction.

Physical observations and regular monitoring may help establish management triggers for Fortescue operations since there are no guidelines for human amenity or vegetation health.

The monitoring of dust emissions using a dust deposition gauge should be in accordance with Australian Standard 3580.10.1 Methods for sampling and analysis of ambient air, Method 10.1: Determination of particulate matter – Deposited matter – Gravimetric method.

#### B.3.2 Active Sampling Methods

Methods for undertaking this include the use of Beta Attenuation Monitors (BAM) or E-Samplers. These units are capable of providing near real-time data to inform operational decisions.



Refer to AS 3580.9.11 Determination of suspended particulate matter - PM10 beta attenuation monitors and AS 3580.9.12 Determination of suspended particulate matter - PM2.5 beta attenuation monitors.

TSP measurement is the least preferred method and should only be used for targeted monitoring. It involves a high-volume air sampler that pulls a set volume of air through a pre-weighed filter for 24 hours. The filter's weight difference after sampling indicates particulate mass, and TSP concentration is the particulate mass divided by the sampled air volume. This equipment needs electricity and cannot detect brief dust events.

This method should be aligned with Australian Standard 3580.9.3 Methods for sampling and analysis of ambient air: Method 9.3 Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High volume sampler gravimetric method.

### **B.3.3 Monitoring Frequency**

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The monitoring program should be developed to collect baseline air quality data before installing mine infrastructure or constructing railways.

For a monitoring program which is gathering data to inform operational activities, a Real Time monitoring network should be used. This information is collected at a near real time frequency (10-minute measurements).

A Dust Deposition program should be aligned to Australian Standard 3580.10.1 Methods for sampling and analysis of ambient air, Method 10.1: Determination of particulate matter – Deposited matter – Gravimetric method, which collects data on a monthly basis.

Gravimetric sampling will occur over a 30-day cycle. After each monitoring event, results should be assessed and the frequency of monitoring reviewed, potentially involving regulatory agencies.

### **B.4 Data Management**

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All data collected in the field or obtained after laboratory analysis must be transferred into Envirosys.