



Dust Management Procedure

Environment

1 Purpose and Scope

This procedure specifies the operational environmental requirements relating to dust management at the Roy Hill Project. This procedure applies to all personnel involved in activities at the Mine, Rail and Port operations that affect dust management.

2 Procedure

2.1 Management Actions

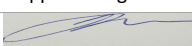
2.1.1 General Requirements

1. Implement dust suppression measures where dust generation is visible, except during topsoil clearing. Dust suppression measures should not be applied to areas where topsoil clearing is occurring as required by the 'Clearing and Soil Management Procedure' (OP-PRO-00187).
2. Use dust suppression measures (e.g. water trucks) on unsealed roads and access tracks, cleared areas and at locations of high dust risk (e.g. where dust lift off is likely or there is evidence of dust during low wind conditions).
3. Ensure that saline water (>5,000 mg/L total dissolved solids (TDS)) is not used for dust suppression unless approved by the Superintendent Environment.
4. Control saline water spray (e.g. through use of dribble bars or reducing length of spray bar) where saline water is permitted to be used for dust suppression, so that overspray does not come into contact with adjacent native vegetation.
5. Investigate use of dust suppressant additives or methods that reduce overall water consumption wherever practicable and cost effective.
6. Keep vegetation clearing and exposed surfaces to a minimum wherever practicable.
7. Vegetation clearing and earthworks should be avoided during high winds (>50 km/hr) where possible.
8. Implement additional dust suppression measures (such as increased frequency of water application) to minimise and control dust emissions where earthworks is required to be conducted during high winds.
9. Adhere to all vehicle speed limits, and reduce vehicle speeds on haul roads, work sites and camp sites where necessary to minimise dust emissions.

2.1.2 Mine and Rail Specific Management Actions

1. Avoid the use of scrapers during high winds (>50 km/hr) where possible.
2. Implement additional dust suppression measures to minimise and control dust emissions where scrapers are required to be used during high winds.
3. Avoid the laying of ballast during high winds (>50 km/hr) where possible.

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4. Implement additional dust suppression measures to minimise and control dust where ballast is required to be laid during high winds (such as increased frequency of water application).
5. Conduct a pre-blast assessment by taking into consideration the wind speed, direction and the strength of temperature inversions in order to minimise the impact of windblown dust.
6. Use water sprays or alternative dust suppression measures to manage dust generation from stockpiles.

2.1.3 Port Specific Management Actions

1. Regularly remove accumulated dust and any ore spillage using a road sweeper, bobcat/front end loader and other mobile equipment.
2. Maintain all dust covers, water sprays, dust extraction systems and other dust suppression systems and measures in good working order as outlined in the Port Bulk Ore Handling Facility Works Approval.
3. Monitor dust concentrations in accordance with the Operating Licence and as outlined in the Assessment of 'Port Dust Events Specification' (OP-SPC-00129).
4. Maintain the Roy Hill boundary dust monitoring network in good working order to ensure that data collected is accurate.

2.2 Training and Awareness

1. Familiarise all personnel associated with dust management activities with the requirements of this procedure.
2. Include information on dust management requirements in site inductions or site communications where relevant.
3. Conduct toolbox talks and develop environmental site notices and environmental awareness posters periodically highlighting dust management requirements – this is the responsibility of the Superintendent Environment Mine or Port and Rail (or delegate where required).
4. Display relevant environmental site notices and environmental awareness posters at prominent workplace locations.
5. Update the training records of personnel in the Learning Management System once registered training has been completed (with the exception of toolbox talks).
6. Maintain records of toolbox training attendance onsite for audit and inspection purposes.

2.3 Monitoring Actions

2.3.1 General Monitoring Actions

1. Undertake monitoring in accordance with approval conditions and commitments, and ensure that all data required for regulatory reporting is captured.
2. Store all monitoring records within the Roy Hill Document Management System.
3. Monitor and report dust levels at selected roads, buildings, camp sites and sensitive residences in accordance with the Licence.
4. Conduct continual visual dust inspection on site during dust generating activities.

2.3.2 Port Specific Monitoring Actions

1. Use Bureau of Meteorology (BOM) weather forecast information, data received from the project meteorological station and dust monitors to initiate proactive dust suppression measures such as the activation of stockyard water cannons prior to windy events.

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2. Maintain membership with Port Hedland Industries Council (PHIC) to ensure; ongoing access to real time emission data and maintenance of the Ambient Air Monitoring Network.
3. Monitor data from the six Roy Hill boundary dust monitors within the Port Loop.
4. Monitor data from the PHIC ambient dust monitor at Taplin Street.
5. Identify exceedances of trigger levels (alert levels and alarm levels) at the ambient Roy Hill boundary monitors and the PHIC network ambient monitor at Taplin Street, and assess if exceedances are attributable to Roy Hill operations. Note: interim trigger levels for ambient Roy Hill boundary monitors and for the PHIC ambient dust monitor at Taplin Street are outlined in Table 1 of 'The Assessment of Port Dust Events Specification' (OP-SPC-00129). Alert levels provide a preliminary alert to plan and take action to avoid an exceedance, and alarm levels require immediate action to be undertaken.
6. Identify and implement additional economical dust suppression measures where trigger levels are exceeded. Refer to the 'Assessment of Port Dust Events Specification' (OP-SPC-00129) for guidance on evaluating exceedances of trigger levels.
7. Review and update the interim and licence trigger levels (this is the responsibility of the Superintendent Environment Port and Rail (or delegate)):
 - If interim values are perceived as not adequate to capture high dust events from the stockyard;
 - If interim values trigger too often when there is no significant dust emissions from site;
 - Once 6 months of data has been collected from boundary and ambient monitors; and
 - Once 12 months of data has been collected from boundary and ambient monitors.
8. Use the 'Assessment of Port Dust Events Specification' (OP-SPC-00129) to assess exceedances of trigger levels and whether there are significant dust emissions from site.

2.4 Incidents, Audits and Inspections

1. Undertake regular inspections of the active work area against the requirements of this procedure.
2. Undertake regular compliance audits against the requirements of this procedure in accordance with the 'Environmental Audit Procedure' (OP-PRO-00018).
3. Schedule inspections and audits against the requirements of this procedure in accordance with the approved HSE Integrated Inspection and Audit Schedule.
4. Store copies of all audits and inspections within the Roy Hill Document Management System.
5. Undertake an investigation into the cause(s) of incidents reportable to regulators in accordance with the 'Incident Investigation Specification' (OP-SPC-00156) and develop actions to prevent recurrence of the incident.
6. Enter corrective and preventative actions from incidents, audits and inspections into the Roy Hill Incident Management System.
7. Undertake regular inspection and maintenance of dust extraction systems and dust suppression systems and measures in accordance with manufacturer's specifications.

2.5 Contingency Actions

1. Implement contingency actions in accordance with this procedure where deficiencies are identified during inspections, audits and incident reporting.
2. Implement the 'Management of External Complaints Procedure' (EA-PRO-00002), where relevant.

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3. Conduct a risk assessment to determine the most effective mitigation measures should additional contingency actions be required, and follow the change management process.
4. Investigate additional dust suppression measures and installation of additional dust monitors if community complaints are received regarding dust emissions attributable to Roy Hill operations.

2.6 Reporting Requirements

1. Report all non-compliances with this procedure, all regulatory exceedances and all community complaints as an incident in the Roy Hill Incident Management System.
2. Close out all incidents and corrective actions in accordance with the 'Incident, Non-Conformance and Action Management Procedure' (OP-PRO-00702).
3. Complete all reporting required within the relevant EnviroSys data entry forms or in the 'Contractor Environmental Report' (CER) (OP-FRM-00305).
4. Undertake reporting of dust emissions in the Annual Environmental Report as required.

3 Accountabilities

Unless otherwise specified, the following roles are accountable or responsible for the activities outlined in this procedure.

Role	Responsibility
General Managers	Accountable for ensuring that resources are available to support the implementation of this procedure where it is relevant to their area of responsibility
Managers	Accountable for the implementation of this procedure where it is relevant to their area of responsibility
Superintendents	Responsible for the implementation of this procedure where it is relevant to their area of responsibility
Environment Team	Responsible for review and update of this procedure

Table 1: Accountabilities

Personnel receiving alert or alarm notifications may include, but not be limited to:

- Shift Supervisors;
- Environment Advisors;
- Environment Superintendent; and
- Environment Manager.

4 Abbreviations

Abbreviation	Definition
BOM	Bureau of Meteorology
DEM	Dust Extinction Moisture
EMS	Environmental Management System
EPA	Environmental Protection Authority
km/hr	Kilometres per hour

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Abbreviation	Definition
µg/m ³	Micrograms per cubic metre
mg/L	Milligrams per litre
PHIC	Port Hedland Industries Council
ROC	Regional Operations Centre
SKM	Sinclair Knight Merz
TDS	Total dissolved solids
%w/w	Percentage weight for weight

Table 2: Abbreviations

5 Definitions

Term	Definition
Alarm Level	Dust monitoring trigger level which requires immediate action in accordance with the Assessment of Port Dust Events Specification.
Alert Level	Dust monitoring trigger level which provides a preliminary alert to plan and take action in accordance with the Assessment of Port Dust Events Specification.
Dust	<p>Dust is considered to be any particle suspended with the atmosphere. Particles can range in size and can become airborne through the action of wind turbulence, by mechanical disturbance of fine materials or through the release of particulate rich gaseous emissions.</p> <p>Particulate matter 10 micrometres or less in diameter (PM₁₀) may have human health impacts through the exacerbation of respiratory problems. The population most susceptible include the elderly, people with existing respiratory and/or cardiovascular problems and children. For this reason, PM₁₀ is the parameter monitored for dust emissions within this procedure (SKM, 2010).</p>
Dust suppression systems	<p>Installed equipment that is designed to reduce dust emissions and include:</p> <ul style="list-style-type: none">- Dust covers- Rubber curtains- Rubber skirts- Primary and secondary scrapers- Seals in transfer chutes and inspection doors- Water sprays- Water cannons- Dust extraction systems- Moisture analysers- Belt wash systems.
Dust suppression measures	<p>Measures manually implemented to reduce dust emissions that include:</p> <ul style="list-style-type: none">- application of water of an approved quality- application of bio-acceptable dust suppressants- covering with less dispersive material.
Operating Licence	The most recent Licence issued under <i>Environmental Protection Act 1986</i> , Part V.

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Operating Licence Alarm Trigger Level	Ambient (PHIC network monitor) trigger level at the PHIC Taplin Street location, in accordance with the Port Hedland Dust Taskforce Standard and Port Hedland Air Quality and Noise Management Plan. The trigger level is a 24-hour average of 70 µg/m ³ PM ₁₀ (reset at midnight) with no more than 10 exceedances per year at Taplin Street.
Operational Environmental Requirements	A plan, procedure or work instruction that must be complied with.
Saline water	Water that has > 5,000 mg/L TDS.
Sensitive receptor	A location where humans are likely to reside; this may include a dwelling, school, hospital, nursing home, child care facility or public recreation area that exist now and in the future (EPA, 2009).
Trigger Level	Criteria for assessing dust monitoring data, including ambient boundary monitoring trigger levels and ambient (PHIC network monitor) trigger level at Taplin Street,
24-hour average indicator	Dust boundary monitoring Alert or Alarm Trigger Level for exceedances occurring within a 24-hour timeframe.

Table 3: Definitions

6 References

Document number	Title
OP-SPC-00129	Assessment of Port Dust Events Specification
OP-PRO-00702	Incident Non-Conformance and Action Procedure
EA-PRO-00002	Management of External Complaints Procedure
OP-PLN-00204	Port Dust Management Plan
OP-PRO-00187	Clearing and Soil Management Procedure
Department of State Development, Mar 2010	Department of State Development. (Mar 2010). <i>Port Hedland Air Quality and Noise Management Plan – The Port Hedland Dust Management Taskforce Report</i> . Perth: Department of State Development.
EPA, 2009	Environment Protection Authority. (Jun 2009). <i>State Environmental (Ambient Air) Policy 2009. Draft Policy for Public and Stakeholder Comment</i> . Perth: Environmental Protection Authority.
SKM, 2010	Sinclair Knight Merz. (April 2010). <i>Roy Hill 55 Mtpa Air Quality Impact Assessment</i> . Perth: Sinclair Knight Merz.

Table 4: References

Note that up-to-date environmental documents should be accessed from the e-Care Roy Hill intranet portal to ensure that the current version is being used.

7 Review

This Procedure is to be reviewed as follows:

- Following the grant of or modification to relevant approvals;
- Annually; or
- As a result of findings or actions identified through inspections, audits and incident reporting.

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Reviews are to examine the appropriateness of this Procedure, taking into consideration corporate, system and compliance requirement changes since the last review was undertaken.

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