

COBURN MINERAL SAND PROJECT  
ENVIRONMENTAL MANAGEMENT  
PLAN

Dust Management Plan

*Prepared for*

**Gunson Resources Limited**

Level 2, 33 Richardson Street  
WEST PERTH

24 November 2006

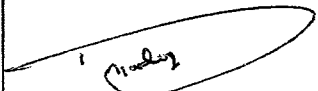
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## Environmental Management Plan Checklist: EAS Form 1b

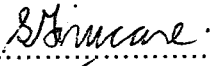
### General Information

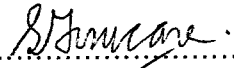
<b>Ministerial Statement No</b>	723	<b>Project Title</b>	Coburn Mineral Sand Project
		<b>Proponent</b>	Gunson Resources Limited
<b>EMP Title (including date and version number)</b>	<b>Dust Management Plan</b>		
	Date: Revision:		

EMP Content	Yes	No	Comments
Is the document structured according to the EMP guideline?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-
<b>Element</b> - Is the aspect appropriately described?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 1
<b>Current Status</b> – Are the project description and receiving environment details adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 2
<b>Potential Impacts</b> – Are the potential impacts described adequately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 3
<b>Environmental Objectives</b> – Are the objectives consistent with the Ministerial Statement and the EPA bulletin?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 4
<b>Performance Indicators/Criteria</b> – Are the indicators and criteria used meaningful, sufficient and appropriate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 5
Are the criteria verifiable and reproducible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Implementation strategy</b> – Are the strategies, tasks and the action program adequate for the environmental objectives?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 6
Have roles and responsibilities been identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Have adequate timeframes and priorities been identified?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Monitoring</b> – Is the program to monitor performance against objectives and criteria adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 7
Are details provided on how/when monitoring will be undertaken and reported?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Contingencies</b> – Are the mechanisms to identify actual and apparent non-conformance adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 8
Are the actions to address non-conformances adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Stakeholder consultation</b> – Is a list of major stakeholders and details of how and when they were and will be consulted, provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 9
<b>Auditing</b> – Are details of an audit process to demonstrate implementation and compliance provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 10
<b>Review and Revision</b> – Is a suitable process to assess the adequacy of the plan detailed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 11
<b>Reporting</b> – are the reporting details provided adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 12
<b>Key Management Actions Table</b> - Has adequate information been provided in the Table?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Section 13
Does the table list the key actions, how implementation will be reported and the evidence that will be provided to DoE?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Figures and Tables</b> – Have relevant figures and tables been provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-
<b>Advisory bodies</b> – Has advice been sought from all relevant advisory bodies and incorporated into the EMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Advice has been sought from appropriate government regulatory agencies and key stakeholders. Refer to attached letter.
Has evidence of this advice been provided with the document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Additional Comments</b>			
The EMP has been developed in accord with the DEC EMP guideline.	 ..... Environmental Manager		Date

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## 1.1 Background

Gunson Resources Limited (Gunson) is developing the Coburn Mineral Sand Project (the Project) in the Shark Bay district of Western Australia (WA), approximately 250 km north of Geraldton and 84 km southeast of Denham. The Project Area is located immediately east of the Shark Bay World Heritage Property (SBWHP). The Project will comprise the mining and processing of a major low grade heavy mineral sand deposit approximately 18 km long, up to 3 km wide and between 10 m and 40 m thick.

The Project was assessed as a Public Environmental Review (PER) under Part IV of the Western Australian *Environmental Protection Act 1986*. In addition, the Project is considered to be a "controlled action" under the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. The environmental assessment was conducted in accordance with the bilateral agreement between the Commonwealth of Australia and WA, meaning that the Commonwealth accredited the WA environmental impact assessment process.

The PER (URS, 2005a) was issued in July 2005 for an eight-week public review period and the Report and Recommendations of the WA Environmental Protection Authority (EPA) (EPA Bulletin 1211) was published in December 2005. Environmental approval for the Project was granted by the State Minister for the Environment in May 2006 (Ministerial Statement No. 723) and the Commonwealth Environment Minister in July 2006.

## 1.2 Aspect

This Dust Management Plan is part of a series of management plans (MPs) for the Project, that are known collectively as the Environmental Management Plan (EMP). The purpose of the EMP is to provide measures to prevent or mitigate potential impacts to the environment and heritage values during construction and operation of the Project. The MPs are based upon the impacts identified during the environmental risk assessment process undertaken during preparation of the PER, with consideration given to stakeholder comment and issues addressed during the EPA's and Department of Environment and Heritage's (DEH) assessment of the Project.

This Dust Management Plan has been prepared in accordance with Condition 12 of Ministerial Statement No. 723 (see Section 1.4), and Condition 8 of the DEH Approval Decision – Coburn Mineral Sand Project (EPBC 2003/1221).

The aspects relevant to the factor "dust" are identified in the EPA Bulletin 1211 as:

- The main emission with potential for off-site effects is particulate, primarily dust from large open sources associated with mining activities.
- Atmospheric modelling has indicated that there is a low potential for dust to affect the vegetation in the SBWHP, as the winds are predominantly from the south and windborne dust is predicted to be

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away from the SBWHP. The modelling has also shown that there is the potential for dust deposition at Hamelin Pool when mining commences on the northern end of the project area.

- Up to 1 g/m<sup>2</sup>/month could be deposited at the southern end of Hamelin Pool.

Air quality is a significant issue to be managed for all mining operations. Particulate emissions (dust) have the greatest potential to affect off-site air quality for the Project, and are anticipated to be generated by mining and associated activities including:

- Clearing of vegetation;
- Topsoil removal and replacement;
- Subsoil removal and stockpiling;
- Excavation of overburden and ore;
- Wheel generated dust from machinery and vehicle movements on-site; and
- Dust pick-up (wind erosion) from exposed areas, including the operational pit, areas cleared for the concentrators and offices, access roads, stockpiles and the accommodation camp.

Emissions of particulate matter may give rise to suspended particulate (Section 1.2.1) and deposited particulate (Section 1.2.2) depending on their particle size. Dust emissions are expected to be generated from the Project during each progressive phase of mine development, and may potentially impact upon sensitive receptors near the Project Area if not controlled.

### 1.2.1 Suspended Particulates

Suspended particulate matter is dust or aerosol that stays suspended in the atmosphere for significant periods. The current nomenclature is to describe fractions of suspended particulate as:

- PM<sub>10</sub>: all particulate effectively less than 10 microns (µm) in diameter;
- PM<sub>2.5</sub>: all particulate effectively less than 2.5 µm in diameter; and
- Total Suspended Particulates (TSP): total suspended particulate, generally less than 50 µm in diameter.

Within the range of suspended particulate, the group of particles which are sized 10 µm or less (PM<sub>10</sub>) has been associated with health effects including increases in mortality, aggravation of existing respiratory and cardiovascular disease, increased hospital admissions and increased asthma incidents. However, more recent research, indicates that it may be the PM<sub>2.5</sub> fraction that has the greatest impact on human health. Particulate that are larger than 10 µm tend not to be able to penetrate the respiratory tract and do not appear to be significant with respect to potential health effects.

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Major natural sources of background particulate levels include bushfires, pollen and wind-blown dust from exposed areas. Anthropogenic sources include stationary and mobile combustion sources, road dust, agriculture, mining, major fires and emissions from industrial processes. Background levels vary widely depending on location, meteorology and proximity of major point or area sources.

TSP and PM<sub>10</sub> are recognised as the primary pollutants of concern for the Project, in particular, those arising from fugitive sources. As such, dust mitigation measures have been recommended to minimise off-site impacts during the life of the Project. These are discussed in Section 6.

### 1.2.2 Deposited Particulate Matter

Deposited particulate matter is dust that, because of its aerodynamic diameter and density, rapidly falls from the air. In general terms, deposited particulate has a diameter of greater than about 20 µm. However, there is no sharp dividing line between these particles and the smaller particles of suspended matter that fall more slowly out of the air. Due to the size of the particulate matter, most of this material will not enter the body. Hence, the effects of deposited particulate are primarily nuisance and may only affect health via annoyance reactions and the like.

There is potential for deposited dust to affect vegetation health or other ecological receptors as a result of localised smothering, which were assessed as part of the PER. It is noted that removal of Pit 10 from the project design has substantially reduced the risk of deposited dust impacts on Hamelin Pool stromatolites (see also Section 2.1).

The dust deposition rate is measured as the amount of dust deposited on a horizontal surface as a result of gravitational settling over a specified time period. The units for this parameter are grams per square metre per month (g/m<sup>2</sup>/month).

Dust generation is most likely to occur during the transportation of Heavy Mineral Concentrate (HMC) on internal roads and during topsoil and overburden stripping activities. The construction and operation of the Project will also generate dust through clearing and topsoil removal and vehicular movement. The clearing will be staged to minimise the areas of exposed soil at any one time.

## 1.3 Standards and Guidelines

The air quality assessment for the Project evaluated predicted air emissions against a range of standards and guidelines, including:

- **National Environment Protection Measure (NEPM) for Ambient Air Quality.** The standards defined in this measure are concentrations set to ensure that public health, amenity and the environment are protected. The NEPM has established standards for particulates as PM<sub>10</sub>, and advisory reporting standards for PM<sub>2.5</sub>;
- **National Health and Medical Research Council (NHMRC) Air Quality Guidelines;** and

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- **New South Wales Impact Assessment Criteria.** These define impact assessment criteria to be applied in the design stages of an activity to ensure that there will be no impact on people's health or amenity. The NSW EPA have set a criterion of 4 g/m<sup>2</sup>/month for deposited dust to protect amenity.

The WA Department of Environment and Conservation (DEC) and EPA routinely adopt (where necessary) ambient air quality guideline values in the assessment of new proposals, and in the management of both local and regional ambient air quality. As a matter of policy, the EPA and DEC have now adopted the NEPM standards for ambient air quality.

In relation to dust impacts, as the primary air quality issue of concern for the Project, off-site concentrations of particulates are predicted to be well below the relevant NEPM standards at nearest residential receptors.

It is recognised that the NEPM standards, or either of the other air quality guidelines discussed, are not directly applicable to monitoring of deposited dust levels as required by Condition 12-2 (6). Gunson will therefore, with agreement from the DEC Air Quality Branch, compare on-going dust deposition monitoring results to an average of the baseline study dust deposition levels as a representative benchmark to evaluate performance of dust management strategies defined in this MP.

Other relevant legislation and guidelines includes:

- *Environmental Protection Act 1986*;
- EPA Guidance Statement No.18 (Prevention of Air Quality Impacts from Land Development Sites 2000) also provides guidance on the control of dust and smoke from land development sites; and
- DEH Best Practice Environmental Management in Mining – Dust Control.

## 1.4 Ministerial Conditions

The Ministerial Conditions relevant to dust management for the Project from Ministerial Statement No. 723 are provided below:

### 12 Dust

12-1 Prior to ground-disturbing activity, the proponent shall prepare a Dust Management Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

12-2 The Dust Management Plan required by condition 12-1 shall include:

1. baseline and ongoing monitoring;
2. prevention of visible dust in the Shark Bay World Heritage Property;
3. details of management and/or mitigation measures to minimise dust;

4. monitoring of the effects of dust and saline water used for dust suppression on vegetation;
  5. preventative measures to minimise fugitive dust sources as part of daily operations;
  6. monitoring of deposited dust levels at the boundary of the proposal area and at Hamelin Pool for the initial three years of the project to provide baseline data;
  7. provision for continuous improvements in dust management; and
  8. monitoring and reporting.
- 12-3 Prior to ground-disturbing activity, the proponent shall implement the Dust Management Plan required by condition 12-1.
- 12-4 The proponent shall make the Dust Management Plan required by condition 12-1 publicly available.
- 12-5 The proponent shall report within the Annual Environmental Reports required by condition 5-4 the outcomes of any monitoring programs and performance reviews associated with the implementation of the Dust Management Plan required by condition 12-1.

The requirements of the Dust Management Plan are outlined in Condition 12-2. Table 1.1 identifies where in this document these requirements have been addressed.

**Table 1.1**  
**Management Plan Requirements**

<b>Ministerial Condition</b>	<b>Requirement</b>	<b>Section Addressed in this MP</b>
12-2 (1)	baseline and ongoing monitoring.	Section 7
12-2 (2)	prevention of visible dust in the Shark Bay World Heritage Property.	Sections 6 and 13
12-2 (3)	details of management and/or mitigation measures to minimise dust.	Sections 6 and 13
12-2 (4)	monitoring of the effects of dust and saline water used for dust suppression on vegetation.	Section 7.1.2
12-2 (5)	preventative measures to minimise fugitive dust sources as part of daily operations.	Section 6
12-2 (6)	monitoring of deposited dust levels at the boundary of the proposal area and at Hamelin Pool for the initial three years of the project to provide baseline data.	Section 7.1.1
12-2 (7)	provision for continuous improvements in dust management.	Sections 6, 13 and 8
12-2 (8)	monitoring and reporting.	Sections 10 and 12

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## 1.5 DEH Condition

The Condition relevant to dust management for the Project from the DEH Approvals Decision – Coburn Mineral Sands Project (EPBC 2003/1221) is provided below:

8. Prior to the commencement of mining operations, the person taking the action must prepare a Dust Management Plan as detailed in Condition 8 of the *Statement that a proposal may be implemented (Pursuant to the provisions of the Environmental Protection Act 1986) Statement No. 723*, published on 22 May 2006. The plan must be implemented.

This Dust Management Plan has been prepared to comply with Condition 8. The plan was also implemented in October 2006 through the installation of the dust gauges and the commencement of the monitoring programme.

## 2.1 Project Overview

The Project proposed in the PER included mining and processing of ore from ten open cut pits. However, during the environmental assessment process, Gunson decided to seek approval to develop only nine pits until operational data became available to validate and refine the prediction of environmental impacts associated with Pit 10. Consequently, the main components of the Project comprise:

- Nine open-cut mine pits;
- Up to two processing plants that will be relocated as mining progresses;
- A borefield;
- Haul roads and access corridors;
- Offices, workshops and other supporting infrastructure; and
- An accommodation camp.

The key characteristics of the approved Project are summarised in Table 2.1.

**Table 2.1**  
**Key Characteristics of the Coburn Mineral Sand Project**

Element	Description
Project Life	Approximately 12 Years.
Number of Pits	Nine pits.
Rate of Mining	Approximately 2,300 tonnes per hour (tph) for the first two years, increasing to 4,600 tph in Year 3 (~15 million tpa for Years 1 and 2, and 30 million tonnes per annum [tpa] for Years 3 to 12).
Mining Method	Dozers and in-pit screening modules.
Estimated Footprint of Disturbance	Approximately 3,695 hectares.
Rate of Processing	Approximately 2,200 tph for the first two years increasing to 4,400 tph in Year 3 (~140,000 tpa of Heavy Mineral Concentrate from Year 1 increasing to 280,000 tpa from Year 3).
Estimated Volume of Tailings	2,180 tph for each 2,200 tph concentrator.
Volume of Process Water	Up to 18 GL/annum at full production.
Estimated Total Volume of Refined Product	Ilmenite – 1,400 kilotonnes (kt) HiTi – 380 kt Zircon – 660 kt

Source: Schedule 1 of Ministerial Statement No. 723

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## 2.2 Existing Environment

### 2.2.1 Existing Air Quality

At present there are no atmospheric emissions at the site beyond natural background levels of dust. There are no ambient air quality data available for the region. However, given the rural nature of the area and the lack of either urban population or industry, existing air quality is expected to be good. On occasion, suspended and deposited particulate levels may be elevated due to windblown dust, erosion and/or bushfires. Soil and landform studies commissioned by Gunson have confirmed that the surface sands of the Project Area have a proportion of fine sand and a degree of instability due to wind erosion.

### 2.2.2 Climate and Meteorology

The Shark Bay district is located within a transitional climatic region that experiences an overlap of tropical and temperate zones, resulting in hot dry summers and mild winters. The area is classified as a Hot Grassland (summer drought) by Bureau of Meteorology (BOM, 2003). The area is affected by the winter circulation of the south, and the monsoonal summers of the north.

The maximum temperature is high most of year, and extreme in summer. Summer can bring thunderstorm activity, significant rainfall, tropical cyclones, extreme wind, low levels of cloud cover, extended sunshine duration and high levels of incident solar radiation.

Rainfall is sporadic, with annual precipitation ranging 200-400 mm. The timing and magnitude of rainfall events are highly influenced by cyclonic and thunderstorm activity. Average annual rainfall is about 212 mm at Hamelin Pool. The majority of rain falls between May and August. Evaporation is high, ranging from 3,000 mm in the east to 2,000 mm in the west. This is largely attributed to the lack of cloud cover, low humidity and medium to strong winds. Table 2.2 provides climate data for the Hamelin Pool weather station, which is located to the north of the Project Area.

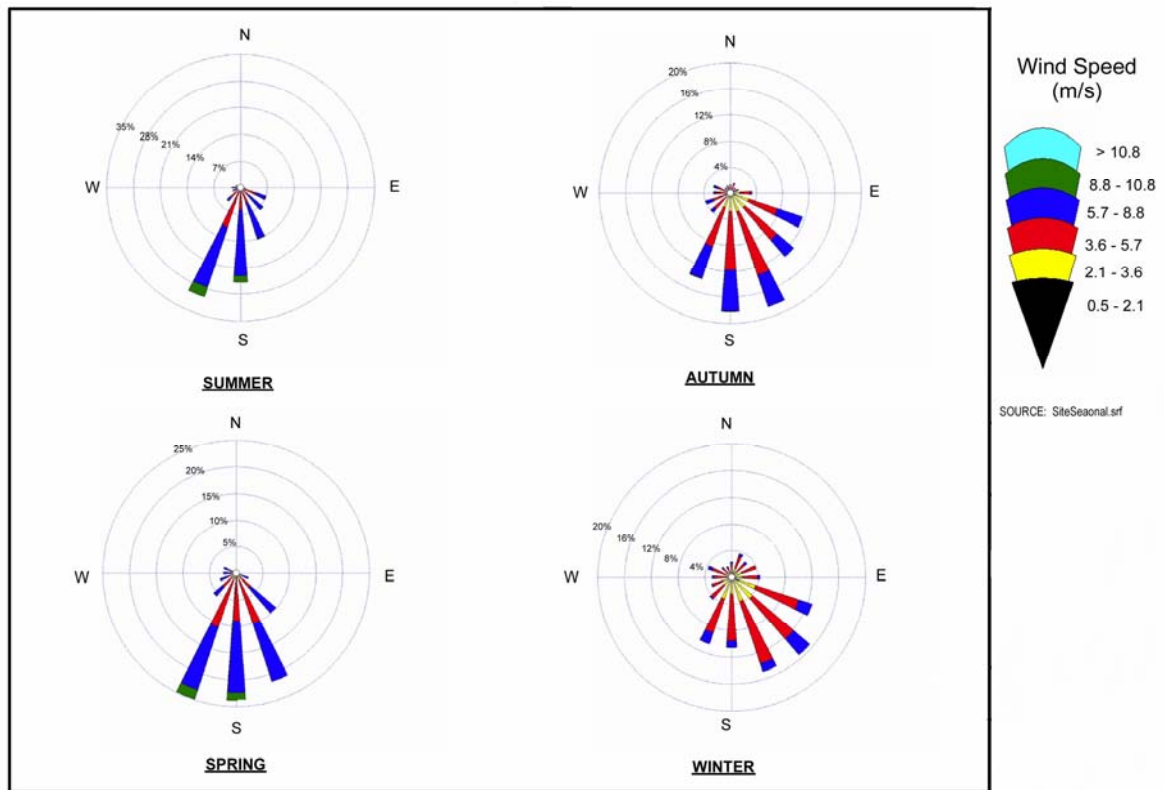
The area is influenced by southeast trade winds, which generate southerly winds for the majority of the year. During summer, southerlies consistently blow over 25 km/hr for several days. Cyclones generating wind gusts up to 180 km/hr occur periodically over summer and autumn.

Figure 2.1 presents the Coburn Project Area TAPM data as seasonal windroses for 2002. The windroses were generated to characterise the existing meteorological conditions and validate the meteorological data files for modelling purposes.

**Table 2.2**  
**Climatic Data from Hamelin Pool Weather Station**

Month	Mean Monthly Rainfall (mm)	Mean Daily Maximum Temperature (deg C)	Mean Daily Minimum Temperature (deg C)	Mean Daily Evaporation (mm)	Mean Monthly Evaporation (mm)	Mean Wind Speed (km/h)	Mean Relative Humidity (%)
Jan	7.6	36.9	20.5	13.4	415.4	18.1	39.5
Feb	13.1	36.7	21.2	13.9	392.7	17.8	42.5
Mar	15.7	34.9	20.1	11.6	359.6	16.5	43.0
Apr	13.7	30.3	17.0	7.1	213.0	14.7	48.0
May	33.1	25.2	13.2	5.2	161.2	13.4	54.0
Jun	47.7	21.5	10.6	3.4	102.0	12.2	63.5
Jul	40.2	20.7	9.2	3.4	105.4	13.3	62.5
Aug	21.5	22.2	9.4	4.7	145.7	14.4	55.0
Sep	8.1	25.4	11.1	6.5	195.0	17.5	46.5
Oct	5.2	28.2	13.0	10.0	310.0	19.2	42.0
Nov	3.7	31.8	15.8	11.0	330.0	19.6	39.0
Dec	2.4	34.8	18.3	12.5	387.5	18.5	39.0
Annual	211.9	-	-	-	3,117.5	-	-
Daily	-	29.1	15.0	8.7	-	16.3	47.5

Source: BOM (2004); BOM station 006025 Hamelin Pool; 20 to 105 years of record.



**Figure 2.1: Windrose for Coburn 2002 (TAPM Generated)**

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### 3.1 Sensitive Receptors

The original layout for the Project included development of Pit 10, with potential sensitive receptors from dust deposition modelling including:

- Stromatolites at Hamelin Pool; and
- Vegetation in the SBWHP.

Gunson has since withdrawn Pit 10 from the Project, and hence the likelihood of adverse impacts to the stromatolites of Hamelin Pool has largely been negated. The potential for dust deposition on the Hamelin Pool stromatolites due to the implementation of the Project was already low. However, no impact is expected with mining operations ceasing at the completion of Pit 9, which is located some 20 km to the south of Hamelin Pool (URS, 2006a).

### 3.2 Emissions Inventory

An emissions inventory was prepared in accordance with the National Pollutant Inventory (NPI) Emission Estimation Technique (EET), Manual for Mineral Sands Mining and Processing (Environment Australia, 2001). The inventory comprises a large number of fugitive sources such as removal of overburden and wind erosion of exposed areas. Emission estimates from these types of sources relies heavily upon calculations using emission factors. Emissions of dust were determined for two mining periods for the proposed operations that represent 'worst case' scenarios for off-site impacts to surrounding receptors:

1. *Scenario 1* - During the first period of operation during which it is anticipated to have greatest exposed areas of disturbance as the initial pits, infrastructure and haul roads are constructed; and
2. *Scenario 2* - Towards the end of the mining operations, during which the mining will be at its northernmost extent and closest to Hamelin Pool.

For the PER, Gunson estimated that approximately 20 million tonnes per annum of overburden and ore would be moved in the first two years, increasing up to 50 million tonnes per annum in subsequent years, and these figures were used for modelling purposes. However, the Detailed Feasibility Study (DFS) indicates that there will be 27 million tonnes per annum of overburden and ore moved in the first two years and up to 60 million tonnes per annum in subsequent years.

It is felt that as the changes to the Project characteristics are related to post construction activities, the results of the emissions inventory and dispersion modelling will still be valid for the initial construction period, which includes construction of the access road, accommodation camp and associated infrastructure. Towards the end of this construction stage, Gunson will assess whether the emissions inventory and dispersion modelling require updating for the remainder of the Project, when results from the dust deposition monitoring have been analysed and the effectiveness of the dust management measures implemented have been assessed.

Mining activities that have the potential to result in dust emissions include the following:

- Topsoil removal and replacement;
- Subsoil removal and stockpiling;
- Excavation of overburden and ore;
- Wheel-generated dust from machinery and vehicle movements on-site; and
- Dust pick-up (wind erosion) from exposed areas, including the operational pits, areas cleared for the concentrators and offices, access roads, stockpiles and the accommodation camp.

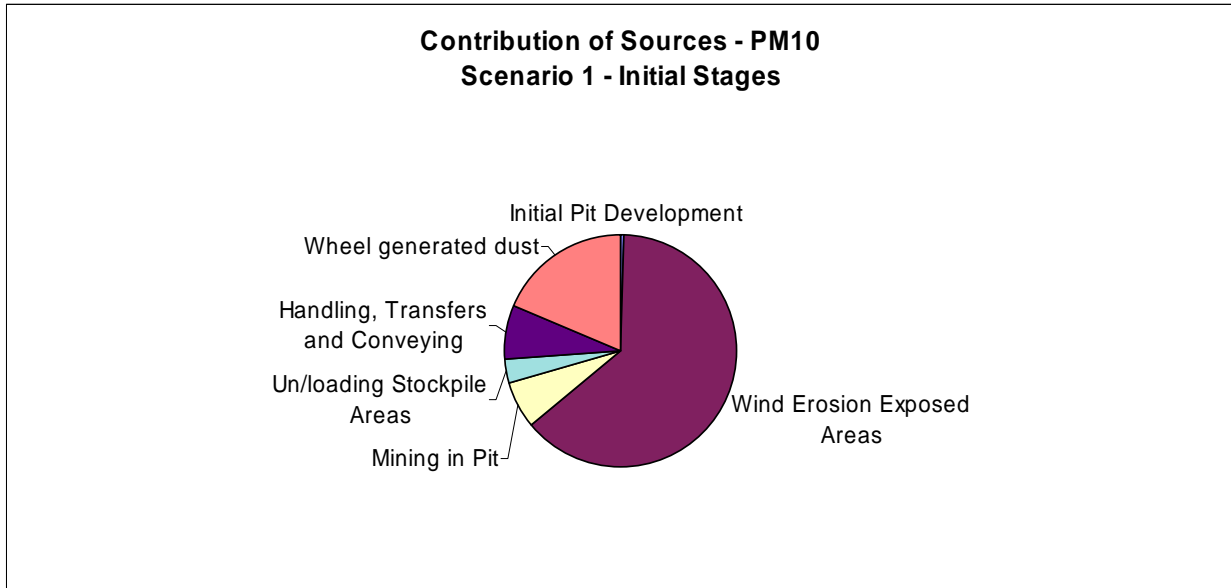
These emissions are typically referred to as ‘fugitive’ emissions. That is, they arise from open ‘area’ or ‘volume’ sources and are often intermittent. The annual emission estimates of TSP and PM<sub>10</sub> for Scenario 1 and 2 are provided as Table 3.1 (fugitive sources).

**Table 3.1  
Emissions Inventory: Fugitive Sources**

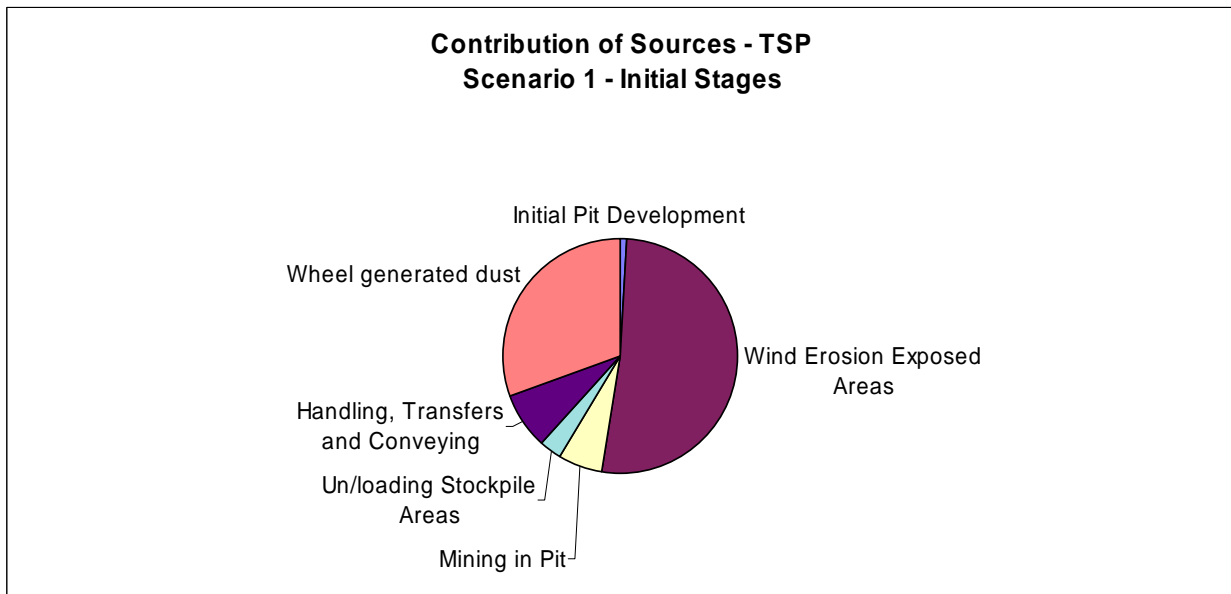
Fugitive Sources	Scenario 1		Scenario 2	
	Annual Emission TSP	Annual Emission PM <sub>10</sub>	Annual Emission TSP	Annual Emission PM <sub>10</sub>
	(kg/yr)	(kg/yr)	(kg/yr)	(kg/yr)
Initial Pit Development	3,100	1,002	3,100	1,002
Wind Erosion Exposed Areas	215,360	107,680	221,235	110,617
Mining in Pit	25,521	11,417	51,042	22,834
Un/loading Stockpile Areas	13,148	5,882	23,172	10,367
Handling, Transfers and Conveying	31,536	12,614	63,072	25,229
Wheel generated dust	127,385	31,591	254,770	63,182
<b>TOTAL (kg/yr)</b>	<b>416,049</b>	<b>170,186</b>	<b>616,390</b>	<b>233,231</b>
<b>TOTAL (t/yr)</b>	<b>416</b>	<b>170</b>	<b>616</b>	<b>233</b>

(Based on NPI Emission Estimation Technique Manual for Mineral Sands Mining and Processing, Version 1, Environment Australia 2001)

The greatest contributor to PM<sub>10</sub> emissions on an annual basis is wind erosion of exposed areas (Figure 3.1). This is also true of TSP emissions (Figure 3.2). The second greatest contributor to dust emissions is wheel generated dust. As this method of emission is assumed to occur over all the access roads, its effect on ground level dust concentrations at any one point is expected to be less substantial. This is due to the total area of the roads and their proximity to the rest of the access road network.



**Figure 3.1: Annual PM<sub>10</sub> Emissions by Source (Scenario 1 – Initial Development)**



**Figure 3.2: Annual TSP Emissions by Source (Scenario 1 – Initial Development)**

### 3.3 Dispersion Modelling

To assist with the air quality assessment, an atmospheric dispersion modelling study was undertaken in order to estimate maximum pollutant concentrations. TAPM (v.2.0) and AUSPLUME (v.6) were used to model potential air quality impacts arising from the Project in accordance with the EPA guidelines. Further detailed information regarding these models and methodology is provided in the Air Quality Assessment Report (Appendix N of URS, 2005b).

All particulates were modelled to predict maximum downwind concentrations. The following assumptions were used for modelling:

- The terrain was assumed to remain at sea level (flat) for the entire area of the site;
- Building dimensions were not considered as part of the modelling exercise; and
- The average canopy height of the terrain surrounding the site is approximately 2 m due to the presence of woodlands. A roughness factor of 0.4 m was therefore designated for land use. This roughness height is categorised as ‘rolling rural’ in AUSPLUME.

All particulate emissions were assigned to either ‘area’ or ‘volume’ sources and included in the dispersion modelling as follows:

- Volume sources (such as truck un/loading and stockpiles experiencing wind erosion) were located on the perimeter of the mine pit and assumed to be 3 m high;
- The area sources were all approximated to rectangular shapes and were set at ground level (including access roads). They were located based upon the south western corner of the area and aligned upon north within the grid coordinates and terrain already specified in AUSPLUME; and
- Deposited dust was based on the TSP emissions of Scenario 2 (Table 3.1) to capture the worst case of deposition into Hamelin Pool. Deposition was modelled as an annual average. This annual average was divided by 12 to convert it to a monthly average for comparison with the guideline value.

Table 3.2 presents a summary of the maximum predicted concentrations at all offsite receptor locations and at the discrete receptors (nearest sensitive receptors) for comparison with the respective guidelines. It should be noted that dispersion modelling was conducted prior to the removal of pit 10 from the Project.

**Table 3.2  
Dispersion Modelling Results**

<b>Pollutant</b>	<b>Maximum Predicted Concentration</b>	<b>Guideline</b>	<b>Units, Time Average</b>
TSP			
Off-site	20.27	90	µg/m <sup>3</sup> , annual
Coburn Homestead	0.16		
PM <sub>10</sub> (24- hours)			
Off-site	20	50	µg/m <sup>3</sup> , 24-hours
Coburn Homestead	1.8		
PM <sub>10</sub> (annual)			
Off-site	1.7	30	µg/m <sup>3</sup> , annual
Coburn Homestead	0.06		

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Dust modelling studies have indicated that there is potential for off-site issues associated with dust, particularly given the strong southerly winds occur during much of the year. Therefore, this plan focuses on the management of fugitive dust. Fugitive sources of particulate (as PM<sub>10</sub>) represent the greatest contributor to regional air emissions, though modelling results indicate that maximum off-site concentrations are within guideline criteria for all particulate types.

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The main environmental objectives for the Project in regard to management of dust emissions are as follows:

- Ensure that dust emissions, both individually and cumulatively, meet limits agreed upon after baseline data have been obtained and reviewed, and does not cause environmental or human health problems. In particular, dust emissions should not adversely affect vegetation and stromatolites within the SBWHP; and
- Use all reasonable and practicable measures to minimise fugitive airborne dust from the Project Area.

## 5.1 Dust Deposition

There are currently no statutory criteria for dust deposition in Western Australia. The NSW EPA criterion of 4 g/m<sup>2</sup>/month is defined to be applicable to protecting human amenity only. No standards are known to exist in relation to dust deposition impacts on non-human (biophysical) receptors.

In the absence of suitable criteria for dust deposition, Gunson will compare the ongoing dust deposition monitoring results to an average of the baseline study dust deposition levels. Performance indicators will therefore be set once baseline dust deposition results have been obtained, and modified whenever relevant air quality criteria are set.

## 5.2 Complaints

Another commonly used performance indicator for dust-related matters in industry is the number of complaints received in relation to dust emissions. Gunson will implement a complaints register. Details to be recorded include but are not limited to:

- The nature of the complaint;
- The time and date of the complaint;
- The complainant (including internal or external); and
- Any (remedial) action taken.

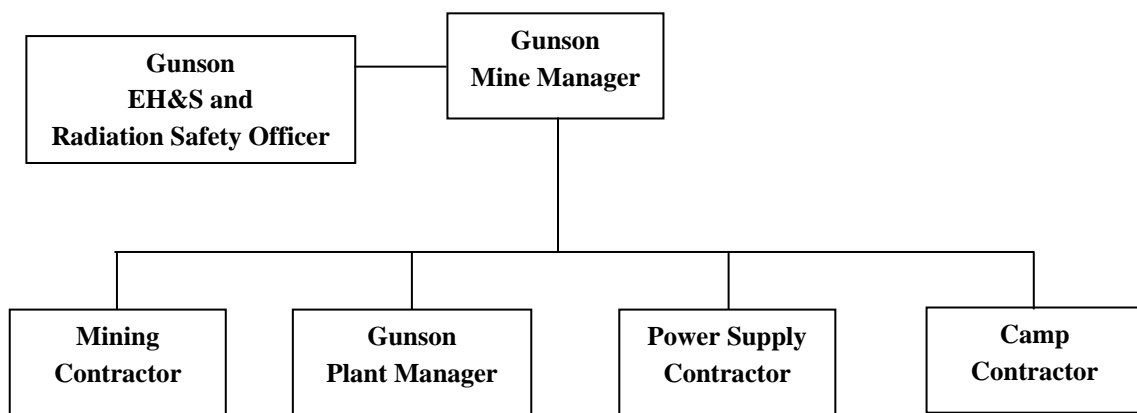
All complaints will be investigated by the Environmental, Health and Safety (EH&S) Officer and remedial action taken where necessary. Due to the remote nature of the Project, a limit of one external complaint and three internal complaints a month will be set. When either of these limits has been exceeded, the EH&S Officer must conduct a formal investigation with details to be submitted to the Mine Manager.

## 5.3 Effects of Dust and Saline Water Used for Dust Suppression on Vegetation

The EH&S Officer will implement a vegetation health rating system from photographs obtained through the monitoring programme discussed in Section 7.12. This will be based on comparative photographs illustrating similar vegetation within the area from a 1 (healthy) – 5 (dead). A reasonable limit will have to be set. For example, if vegetation health decreases by a rating of two, contingency actions are then implemented.

Gunson has outlined a range of measures designed to minimise dust impacts from the construction and operation of the Project (Table 6.1). Specific systems-focussed management measures that will be conducted on-site by Gunson employees will be contained in an Environmental Management System.

Gunson has developed a preliminary site organisational structure (Figure 6.1), with both a Mine Manager and an EH&S Officer directly employed by Gunson and based on-site. Responsibility for management actions has therefore largely been given to one of these two roles. However, it is expected that Gunson’s contractors will implement these actions with supervision, review and audit conducted by Gunson’s EH&S Officer and Mine Manager.



**Figure 6.1: Schematic Organisational Chart**

**Table 6.1  
Management Actions, Timing and Responsibility for Compliance with Objectives**

Activity/Source of Dust	Priority	Management Action	Responsible Personnel	Timing
Clearing	1	No clearing will be undertaken unless specifically required, and clearing activities shall be avoided in spring where possible.	Mine Manager	Construction/operation
		The extent of the proposed clearing will be clearly marked by flagging tape. This clearly delineates the area to be cleared while still allowing fauna to relocate.	EH&S Officer	Prior to ground disturbing activities
		Maps will be produced that detail areas to be cleared, including the timing of the clearing operations and areas rehabilitated. These maps will be updated on a regular basis.	EH&S Officer	Prior to ground disturbing activities
		Where possible, equipment will be placed on flattened vegetation rather than clearing.	EH&S Officer	Construction/operation/rehabilitation
		Vegetation and soil clearing will not be conducted during high wind events.	EH&S Officer	Construction/operation

**Table 6.1 (cont.'d)**

Activity/Source of Dust	Priority	Management Action	Responsible Personnel	Timing
Site-wide/Exposed Areas	2	Water will be applied at regular intervals to control dust. During dry and windy weather conditions the application of water will occur more frequently. Application of water will occur by sprinkler system or water cart. Fresh water will be used in areas to be rehabilitated. Dust suppression water additives will be investigated in the hope that this will improve the effectiveness of dust suppression and reduce water consumption.	EH&S Officer	Construction/operation
		Daily monitoring, through environmental inspections, will be conducted to ensure adequate dust control measures are being implemented.	EH&S Officer	Construction/operation
		When activities have ceased or are not expected to occur for a period of greater than one month (or earlier if wind conditions are forecast or result in visible dust), efforts will be made to control dust through the use of mulch, temporary vegetation cover, gravel or other means.	Mine Manager	Construction/operation
		Site-specific dust minimisation and mitigation training will be conducted for all contractors and site personnel.	EH&S Officer	Construction/operation
		Monitoring of current and forecast wind conditions using daily forecasts from the Bureau of Meteorology and real time wind speed and direction monitoring data will be undertaken.	EH&S Officer	Construction/operation

**Table 6.1 (cont.'d)**

Activity/Source of Dust	Priority	Management Action	Responsible Personnel	Timing
Site-wide/Exposed Areas (cont.'d)	2	Implementation of the Progressive Rehabilitation Management Plan shall occur.	EH&S Officer	Construction/operation/rehabilitation
		Activities that generate significant amounts of fugitive dust will be postponed during high wind events. The EH&S Officer will have the authority to stop work.	EH&S Officer	Construction/operation/rehabilitation
Wheel Generated Dust/Roads	3	All sealed haul roads will be cleaned as necessary with spray trucks with brushes and/or personnel with hand equipment to remove any accumulated material from roadways.	Mine Manager	Construction/operation
		Ensure all unsealed roads are constructed and maintained to a satisfactory condition to minimise dust.	Mine Manager	Construction/operation
		Water will be routinely applied to road surfaces during active operation.	Mine Manager	Construction/operation
		Ensure adequate speed limits are set, sign posted and adhered to for all roads.	Mine Manager	Construction/operation
		Loads are to be kept within designated load limits and load covers always used.	Mine Manager	Construction/operation
		Haul truck traffic shall be limited to authorised routes and designated entrance and exit points.	Mine Manager	Construction/operation

**Table 6.1 (cont.)**

Activity/Source of Dust	Priority	Management Action	Responsible Personnel	Timing
Wheel Generated Dust/Roads (cont.'d)	3	All drivers are to receive site specific training on dust minimisation.	EH&S Officer	Construction/operation
Handling, Transfers and Conveying	4	Multiple handling of material that has the potential to generate dust will be avoided where possible.	Mine Manager	Construction/operation/rehabilitation
		Conveyor loads shall be kept within designated load limits and conveyor covers used where practical.	Mine Manager	Operation
Un/loading Stockpile Areas	5	If practical, un/loading and stockpile areas will be located in places with protection from wind erosion.	Mine Manager	Construction/operation
		Stockpiles will be of a suitable height, width and slope to minimise wind effects.	Mine Manager	Construction/operation
		Activity will be limited to the downwind side of the stockpile and stockpiles are not to be used during high wind events.	EH&S Officer	Construction/operation/rehabilitation
		Where the life of the stockpile is longer than one month, efforts will be made to control dust through the use of mulch, temporary vegetation cover, gravel or other means.	EH&S Officer	Construction/operation/rehabilitation
		Watering sprays will be utilised on stockpiles if wind is lifting material.	EH&S Officer	Construction/operation/rehabilitation

**Table 6.1 (cont.'d)**

Activity/Source of Dust	Priority	Management Action	Responsible Personnel	Timing
Un/loading Stockpile Areas (cont'd.)	5	Whenever possible, stockpiling operations will reduce material drop height when loading-out to stockpiles and/or trucks.	Mine Manager	Construction/operation
		If practical, material will be wetted prior to loading/disturbing to minimise the generation of dust.	Mine Manager	Construction/operation/ rehabilitation
Site Access Points	6	Grates will be placed at Project access points to knock loose dirt and debris from vehicles. If this is not sufficient vehicles will be washed prior to leaving site.	Mine Manager	Construction/operation/ rehabilitation
		Speed limits and access restrictions are to be posted at all Project access points.	Mine Manager	Construction

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## 7.1 Background

It is anticipated that through the implementation of the management actions, the likelihood of adverse dust impacts arising from the Project will be minimised. To monitor progress towards this objective, the following monitoring procedures will be implemented:

- Baseline and ongoing dust deposition monitoring; and
- The effects of dust and saline water used for dust suppression on vegetation.

### 7.1.1 Dust Deposition Monitoring

Gunson has committed to installing five dust deposition gauges for the purposes of determining baseline dust deposition levels, and for ongoing operational dust deposition monitoring. Dust deposition gauges will initially be located at appropriate sites, as illustrated in Figure 7.1, and in accordance with AS2922-1987 *Ambient Air - Guide for the Siting of Sampling Units*. One gauge will be located near Hamelin Homestead (Hamelin Pool), reflecting ambient dust levels at Hamelin Pool which may potentially affect the stromatolites. Four will be placed around the initial mining activities:

- One of these will be located adjacent to the border of the Zuytorp Nature Reserve (for dust emissions to the south);
- One will be located within the Project Area near the border of the Hamelin and Coburn pastoral leases (for dust emissions to the north);
- One mobile station will be located adjacent to mining activities on the SBWHP border (for dust emissions to the west), which will follow adjacent mining activities northwards; and
- Another mobile station will be located within the Project Area adjacent to mining activities on the eastern side of the mine path. This mobile station will be used to provide comparisons to the mobile station on the border of the SBWHP. The aims of this station are to:
  - Identify background dust emissions that may be generated from disturbed areas on the Coburn pastoral lease (during south-easterly winds) following commencement of mining operations; and
  - Monitor potential dust emissions impacting on the adjacent Coburn pastoral lease when mining commences.

In consultation with DEC, Gunson will review the suitability of locations of dust deposition gauges for subsequent pit phases beyond the initial three years. This will take into account the review of monitored data from the first three years of operations against background data, to assess the relative risk of dust deposition from subsequent pits.

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Dust deposition monitoring will be carried out in accordance with Australian Standards, AS/NZS 3580.10.1:2003 *Determination of Particulate Matter - Deposited Matter - Gravimetric Method*. Sampling and sample analysis will be conducted on a monthly basis (as per the standard) at each of the five locations, for six to nine months prior to the commencement of operations. These ambient baseline data will be utilised in setting appropriate limits for on-going dust deposition monitoring levels.

An automatic weather station will also be installed to enable correlation of the dust deposition results with wind speed and wind direction data.

### **7.1.2 The Effects of Dust and Saline Water Used for Dust Suppression on Vegetation**

Photographic monitoring stations will be established to monitor the effects of dust and saline water used for dust suppression on vegetation. Monitoring stations will be set up as required to target specific areas where visible dust has been observed or saline water is being used on access roads to suppress dust. As an approximate guide, monitoring stations should be located every 1-2 km along actively used access roads, and set 10 - 15 m back from the road. Monitoring stations may simply be a peg with a referenced GPS coordinate.

Photographic monitoring will include photographic comparisons of vegetation health to determine if mining activities are having a significant effect on vegetation health. Photographs will be taken at the monitoring station towards the access road every year.

## **7.2 Other Monitoring/Inspections Required**

### **7.2.1 Wind Conditions**

The EH&S Officer will monitor current and forecast wind conditions using daily forecasts from the BOM and data obtained from the site real time wind speed and direction station. The EH&S Officer can then post these forecasts and real time conditions so that employees and contractors are able to easily view them at the start of each shift. The EH&S Officer shall determine appropriate wind conditions for specific job tasks and communicate these to site personnel during the site environmental induction.

### **7.2.2 Environmental Inspections**

Daily monitoring, through environmental inspections, will be conducted to ensure adequate dust control measures are being implemented. The EH&S Officer will make daily inspections of areas of potentially significant dust emissions to monitor visible dust emissions and enforce the use of appropriate dust minimisation strategies. The EH&S Officer will have the authority to stop works should wind conditions be too strong or if the dust mitigation strategies being used appear not to be effective.

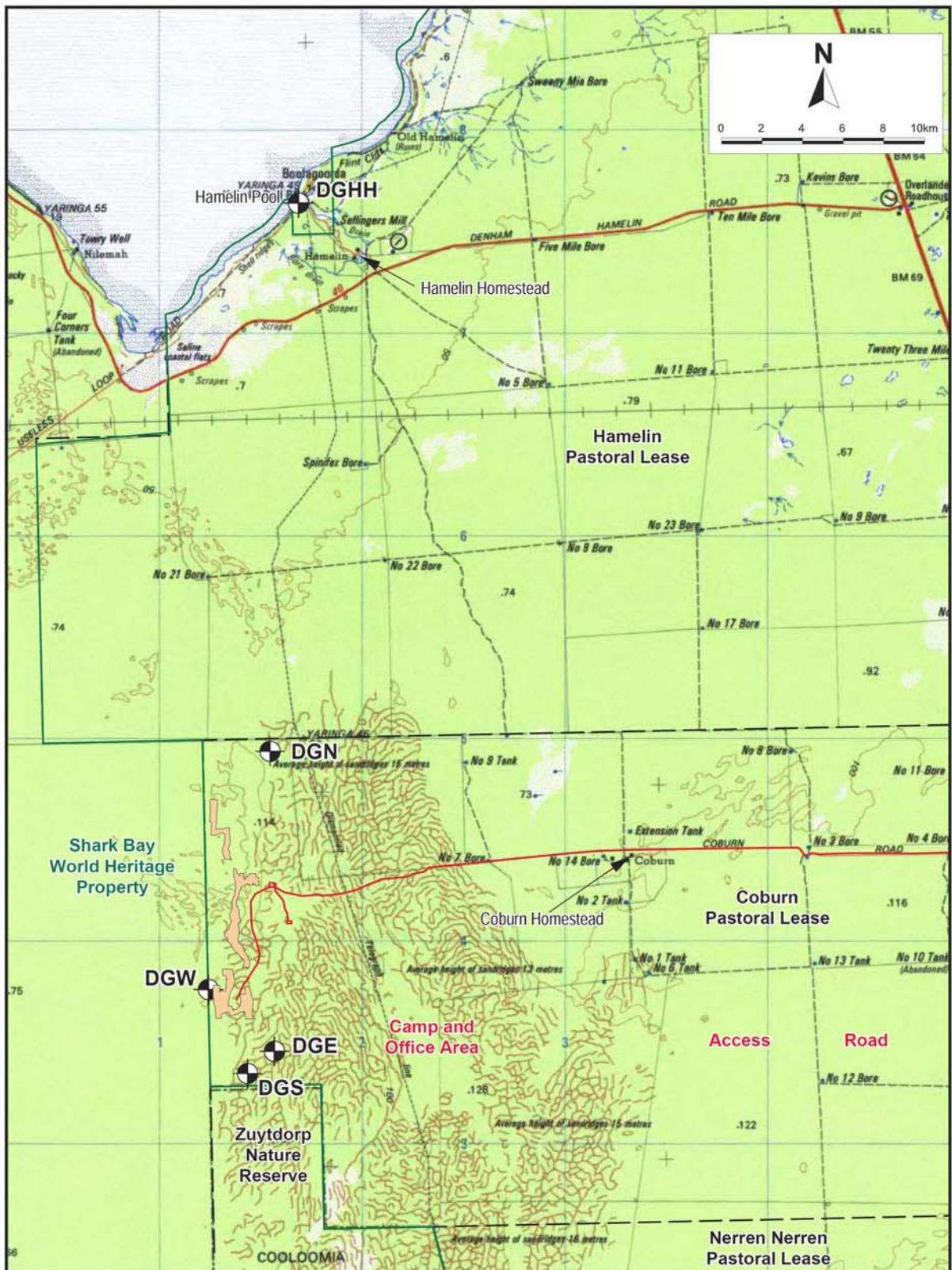


Figure 7.1: Locations of Dust Deposition Gauges

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Contingencies will be implemented should any of the monitoring or inspections deem remedial actions are required, the complaints limit exceeded or visible signs of dust are present. The Mine Manager or EH&S Officer may need to initiate contingency actions, and these could come in the form of ordering:

- Work to cease until acceptable conditions or remedial actions have been implemented;
- Lower speed limits if necessary to prevent unacceptable dust levels;
- The wetting of exposed areas;
- The covering of stockpiles;
- Cleaning of roads or vehicles;
- Dust minimisation training or review of training for site personnel;
- Increased dust deposition or photographic monitoring; and/or
- The introduction of alternative dust monitoring methods, including high volume samplers or real time monitoring equipment, to assist in determining the nature of dust and/or complaint exceedances.

Further investigations may need to be conducted when contingency actions have been implemented. This will document the root cause for the initiation of the contingency action. Should this be the result of an exceedance of the dust deposition limits to be established on the basis of baseline data, the DEC may also need to be informed and provided with evidence of the formal investigation.

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## 9.1 During the EIA Process

Gunson undertook stakeholder consultation with CALM, DEC and surrounding pastoralists prior to submission of the PER in relation to the management of dust. Issues raised during this consultation and Gunson's responses are documented in Section 5 of the PER (URS, 2005a). Public comment was also received during the eight-week public review period for the PER, with issues raised and Gunson's responses documented in the Proponent's Response to Submissions (URS, 2006a).

The key stakeholder issue in regards to dust was the potential impact of dust emissions on algal mats and stromatolites in Hamelin Pool. Modelling studies undertaken during the environmental assessment of the Project indicated that there was potential for minor dust impacts on stromatolites in Hamelin Pool Marine Nature Reserve associated with the development of the northernmost of the proposed mining areas (Pit 10).

As discussed in the Proponent's Response to Submissions (URS, 2006a), the potential for dust deposition on the Hamelin Pool stromatolites due to Project implementation was already low. However, no impact is expected with mining operations now ceasing at the completion of Pit 9, which is located some 20 km to the south of Hamelin Pool.

## 9.2 During Preparation of this MP

Ministerial Condition 12-1 requires that this Dust MP be prepared to meet the requirements of the Minister for the Environment on advice of the EPA. In addition, the DEC's guidelines on the preparation of EMPs state that relevant advisory agencies and other stakeholders should be given an opportunity to provide input to the draft MP. The relevant stakeholders for this MP are:

- EPA; and
- DEC Air Quality Branch.

To obtain advice from these stakeholders, a draft MP was submitted to the DEC Air Quality Branch for review. Feedback from the DEC Air Quality Branch was addressed during the preparation of this version of the MP, prior to submission to the DEC Statement Management Section.

Documentation on the comments received from the DEC Air Quality Branch, and the way in which these comments have been addressed in the MP, has been submitted to the DEC Statement Management Section under separate cover. It is understood that the DEC Statement Management Section will consult with the EPA to obtain its input on the MP.

The final MP will be prepared following receipt of comments from the EPA and will be submitted to the EPA through the DEC Statement Management Section and the DEC Audit Branch for sign-off.

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### **9.3 Consultation during Construction and Operation**

Stakeholder consultation will continue throughout the life of the Project and will address any issues raised by stakeholders.

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Gunson will establish and maintain a programme and procedures for periodic audits of the EMP, including this MP. The current audit programme is outlined in URS (2006b). Maintenance and implementation of the audit programme will be the responsibility of Gunson's EH&S Officer.

Environmental audits can occur in many forms, but have a common objective: to assess the environmental performance of a facility in order to identify risks and potential liabilities. For this Project, the audits will also be required to provide information and evidence for the reports required under the Ministerial Statement, which are listed in Section 12 of this MP.

The format of the audit will depend on the issue or area being reviewed but could include the following phases:

- Development of the audit protocol.
- Completion of a questionnaire by site personnel prior to a site visit by the auditor.
- Site visit, comprising interviews, site inspections and/or direct measurement.
- Review of relevant documentation and records.
- Preparation and submission of the audit report.

This MP will be audited on an annual basis and the outcomes included in the relevant reports required under Ministerial Condition 5 (see Section 12). Information on the results of the audits will also be provided to Gunson management for review.

In addition to formal audits by internal or external auditors to meet the reporting requirements for Ministerial Condition 5, internal area or facility inspections will be conducted to assess the effectiveness of day-to-day environmental management. This will allow opportunities for improvements in environmental performance to be identified and acted upon as soon as possible. The inspections will occur on a weekly, monthly or less frequent basis, depending on the area or facility being reviewed.

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This MP will be reviewed on an annual basis or more frequently if required, to address the following:

- Any changes in Project design or operation that require modifications to the environmental management procedures outlined in this MP;
- Any issues identified as a result of internal and external audits, and Gunson management review of the audit outcomes, in relation to the suitability, adequacy and effectiveness of this MP in meeting the agreed objectives; and
- Corrective or preventative actions developed in response to environmental incidents and nonconformances.

Revision of this MP may also be triggered by Conditions 10 and 11 of the Commonwealth environmental approval. These conditions are as follows:

10. If the person taking the action wishes to carry out any activity otherwise than in accordance with the plans, programs or measures referred to in paragraphs 1 to 8, the person taking the action may submit for the Minister's approval a revised version of any such plan, program or measure. If the Minister approves a revised plan, program or measure so submitted, the person taking the action must implement that plan, program or measure instead of the plan, program or measure as originally approved.
11. If the Minister believes it is necessary or desirable for the better protection of the environment relevant to the species or World Heritage values mentioned in this Approval to do so, the Minister may request the person taking the action to make specified revisions to a plan, program or measure approved pursuant to paragraphs 1 to 8, and to submit the revised plan, program or measure for the Minister's approval. The person taking the action must comply with any such request. If the Minister approves a revised plan, program or measure pursuant to this condition, the person taking the action must implement that plan, program or measure instead of the plan, program or measure as originally approved.

The revised MP will be submitted to the relevant stakeholders (see Section 9) for review and approval.

The revision number for the MP will be recorded on the document's signature page.

## 12.1 Internal Reporting

Environmental records are evidence of the ongoing environmental performance of the Project and demonstrate conformance with legal and other requirements. Environmental records to be maintained by Gunson and/or its contractors will include:

- A register of legal and other regulatory requirements including licences and permits;
- A register of environmental aspects and impacts;
- Incident reports;
- Training records;
- Inspection, calibration and maintenance records;
- Monitoring data;
- A register of non-conformances;
- Public complaints and responses to these; and
- Internal and external audits and reviews.

## 12.2 External Reporting under the State Ministerial Approval

The reporting requirements defined under Ministerial Statement No. 723 are as described below. There is a degree of overlap for these reports, and it is expected that some of these reports will be combined to simplify the review process.

### 12.2.1 Compliance Reports

Compliance reports are required under Ministerial Condition 5-1 to address:

- The status of implementation of the proposal, as defined in Schedule 1 of the Ministerial Statement;
- Evidence of compliance with the conditions and commitments; and
- The performance of the environmental management plans and programmes.

These reports are to be submitted to the DEC Audit Branch on an annual basis, or more frequently if sign-off of a condition or commitment is required more rapidly than annually.

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### 12.2.2 Performance Review Reports

Performance review reports are required every five years after the start of operations. These are required to address:

1. The major environmental issues associated with implementing the project; the environmental objectives for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those objectives;
2. The level of progress in the achievement of sound environmental performance, including Australian industry benchmarking, and the use of best available technology where practicable;
3. Significant improvements gained in environmental management, including the use of external peer reviews;
4. Stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and
5. The proposed environmental objectives over the next five years, including improvements in technology and management processes.

### 12.2.3 Independent Audit Report

Ministerial Condition 5-3 requires that an independent auditor prepare a report on each condition/commitment included in the Ministerial Statement which requires preparation of a management plan, programme, strategy or system. The objective of the report is to determine whether the requirements of these conditions and commitments have been fulfilled within the stated timeframe.

It is expected that this report could be included in the Compliance Reports submitted in accordance with Ministerial Condition 5-1.

### 12.2.4 Annual Environmental Report

An Annual Environmental Report (AER) is required under Ministerial Condition 5-4. The purpose of the AER is to report on:

- Implementation of Gunson's environmental commitments (but not the Ministerial Conditions); and
- Outcomes of any monitoring programmes and performance reviews associated with the implementation of the MPs.

Unlike the other reports required under Ministerial Condition 5, this report is to be made available to the public.

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This report is not to be confused with the AER required by the DoIR as part of mining lease conditions (Section 12.4), or by the DEC in relation to licensing under Part V of the *Environmental Protection Act 1986* (Section 12.5).

### **12.3 External Reporting under the Commonwealth Ministerial Approval**

Condition 9 of the Commonwealth environmental approval issued under the EPBC Act requires that:

On 1 September of each year after the date of commencement of operations, the Project Director for the person taking the action must provide to the (Australian Government) Minister for the Environment and Heritage (the Minister) a certificate stating that the person taking the action has complied with the conditions of this Approval. This certificate must state, to the satisfaction of the Minister, the manner in which the approval conditions have been complied with. Should the Minister so direct, the person taking the action must appoint an independent auditor to audit compliance under this condition and make the results of that audit available to the Minister.

### **12.4 External Reporting under Mining Lease Conditions**

As part of the mining lease conditions set by the DoIR, Gunson will be required to submit an AER. The objectives of the AER are defined by the DoIR (Department of Minerals and Energy, 1996) as:

- To concisely document the major mining activities for the reporting year and proposed activities for the following year;
- To concisely document environmental management and rehabilitation activities for the reporting year and proposed activities and developments in the following year;
- To assist operators in monitoring their own performance;
- To assist in the preparation of a completion report and audit for the DoIR on cessation of operations; and
- To provide basic information to DoIR about the extent of mining operations in the State and the standard of environmental management being achieved.

### **12.5 External Reporting under the Pollution Prevention Licence**

A pollution prevention licence will be required for the Project under Part V of the *Environmental Protection Act 1986*. This licence is not yet required. Once the licence has been issued, the need for reporting data relevant to this MP will be reviewed, and the MP amended if required.

**Table 13.1**  
**Key Management Actions Table**

Objective	Target (if applicable)	Ref	Key Management Action	DEC Reporting/Evidence	Status (to be updated in annual compliance reports)
Use all reasonable and practicable measures to minimise fugitive airborne dust from the Project Area.		D1.1	Authorisation for all clearing must be given through a clearing permit obtained from the EH&S Officer.	Maps detailing areas that have been cleared and/or rehabilitated in the previous year to be submitted with the Annual Environmental Report (AER).	
		D1.2	A stockpile inventory will be maintained, with information collected including, but not limited to: <ul style="list-style-type: none"> <li>• Location of stockpile, number, position in landscape and location description;</li> <li>• Stockpile dimensions (volume, surface area, maximum height);</li> <li>• Date stockpiled;</li> <li>• Stockpile characteristics (material type/colour, % rock, % sand, % gravel etc.);</li> <li>• Vegetation growing on stockpile;</li> <li>• Date reviewed; and</li> <li>• Comments (if any).</li> </ul>	Stockpile inventory to be submitted annually within the AER.	

# Key Management Actions Table

**Table 13.1 (cont.'d)**

Objective	Target (if applicable)	Ref	Key Management Action	DEC Reporting/Evidence	Status (to be updated in annual compliance reports)
Use all reasonable and practicable measures to minimise fugitive airborne dust from the Project Area (cont.'d).		D1.3	Site specific dust minimisation and mitigation training for all contractors and site personnel. This will be conducted by the EH&S Officer throughout the construction and operational phases of the Project and every employee shall review training on an annual basis.	Up-to-date staff training records will be kept on-site and produced for regulators/auditors if/when required.	
Ensure that dust emissions, both individually and cumulatively, meet limits agreed upon after baseline data has been obtained and reviewed, and do not cause environmental or human health problems. In particular, dust emissions should not adversely affect vegetation and stromatolites within the SBWHP.	To be set based upon baseline data to be established prior to ground disturbance.	D2.1	Monitoring dust emissions using dust deposition gauges, Section 7.1.1.	Baseline data and on-going dust deposition monitoring results will be submitted in the AER.	

**Table 13.1 (cont.'d)**

Objective	Target (if applicable)	Ref	Key Management Action	DEC Reporting/Evidence	Status (to be updated in annual compliance reports)
<p>Ensure that dust emissions, both individually and cumulatively, meet limits agreed upon after baseline data has been obtained and reviewed, and do not cause environmental or human health problems. In particular, dust emissions should not adversely affect vegetation and stromatolites within the SBWHP (cont.'d).</p>	<p>A limit of one external complaint a month and three internal complaints a month</p>	<p>D2.2</p>	<p>Implementation of a complaints register. The details to be recorded include but are not limited to:</p> <ul style="list-style-type: none"> <li>• The nature of the complaint;</li> <li>• The time and date of the complaint;</li> <li>• The complainant (including internal or external); and</li> <li>• Any (remedial) action taken.</li> </ul> <p>All complaints will be investigated by the EH&amp;S Officer and remedial action taken where necessary. When either of the limits have been exceeded, the EH&amp;S Officer must conduct a formal investigation with details to be submitted to the Mine Manager.</p>	<p>Number and nature of complaints, as well as remedial action taken will be provided within the AER.</p>	

# Key Management Actions Table

**Table 13.1 (cont.'d)**

Objective	Target (if applicable)	Ref	Key Management Action	DEC Reporting/Evidence	Status (to be updated in annual compliance reports)
Ensure that dust emissions, both individually and cumulatively, meet limits agreed upon after baseline data has been obtained and reviewed, and do not cause environmental or human health problems. In particular, dust emissions should not adversely affect vegetation and stromatolites within the SBWHP (cont.'d).	To be set based upon veg health rating system to be implemented (e.g. not greater than a change of two).	D2.3	Photographic monitoring of the effects of dust and saline water used for dust suppression on vegetation, Section 7.12.	Summaries of the results of the monthly photographic monitoring will be provided within the AER.	
	To be set based upon baseline data to be established prior to ground disturbance.	D2.4	Analysis of foliage dust content at photographic monitoring stations for the effects of dust on vegetation.	Summaries of the results of the annual foliage dust analysis will be provided within the AER.	

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The methodology adopted and sources of information used by URS are outlined in this report. URS has made no independent verification of this information beyond the agreed scope of works and URS assumes no responsibility for any inaccuracies or omissions. No indications were found during our investigations that information contained in this report as provided to URS was false.

This report was prepared in July to November 2006 and is based on the conditions encountered and information reviewed at the time of preparation. URS disclaims responsibility for any changes that may have occurred after this time.

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