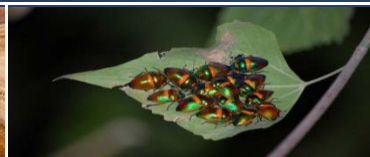




# Appendix M Dust Report



Sherwin Iron (NT) Pty Ltd  
Sherwin Creek Iron Ore Project  
Environmental Impact Statement



2013





**HSE**

ECOZ ENVIRONMENTAL SERVICES

ENVIRONMENTAL DUST MONITORING DATA ASSESSMENT FOR  
THE PROPOSED MINE SITE AND ACCOMMODATION CAMP

NORTHERN TERRITORY

HJ.203128.SAa

10<sup>th</sup> October 2013

Health Safety Environment Australia Pty Ltd

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HJ.203128.SAa V2

Ms. Justine Shailes  
Senior Consultant  
EcOz Environmental Services  
GPO Box 381  
Darwin, NT 0801

Dear Justine,

Thank you for the opportunity to provide consultancy services to EcOz Environmental Services.

An updated report on the assessment of ambient environmental dust measurement data collected for the proposed mine development and accommodation camp is attached for your records.

Should you have any queries regarding this work, please contact me on receipt of this report.

Yours sincerely,



Jwalit Parikh  
Senior Consultant  
Occupational Hygiene and Environmental Risk Management

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## 1.0 INTRODUCTION

Health Safety Environment Australia was requested by Ms. Justine Shailes, Senior Consultant for EcOz Environmental Services to provide a report on ambient environmental dust monitoring data for the proposed mine located approximately 450 km SE of Darwin in Northern Territory.

The ambient dust monitoring data for the following locations and time period were provided by EcOz Environmental Services on 13<sup>th</sup> September 2013.









Location	GPS Coordinates and Zone	Dates of Measured Noise Data
East	422937 S, 8371890 E, Zone 53	17 <sup>th</sup> July to 17 <sup>th</sup> August 2013
South	422734 S, 8371667 E, Zone 53	17 <sup>th</sup> July to 17 <sup>th</sup> August 2013
West	422522 S, 8371839 E, Zone 53	17 <sup>th</sup> July to 17 <sup>th</sup> August 2013
North	422782 S, 8372073 E, Zone 53	17 <sup>th</sup> July to 17 <sup>th</sup> August 2013

The assessment of the data was carried out by Jwalit Parikh, Senior Consultant for Health Safety Environment Australia on 13<sup>th</sup> and 16<sup>th</sup> September 2013.

## 2.0 BACKGROUND INFORMATION

Over a given sampling period, particles that settle from the ambient air are collected in a vessel and retained together with any rainwater. The sample is passed through a sieve to remove any extraneous matter (e.g. leaves, insects) and the sieved sample containing the deposited matter is transferred to a filtration apparatus. The insoluble and soluble materials are separated by filtration and the mass of the dried insoluble solids is gravimetrically determined. The ash and combustible matter content are determined by loss on ignition of the insoluble solids. Soluble solids are determined from the filtrate. The total solids are obtained by the addition of the insoluble solids and the soluble solids. The mass deposition rate of deposited matter is then calculated from the mass of solids obtained, the funnel cross-sectional area and the exposure period.

In general, a wide range of mining activities may generate dust, including:

-  removal of vegetation and topsoil
-  removal of overburden material
-  blasting and drilling operations
-  operation of crushing and screening equipment
-  loading and unloading of material on-site and subsequent transport off-site
-  transport by vehicles on access roads and haul roads
-  wind action affecting stockpiles and exposed areas of the site
-  combustion of materials such as diesel

Different mines may generate substantially different levels of dust because levels are significantly influenced by climatic factors such as rainfall, temperature, and winds, and because different mining activities generate different amounts of dust.

In mining operations, the removal of topsoil and overburden and the transport of this material is typically the major source of dust emissions.

### 3.0 METHODOLOGY

The method proposed requires the installation of dust deposition gauges, which are based on Australian Standard AS/NZ 3580.10.1:2003, Methods for sampling and analysis of ambient air; Method 10.1: Determination of Particulates, Deposited Matter, Gravimetric Method and provides a means for measuring the mean concentration of particulate matter which is deposited from the atmosphere, determines mass deposition rates for total solids, insoluble solids, soluble solids and combustible matter. Note that this method is a typical method used within industry, as it measures 'dust fall' in the region. The monitoring is typically measured over each 30 day (monthly) period, and is ideally installed/ collected on the first day of the month.

The deposit gauge consists of a 150 mm diameter glass funnel (with 60° nominal bowl angle) supported in the neck of a wide mouth 2.5 litre amber glass bottle with a rubber stopper. The stand that supports the deposit gauge is approximately 2.0 metres above ground level. The stand also incorporates a container holder that protects the bottle contents from sunlight which has the potential to accelerate algal growth. The holder also contains a drainage hole at the base to prevent rainwater buildup. All bottles contained 10 mL of copper sulfate solution as an algicide. After the required sampling period the samples were collected and any deposited matter adhering to the inside of the funnel was washed in to the deposit gauge bottles using the minimum amount of distilled water from a wash bottle. The funnel was removed and the deposit bottle was sealed. Samples were analysed by SIMTARS Laboratories in Accordance with AS 3580.10.1. Certificate of Analysis is provided in Appendix A of this report.

Local weather observations, e.g. wind speed, during the monitoring periods in July and August were not available to Health Safety Environment Australia.

No specific criteria, guideline or standards identified to compare the results of total solids, insoluble solids, soluble matter, ash and combustible matter collected by dust deposition gauges at the proposed development site.

### 4.0 COMMENTS

It was stated by EcOz Environmental Services that approximately 8-15 truck movements for bulk sampling purpose was occurred at the proposed mine site area over the period of dust monitoring. It was also stated that the proposed accommodation camp is located approximately 2.5 km west of the proposed mine site.

## 5.0 RESULTS

The amount of particulate matter deposited in the dust gauges over the collection period is shown in Table 1 and is reported in grams deposited per square meter per month. The total amount of particulate matter collected can be separated into total solids which are a combination of insoluble solids and soluble solids; and combustible matter. Dust deposition gauges were located around the proposed mine site area to measure the background amount of dust that can be deposited in the nearby vicinity without any mining or construction related activities.

The results of the ambient dust monitoring data at the proposed mine site is summarised in the Tables 1 below.

**Table 1: Dust deposition results for samples collected from 17<sup>th</sup> July to 17<sup>th</sup> August 2013**

Location ID	Sample ID	Collection Duration (days)	Total Solids (g/m <sup>2</sup> /month)	Insoluble Solids (g/m <sup>2</sup> /month)	Ash (g/m <sup>2</sup> /month)	Soluble Matter (g/m <sup>2</sup> /month)	Combustible Matter (g/m <sup>2</sup> /month)
East	1 East	31	3.4	2.2	1.9	1.2	0.3
South	2 South	31	1.5	1.4	1.1	0.1	0.3
West	3 West	31	2.0	1.0	0.8	1.0	0.2
North	4 North	31	2.3	1.2	1.0	1.1	0.2

As can be seen from the results, the highest amount of total solids, insoluble solids, soluble matter, ash and combustible matter was detected at the "East" location.

## 6.0 RECOMMENDATIONS

Dust amounts collected during the collection period can be used to establish long term trends and to investigate localized dust falls in the area. Therefore, conducting periodic monitoring at the selected locations (East, South, West, North) would be able to give a better picture on the amount of dust falls and any potential contribution of the overall dust deposition from the construction or mining related activities in the proposed development area.

To minimize environmental dust emissions due to construction or mining related activities, in general, it is recommended that:

- Water unsealed roads and stockpiles.
- Keep the stockpiles low so wind is less likely to spread dust.



Jwalit Parikh

Senior Consultant

Occupational Hygiene and Environmental Risk Management

## 7.0 LIMITATION OF LIABILITY

- 1 The Services provided to you by Health Safety Environment Australia Pty Ltd, which may include (but are not limited to) verbal or written advice, reports, data, laboratory test results, general findings or recommendations ("Services"). Those services have been provided to you subject to a number of limitations as set out in Clause 2 below.
- 2 You acknowledge that Services have been provided to you on the basis that:
  - 2.1 the Services provided are as set out in our offer or as discussed with you before we commenced the Services.
  - 2.2 the quality and efficiency of the Services provided are dependent on a number of factors that may have arisen whilst attending to and/or finalizing the Services, including but not limited to:
    - 2.2.1 the accuracy of your instructions at the time the Services are provided, and on the understanding that should any of your instructions have changed whilst we were preparing or finalizing the Services, that you notified us of any changes prior to Health Safety Environment Australia Pty Ltd finalizing the Services;
    - 2.2.2 the extent to which Health Safety Environment Australia Pty Ltd was able to have personal access to any site, machinery, plant, or any other access (including discussions with relevant persons) that may pertain to the Services;
    - 2.2.3 factors outside of our control, such as inclement weather, other 'acts of god' industrial action or close-downs;
    - 2.2.4 changes to any laws, rules of regulations that may apply directly or indirectly to the Services;
    - 2.2.5 that we rely on information provided by third-parties such as governmental agencies or other regulatory bodies in good faith, and any errors or inaccuracies in that information (unless brought to the attention of Health Safety Environment Australia Pty Ltd by that particular agency or body prior to finalising the Services) may affect the Services;
- 3 Although Health Safety Environment Australia Pty Ltd has made all reasonable attempts to ensure that any physical information we obtain whilst performing the Services, such as samples, photographs or any other form of data are representative, any non-homogenous or unrepresentative samples (of which we are unaware despite our best attempts) may affect the Services.
- 4 The Services were provided to meet your particular circumstances as at the time of your request, and should not be relied upon by any third party at any time, or by you if any circumstance (however described) relevant to the Services have changed since we provided the Services to you
- 5 To the extent permitted by law, Health Safety Environment Australia Pty Ltd is not responsible for any loss or damage (however defined, consequential or otherwise) that arises as a direct or indirect result of acts or omissions by you, your employees, servants, agents or any other third parties, whilst relying or acting on any advice provided as part of the Services. You acknowledge that Health Safety Environment Australia Pty Ltd will not be liable in any way whatsoever (whether in contract, tort or otherwise) for any loss or damage sustained by you arising from, or in connection with the Services.



## APPENDIX A: CERTIFICATE OF ANALYSIS



**Mackay Office**

Street Address      169 Sydney Street, Mackay Q 4740  
Postal Address      PO Box 453, Mackay Q 4740  
Phone                    07 4999 5300  
Fax                        07 4999 5301

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**Analysis Report**

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**Report Number**                    OM17456F1  
**Report Issue Date**                September 6, 2013  
**Report To**                            EcOz Environmental Services  
   75 Woods Street,  
   Third Floor Winlow House  
   Darwin NT 0800  
**Client Reference**                    Jyoti Maggu  
**Job Description**                    Dust Deposition Analysis  
**Date Received**                      August 27, 2013  
**Date Tested/Completed**            September 4, 2013  
**Responsibility for Sampling**      Client  
**Approved Signatory**                Patrick Lynch - Principal Scientist

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Unless otherwise indicated responsibility for sampling rests with the client. Where test items are submitted by the client results expressed in this report relate only to test items as received. This document may not be reproduced except in full or used in any way for advertising purposes without the written approval of the laboratory.

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**Report Number: OM17456F1**

Results:

Laboratory Number	Sample ID	Date From	Date To	Sampling Period (Days)	Total Solids g/m <sup>2</sup> .Month	Insoluble Solids g/m <sup>2</sup> .Month	Ash g/m <sup>2</sup> .Month	Soluble Matter g/m <sup>2</sup> .Month	Combustible Matter g/m <sup>2</sup> .Month
OM17456F1/1	1 East	17/07/2013	17/08/2013	31	3.4	2.2	1.9	1.2	0.3
OM17456F1/2	2 South	17/07/2013	17/08/2013	31	1.5	1.4	1.1	0.1	0.3
OM17456F1/3	3 West	17/07/2013	17/08/2013	31	2.0	1.0	0.8	1.0	0.2
OM17456F1/4	4 North	17/07/2013	17/08/2013	31	2.3	1.2	1.0	1.1	0.2
Limit of Reporting (LOR)					0.1	0.1	0.1	0.1	0.1

Reference

LP0182 - Procedure for Determination of Dust Deposition (AS3580.10.1).