



ESPERANCE PORTS
Sea & Land

TSP EXCEEDANCE REPORT

MONITORING PERIOD

15 – 16TH FEBRUARY 2011

Revision	Prepared	Reviewed	Approved	Date	Description
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1. INTRODUCTION

On the 02nd of March 2011, the Esperance Port Sea and Land (ESPL) became aware of laboratory results detailing dust (TSP) exceedences of the license criteria (refer to Table 1). Consistent with the latest amended Licence (L5099/1974/12) requirement of Condition 9, this requires an exceedance report to be submitted to the DEC on 14th of March 2011, within seven working days.

Table 1: Emission Concentration Targets from DEC Licence Number L5099/1974/12 issued to EPSL on 27th January 2011.

Emission	Ambient concentration target
Nickel in air	0.14 µg/m ³
Dust as PM ₁₀	50 µg/m ³
Dust as TSP	90 µg/m ³
Silica in air	5 µg/m ³

2. INVESTIGATION

2.1 Date and time of the exceedance

The recorded TSP concentration exceeded the emission concentration target (**Table 1**) according to the Licence L5099/1974/12 within the **exceedance periods, from 1207 15/2/2011 to 1224 16/2/2011**)

- 99 µg TSP/m³ at site 2.





<p>Disclaimer: This map consists of shape files generated by EPSL (2011) and Landgate (2010). This map is not to be used for navigational purposes. Positional accuracy should be considered as approximate.</p> 	<p>Map of Esperance Port Air Quality sites</p>	
	<p>Scale: 1:10,000</p> 	<p>Date: 5 January 2011</p>
		<p>Map no.</p>

Figure 2: Map of EPSL air quality monitoring stations. Sites 1, 2, 3 and 4 monitor PM10, TSP, metals, sulphur. Silica is also measured at sites 1, 2 and 4. E-samplers measure TSP in real time at sites EP5 to EP8. EP7 has a meteorological station.

2.2 Port Activities

The following Port activities occurred during the monitoring period:

- BOGASARI LI was along side Berth 1 being loaded with wheat between 1049 hours 14th of February 2011 to 1550 hours 16th of February 2011
- HAL PRIDE was along side Berth 2 discharging empty containers between 1532 hours 15th of February 2011 to 2200 hours 16th of February 2011
- 35,275 tonnes of iron ore averaged across 4 trains
- 60 tonnes of nickel concentrate across 1 truck.

2.3 Meteorological Activities

The wind directions for the 24 hour period are predominantly from E (54%), ESE (34%) and SE (12%) (**Figure 2**). The maximum hourly average wind speed of 8.5 m/s (30.6 km/hr) was recorded from the ESE at 1600 on the 15th of February, typical of the afternoon winds in summer on the Esperance coast. The 'Beaufort Wind Force Scale' is a measure of understanding wind speeds in descriptive terminology. A wind speed of 8.5 m/s is described as a 'fresh winds' (BOM, 2011).

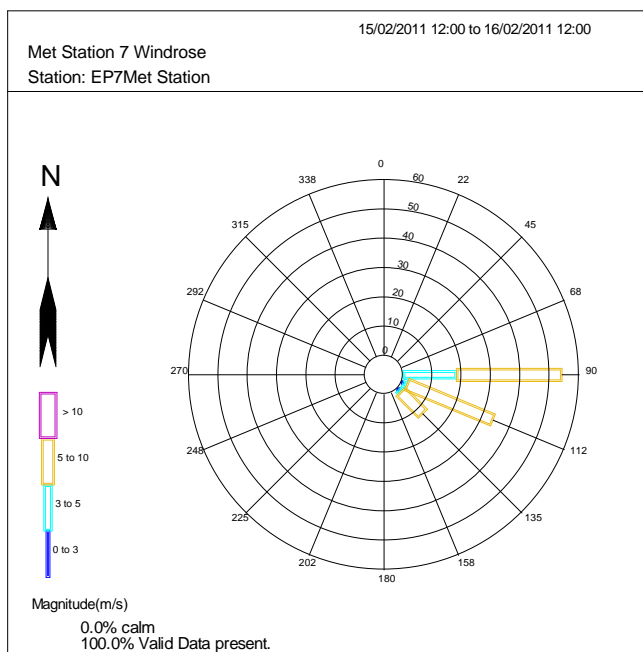


Figure 2 Wind rose for the monitoring period 1200 hrs 15/02/2011 to 1200 hrs 16/02/2011. Raw data source: EP7 monitoring station, Berth 3.

2.4 Investigation of Berth 1 dust emissions

2.4.1 Exceedance Period

The TSP exceedance in dust concentrations occurred at Site 2 located downwind of Berth 1. Wheat loading started before the monitoring period (0714 on the 15/03/2011 to 2333 on the 15/03/2011) and occurred also on the 16/03/2011 during the last 5 hours of the monitoring period (0713 on the 16/03/2011 to 1421 on the 16/03/2011) (**Figure 3**). The Esampler recorded the highest values of TSP during wheat loading and the lowest values when the loading activity stopped at night time. These changes in TSP are not related to changes in wind direction during the exceedance period (**Figure 4**).

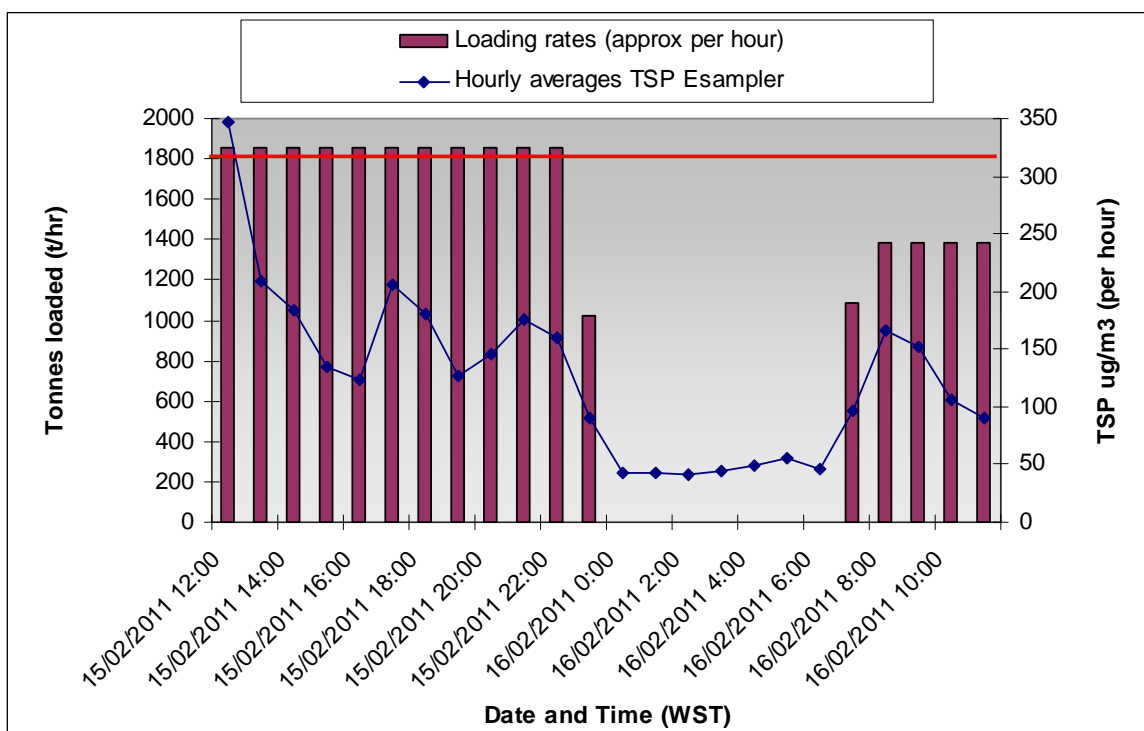


Figure 3 Hourly average of TSP recorded from Esampler5 and tonnes of wheat loaded per hour during the monitoring period for MV Bogasari LI between 0714 on the 15/03/2011 to 2333 on the 15/03/2011 and between 0713 on the 16/03/2011 to 1200 on the 16/03/2011.

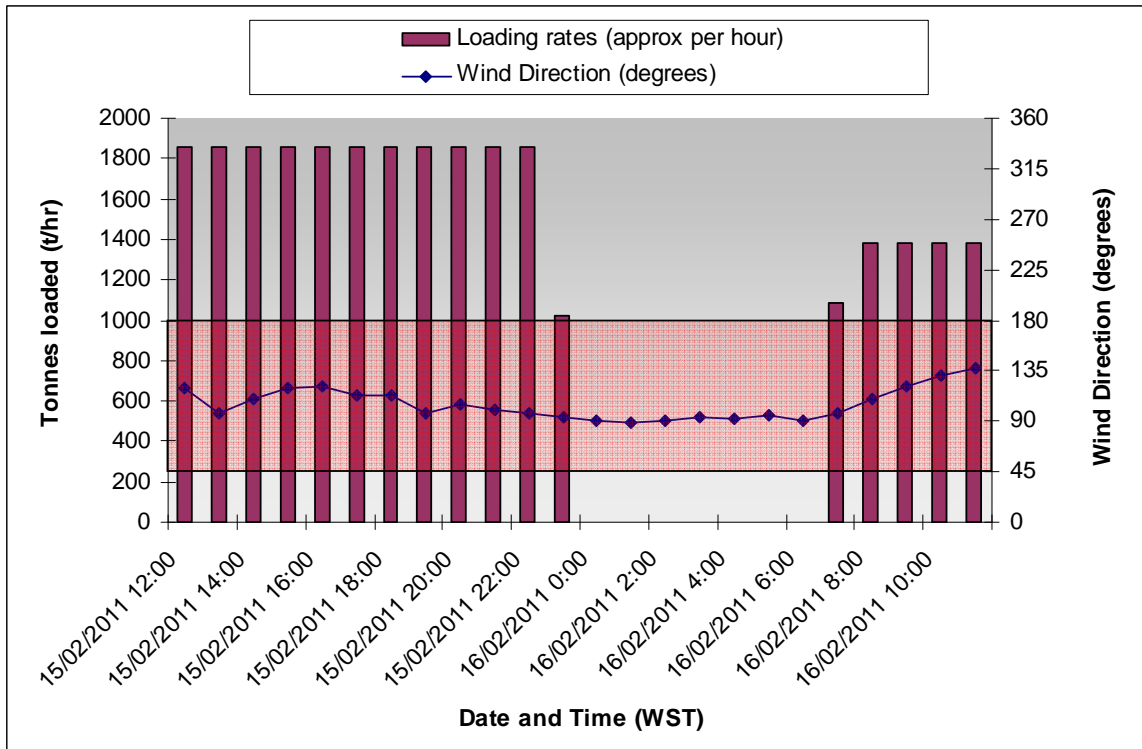


Figure 4 Wind direction and tonnes loaded per hour during the monitoring period for MV Bogasari LI between 0714 on the 15/03/2011 to 2333 on the 15/03/2011 and between 0713 on the 16/03/2011 to 1200 on the 16/03/2011.

3. CONCLUSIONS

The TSP exceedances at Sites 2 ($99 \mu\text{g}/\text{m}^3$) can be attributed to activities on Berth 1 in the Port. A clear correlation could be made between elevated TSP levels at Site 2 and the wheat loading activity (**Figure 3**). The Ports’ mineral handling activities did not contribute significantly to TSP concentrations at Site 2 since iron (1.3% TSP) and nickel (0.01% TSP) did not constitute a significant proportion of the TSP. “Fresh winds” (Beaufort scale) may not be strong enough to mobilise beach sand and particulates from unsealed surfaces that occur in easterly winds at or above “near gale” speeds that have been observed in many other exceedance reports submitted in 2011.

3.1 Corrective Action

Discussions with CBH are continuing.

- CBH is investigating dust control improvement opportunities for Berth 1 loading and will begin a fogging trial in March 2011.

APPENDIX A MPL LABORATORY REPORT



Part of the EnviroLab Group



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CERTIFICATE OF ANALYSIS 109135

Client:
 Esperance Ports - Sea and Land
 PO Box 35
 Esperance
 WA 8450

Attention: C Magana

Sample log in details:

Your Reference:	Dust Analysis
No. of samples:	18 High Volume Filters
Date samples received:	18/02/11
Date completed instructions received:	18/02/11
Location:	

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
 Samples were analysed as received from the client. Results relate specifically to the samples as received.

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by:	25/02/11
Date of Preliminary Report:	Not issued
Issue Date:	28/02/11

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 Accredited for compliance with ISO/IEC 17025.
 Tests not covered by NATA are denoted with *.

Results Approved By:


 Dr Monika Bierger
 Supervisor - Micro, Asbestos, Dust

MPL Reference: 109135
 Revision No: R 00

Metals in High Volume Filters							
Our Reference:	UNITS	PQL	109135-1	109135-2	109135-3	109135-4	109135-5
Your Reference	--	--	EAP825	EAP828	EAP827	EAP828	EAP829
Location	--	--	Site 4	Site 3	Site 2	Site 1	Site 5
Date Sampled			14/02/11	14/02/11	14/02/11	14/02/11	14/02/11
Dust	mg/filter	0.1	99	110	64	38	35
Dust in Air	µg/m ³	0.1	64	73	42	25	23

Metals in High Volume Filters							
Our Reference:	UNITS	PQL	109135-6	109135-7	109135-8	109135-9	109135-10
Your Reference	--	--	EAP830	EAP831	EAP832	EAP833	EAP834
Location	--	--	Blank	Site 4	Site 3	Site 2	Site 1
Date Sampled				15/02/11	15/02/11	15/02/11	15/02/11
Dust	mg/filter	0.1	1.5	61	51	150	76
Dust in Air	µg/m ³	0.1	[NA]	39	33	99	48
Iron	µg/filter	20	[NA]	[NA]	[NA]	2,100	[NA]
Iron in Air	µg/m ³	0.01	[NA]	[NA]	[NA]	1.3	[NA]
Nickel	µg/filter	5	[NA]	[NA]	[NA]	15	[NA]
Nickel in Air	µg/m ³	0.002	[NA]	[NA]	[NA]	0.010	[NA]
Lead	µg/filter	5	[NA]	[NA]	[NA]	<5.0	[NA]
Lead in Air	µg/m ³	0.003	[NA]	[NA]	[NA]	<0.003	[NA]
Lithium	µg/filter	5	[NA]	[NA]	[NA]	<5.0	[NA]
Lithium in Air	µg/m ³	0.002	[NA]	[NA]	[NA]	<0.002	[NA]
Sulfur	µg/filter	50	[NA]	[NA]	[NA]	5,200	[NA]
Sulfur in Air	µg/m ³	0.03	[NA]	[NA]	[NA]	3.4	[NA]
Zinc	µg/filter	5	[NA]	[NA]	[NA]	822	[NA]
Zinc in Air	µg/m ³	0.005	[NA]	[NA]	[NA]	0.53	[NA]

Metals in High Volume Filters							
Our Reference:	UNITS	PQL	109135-11	109135-12	109135-13	109135-14	109135-15
Your Reference	--	--	EAP835	EAP838	EAP837	EAP838	EAP839
Location	--	--	Site 5	Blank	Site 4	Site 3	Site 2
Date Sampled			15/02/11		16/02/11	16/02/11	16/02/11
Dust	mg/filter	0.1	47	3.1	44	42	52
Dust in Air	µg/m ³	0.1	30	[NA]	30	29	35
Iron	µg/filter	20	[NA]	[NA]	800	1,000	1,600
Iron in Air	µg/m ³	0.01	[NA]	[NA]	0.65	0.71	1.1
Nickel	µg/filter	5	[NA]	[NA]	<5.0	5.3	13
Nickel in Air	µg/m ³	0.002	[NA]	[NA]	<0.002	<0.002	0.010
Lead	µg/filter	5	[NA]	[NA]	<5.0	<5.0	<5.0
Lead in Air	µg/m ³	0.003	[NA]	[NA]	<0.003	<0.003	<0.003
Lithium	µg/filter	5	[NA]	[NA]	<5.0	<5.0	<5.0
Lithium in Air	µg/m ³	0.002	[NA]	[NA]	<0.002	<0.002	<0.002
Sulfur	µg/filter	50	[NA]	[NA]	1,100	1,600	2,300
Sulfur in Air	µg/m ³	0.03	[NA]	[NA]	0.72	1.1	1.5
Zinc	µg/filter	5	[NA]	[NA]	544	809	808
Zinc in Air	µg/m ³	0.005	[NA]	[NA]	0.37	0.55	0.55

MPL Reference: 109135
 Revision No: R 00

Client Reference: Dust Analysis

Metals in High Volume Filters	UNITS	PQL	109135-16	109135-17	109135-18	109135-19
Our Reference:	--	--	EAP640	EAP641	EAP642	Lab Blank
Your Reference	--	--	Site 1	Site 5	Blank	
Location	--	--	16/02/11	16/02/11		
Date Sampled						
Dust	mg/filter	0.1	63	27	3.7	[NA]
Dust in Air	µg/m ³	0.1	43	18	[NA]	[NA]
Iron	µg/filter	20	1,100	500	170	180
Iron in Air	µg/m ³	0.01	0.76	0.34	[NA]	[NA]
Nickel	µg/filter	5	9.3	<5.0	<5.0	<5.0
Nickel in Air	µg/m ³	0.002	0.010	<0.002	[NA]	[NA]
Lead	µg/filter	5	<5.0	<5.0	<5.0	<5.0
Lead in Air	µg/m ³	0.003	<0.003	<0.003	[NA]	[NA]
Lithium	µg/filter	5	<5.0	<5.0	<5.0	<5.0
Lithium in Air	µg/m ³	0.002	<0.002	<0.002	[NA]	[NA]
Sulfur	µg/filter	50	3,400	1,600	770	820
Sulfur in Air	µg/m ³	0.03	2.3	1.1	[NA]	[NA]
Zinc	µg/filter	5	856	815	764	231
Zinc in Air	µg/m ³	0.005	0.58	0.58	[NA]	[NA]

Client Reference: Dust Analysis

Method ID	Methodology Summary
WILAB 4	Airborne samples analysed according to AS 2985 for Respirable Dust or AS 3640 for Inhalable Dust. Sample results based on volume data supplied by client. Samples tested as received, *accreditation does not cover sampling.
WILAB 17	Metals in soil and water by ICP-OES.

Report Comments:

INS: Insufficient sample for this test; NT: Not tested; PQL: Practical Quantitation Limit; <: Less than; >: Greater than
RPD: Relative Percent Difference; NA: Test not required; LCS: Laboratory Control Sample; NR: Not requested
NS: Not specified; NEPM: National Environmental Protection Measure
DOL: Sample rejected due to particulate overload

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the sample batch were within laboratory acceptance criteria.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spike and LCS: Generally 70-130% for inorganics/metals; 80-140% for organics and 10-140% for SVOC and Speciated Phenols is acceptable.

Surrogates: 80-140% is acceptable for general organics and 10-140% for SVOC and Speciated Phenols.