



**ESPERANCE PORTS**  
*Sea & Land*

## **TSP EXCEEDANCE REPORT**

### **MONITORING PERIOD**

**25 – 26<sup>TH</sup> FEBRUARY 2011**

<b>Revision</b>	<b>Prepared</b>	<b>Reviewed</b>	<b>Approved</b>	<b>Date</b>	<b>Description</b>
1	M. Tarusello	A. Leonard		16/3/2011	

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## 1. INTRODUCTION

On the 11<sup>th</sup> of March 2011, the Esperance Port Sea and Land (ESPL) became aware of laboratory results detailing dust (TSP) marginally exceeding 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 22<sup>nd</sup> 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 <sup>3</sup>
Dust as PM <sub>10</sub>	50 µg/m <sup>3</sup>
Dust as TSP	90 µg/m <sup>3</sup>
Silica in air	5 µg/m <sup>3</sup>

## 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 **1433 25/2/2011 to 1552 26/2/2011**:

- 93 µg TSP/m<sup>3</sup> at site 4.



**Figure 1:** Map of Air Quality Monitoring Stations

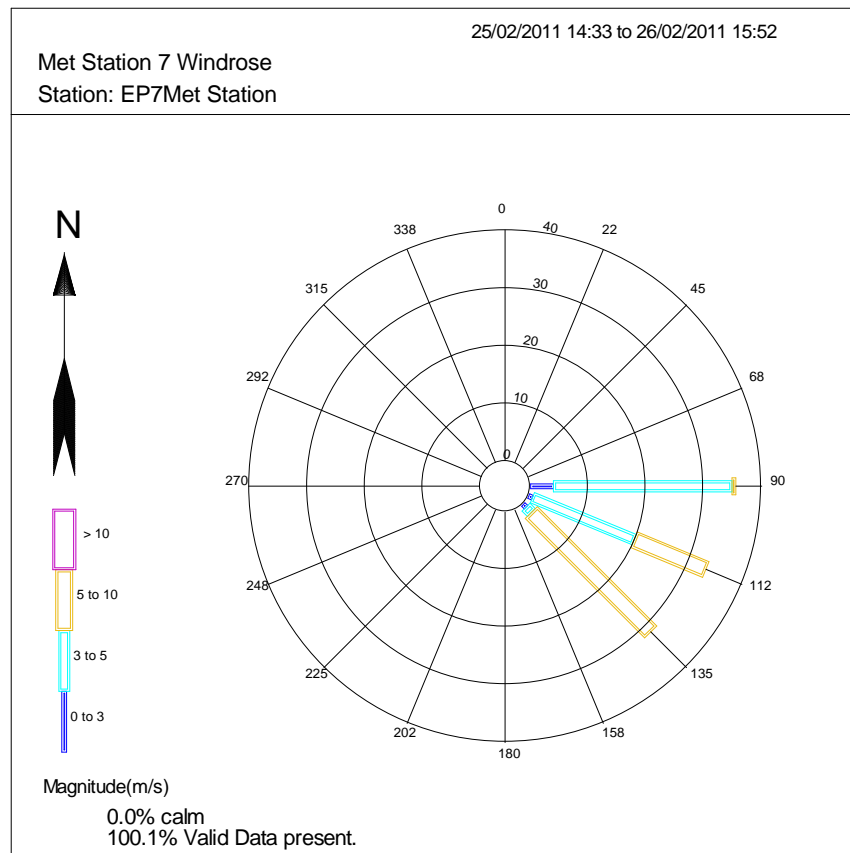
## 2.2 Port Activities

The following Port activities occurred during the monitoring period:

- TIAN YANG HA was along side Berth 3 being loaded with iron ore between 1620 hours 23<sup>rd</sup> of February 2011 to 0839 hours 26<sup>th</sup> of February 2011.
- 35,857 tonnes of iron ore averaged across 4 trains
- 119 tonnes of nickel concentrate across 2 trucks

## 2.3 Meteorological Activities

The wind directions for the 24 hour period are in the wind arc from E (35%), ESE (33%) and SE (32%) (**Figure 2**). The maximum hourly average wind speed of 7.8 m/s (28.1 km/hr) was recorded from the ESE at 1300 on the 26<sup>th</sup> 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 7.8 m/s is described as a 'moderate winds' (BOM, 2011).



**Figure 2** Wind rose for the monitoring period 1433 hrs 25/02/2011 to 1552 hrs 26/02/2011. Raw data source: EP7 monitoring station, Berth 3.

## **2.4 Reason for exceedance**

The TSP marginal exceedance for Site 4 is likely to be due to moderate winds (maximum of 7.8 m/s ESE) mobilising particulates from the unsealed surfaces from cleared areas on Dempster Head, the reclaim area around sheds 3 and 4, and the CBH lease area. Iron (0.7% Fe in TSP) and nickel (<0.001% Ni in TSP) handling activities constituted less than 1% of the TSP.

## **3. CONCLUSIONS**

The TSP exceedance of 93 µg/m<sup>3</sup> recorded at site 4 between 25/02/2010 and 26/02/2011 is likely to have resulted from winds from the ESE direction, mobilising dust from unsealed surfaces of Dempster Head and the Port precinct.

EPSL already has a dust management strategy on its unsealed areas. EPSL will endeavour to pursue lessees (CBH and Summit) to request that a dust management strategy be implemented on non-sealed surfaces by CBH and Summit, the occupiers of their respective lease areas.

### **3.1 Corrective Action**

The event is predominantly due to meteorological conditions and the unsealed surfaces. EPSL already implements a dust binding agent on unsealed surfaces. No further action can be practically taken by EPSL to further reduce dust in near gale winds.

### APPENDIX A MPL LABORATORY REPORT



Part of the EnviroLab Group



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#### INTERIM REPORT **109358**

**Client:**  
 Esperance Ports - Sea and Land  
 PO Box 35  
 Esperance  
 WA 6450

**Attention:** C Magana

**Sample log in details:**

Your Reference:	<b>Dust Analysis</b>
No. of samples:	30 High Volume Filters
Date samples received:	1/03/11
Date completed instructions received:	1/03/11
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:	8/03/11
Date of Preliminary Report:	09/03/11
Issue Date:	9/03/11 (Interim Report Date)

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**Results Approved By:**



Dr Monika Berger  
 Supervisor - Micro, Asbestos, Dust

Metals in High Volume Filters							
Our Reference:	UNITS	PQL	109358-1	109358-2	109358-3	109358-4	109358-5
Your Reference	--	--	PVCHV21	PVCHV22	PVCHV23	EAP667	EAP668
Location	--	--	Site 4	Site 3	Site 2	Site 1	Site 5
Date Sampled			22/02/11	22/02/11	22/02/11	22/02/11	22/02/11
Air Volume	m <sup>3</sup>		1,562	1,560	1,563	1,566	1,560
Weight of Filter (initial)	mg	0.02	575.70	636.70	650.50	3,511.00	3508.40
Weight of Filter (final)	mg	0.02	698.00	750.00	748.90	3660.60	3546.50
Dust	mg/filter	0.04	120	110	98	140	38
Dust in Air	µg/m <sup>3</sup>	0.1	79	73	63	89	24
Iron	µg/filter	5	1,600	1,300	2,000	2,200	450
Iron in Air	µg/m <sup>3</sup>	0.005	1.1	0.84	1.3	1.4	0.29
Nickel	µg/filter	2	16	16	22	9	2
Nickel in Air	µg/m <sup>3</sup>	0.001	0.010	0.010	0.010	0.010	<0.001
Lead	µg/filter	5	8	<5	7	<5	<5
Lead in Air	µg/m <sup>3</sup>	0.005	0.010	<0.005	<0.005	<0.005	<0.005
Lithium	µg/filter	2	<2	<2	<2	4	3
Lithium in Air	µg/m <sup>3</sup>	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Sulfur	µg/filter	50	1,000	1,200	940	2,800	1,500
Sulfur in Air	µg/m <sup>3</sup>	0.02	0.65	0.74	0.61	1.8	0.94
Zinc	µg/filter	5	36	42	62	1,086	1,014
Zinc in Air	µg/m <sup>3</sup>	0.002	0.020	0.030	0.040	0.69	0.65

Metals in High Volume Filters							
Our Reference:	UNITS	PQL	109358-6	109358-7	109358-8	109358-9	109358-10
Your Reference	--	--	EAP669	EAP670	EAP671	EAP672	EAP673
Location	--	--	Blank	Site 4	Site 3	Site 2	Site 1
Date Sampled				23/02/11	23/02/11	23/02/11	23/02/11
Air Volume	m <sup>3</sup>		[NA]	1,675	1,643	1,678	1,685
Weight of Filter (initial)	mg	0.02	3498.70	3511.80	3,604.00	3509.70	3511.20
Weight of Filter (final)	mg	0.02	3,501.00	3561.20	3560.10	3581.80	3571.10
Dust	mg/filter	0.04	2.3	49	56	72	60
Dust in Air	µg/m <sup>3</sup>	0.1	[NA]	29	34	43	36
Iron	µg/filter	5	150	[NA]	[NA]	[NA]	[NA]
Nickel	µg/filter	2	<2	[NA]	[NA]	[NA]	[NA]
Lead	µg/filter	5	<5	[NA]	[NA]	[NA]	[NA]
Lithium	µg/filter	2	2	[NA]	[NA]	[NA]	[NA]
Sulfur	µg/filter	50	770	[NA]	[NA]	[NA]	[NA]
Zinc	µg/filter	5	951	[NA]	[NA]	[NA]	[NA]

Client Reference: Dust Analysis

Metals in High Volume Filters	UNITS	PQL	109358-11	109358-12	109358-13	109358-14	109358-15
Our Reference:	--	--	EAP674	EAP675	EAP676	EAP677	EAP678
Your Reference	--	--	Site 5	Blank	Site 4	Site 3	Site 2
Location	--	--	Site 5	Blank	Site 4	Site 3	Site 2
Date Sampled	--	--	23/02/11	Blank	24/02/11	24/02/11	24/02/11
Air Volume	m <sup>3</sup>		1,683	[NA]	1,516	1,530	1,524
Weight of Filter (initial)	mg	0.02	3523.10	3,525.00	3515.40	3524.60	3510.30
Weight of Filter (final)	mg	0.02	3552.10	3527.70	3642.60	3592.10	3592.80
Dust	mg/filter	0.04	29	2.7	130	67	82
Dust in Air	µg/m <sup>3</sup>	0.1	17	[NA]	84	44	54

Metals in High Volume Filters	UNITS	PQL	109358-16	109358-17	109358-18	109358-19	109358-20
Our Reference:	--	--	EAP679	EAP680	EAP681	EAP682	EAP683
Your Reference	--	--	Site 1	Site 5	Blank	Site 4	Site 3
Location	--	--	Site 1	Site 5	Blank	Site 4	Site 3
Date Sampled	--	--	24/02/11	24/02/11	Blank	25/02/11	25/02/11
Air Volume	m <sup>3</sup>		1,538	1,533	[NA]	1,620	1,625
Weight of Filter (initial)	mg	0.02	3,519.00	3525.40	3508.70	3515.40	3516.20
Weight of Filter (final)	mg	0.02	3595.90	3571.80	3,511.00	3665.30	3596.30
Dust	mg/filter	0.04	78	46	2.3	150	80
Dust in Air	µg/m <sup>3</sup>	0.1	51	30	[NA]	93	49
Iron	µg/filter	5	[NA]	[NA]	[NA]	1,000	700
Iron in Air	µg/m <sup>3</sup>	0.005	[NA]	[NA]	[NA]	0.64	0.43
Nickel	µg/filter	2	[NA]	[NA]	[NA]	3	3
Nickel in Air	µg/m <sup>3</sup>	0.001	[NA]	[NA]	[NA]	<0.001	<0.001
Lead	µg/filter	5	[NA]	[NA]	[NA]	<5	<5
Lead in Air	µg/m <sup>3</sup>	0.005	[NA]	[NA]	[NA]	<0.005	<0.005
Lithium	µg/filter	2	[NA]	[NA]	[NA]	3	3
Lithium in Air	µg/m <sup>3</sup>	0.001	[NA]	[NA]	[NA]	<0.001	<0.001
Sulfur	µg/filter	50	[NA]	[NA]	[NA]	1,600	1,500
Sulfur in Air	µg/m <sup>3</sup>	0.02	[NA]	[NA]	[NA]	0.97	0.95
Zinc	µg/filter	5	[NA]	[NA]	[NA]	1,116	1,233
Zinc in Air	µg/m <sup>3</sup>	0.002	[NA]	[NA]	[NA]	0.69	0.76

Metals in High Volume Filters	UNITS	PQL	109358-21	109358-22	109358-23	109358-24	109358-25
Our Reference:	--	--	EAP684	EAP685	EAP686	EAP687	PVCHV/24
Your Reference	--	--	Site 2	Site 1	Site 5	Blank	Site 4
Location	--	--	Site 2	Site 1	Site 5	Blank	Site 4
Date Sampled	--	--	25/02/11	25/02/11	25/02/11		26/02/11
Air Volume	m <sup>3</sup>		1,620	1,632	1,629	[NA]	1,486
Weight of Filter (initial)	mg	0.02	3516.50	3,511.00	3,523.00	3515.70	637.50
Weight of Filter (final)	mg	0.02	3581.70	3574.30	3550.90	3515.80	725.10
Dust	mg/filter	0.04	65	63	28	0.10	88
Dust in Air	µg/m <sup>3</sup>	0.1	40	39	17	[NA]	[NA]
Iron	µg/filter	5	1,300	880	430	160	[NA]
Iron in Air	µg/m <sup>3</sup>	0.005	0.81	0.54	0.26	[NA]	[NA]
Nickel	µg/filter	2	15	12	3	<2	[NA]
Nickel in Air	µg/m <sup>3</sup>	0.001	0.010	0.010	<0.001	[NA]	[NA]
Lead	µg/filter	5	<5	<5	<5	<5	[NA]
Lead in Air	µg/m <sup>3</sup>	0.005	<0.005	<0.005	<0.005	[NA]	[NA]
Lithium	µg/filter	2	3	3	3	3	[NA]
Lithium in Air	µg/m <sup>3</sup>	0.001	<0.001	<0.001	<0.001	[NA]	[NA]
Sulfur	µg/filter	50	5,700	5,700	1,600	800	[NA]
Sulfur in Air	µg/m <sup>3</sup>	0.02	3.5	3.5	0.97	[NA]	[NA]
Zinc	µg/filter	5	1,173	950	1,046	1,044	[NA]
Zinc in Air	µg/m <sup>3</sup>	0.002	0.72	0.58	0.64	[NA]	[NA]

Metals in High Volume Filters	UNITS	PQL	109358-26	109358-27	109358-28	109358-29	109358-30
Our Reference:	--	--	PVCHV/25	PVCHV/26	EAP688	EAP689	EAP690
Your Reference	--	--	Site 3	Site 2	Site 1	Site 5	Blank
Location	--	--	Site 3	Site 2	Site 1	Site 5	Blank
Date Sampled	--	--	26/02/11	26/02/11	26/02/11	26/02/11	
Air Volume	m <sup>3</sup>		1,493	1,486	1,492	1,489	[NA]
Weight of Filter (initial)	mg	0.02	610.30	638.00	3512.90	3,507.00	3502.20
Weight of Filter (final)	mg	0.02	676.90	689.30	3576.30	3537.60	3,504.00
Dust	mg/filter	0.04	67	51	63	31	1.8

Metals in High Volume Filters	UNITS	PQL	109358-31	109358-32
Our Reference:	--	--	Lab Blank (glass fibre)	Lab Blank (PVC)
Your Reference	--	--		
Location	--	--		
Date Sampled	--	--		
Iron	µg/filter	5	170	22
Nickel	µg/filter	2	<2	<2
Lead	µg/filter	5	<5	<5
Lithium	µg/filter	2	<2	<2
Sulfur	µg/filter	50	910	<50
Zinc	µg/filter	5	1,260	<5

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 a 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; 60-140% for organics and 10-140% for SVOC and Speciated Phenols is acceptable.  
 Surrogates: 60-140% is acceptable for general organics and 10-140% for SVOC and Speciated Phenols.