



ESPERANCE PORTS
Sea & Land

PM10 EXCEEDANCE REPORT

MONITORING PERIOD

MIDDAY TO MIDDAY

16TH – 17TH OCTOBER 2011

Revision	Prepared	Reviewed	Approved	Date	Description
0	N. Norrish	A Leonard			
1	A Leonard	A Leonard		7/11/2011	Wind direction data corrected by reporting vector average to account for scale change from 0 to 360 degrees

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1. PURPOSE

On the 18th October 2011, the Esperance Ports Sea and Land (EPSL) became aware of PM₁₀ concentrations in excess of ambient concentration targets. Consistent with the latest Licence (L5099/1974/13) issued on the 24th February 2011 (amended 28th July 2011) requirement of Condition 9, this requires an exceedance report to be submitted to the DEC, within seven working days (27th October 2011). The targets are replicated in Table 1 below. The exceedance was recorded at Site 4 for the monitoring period of 1200hrs 16th October 2011 to 1200hrs on 17th October 2011.

Table 1. Emission Concentration Targets from Licence Number L5099/1974/13 issued to EPSL on 24 February 2011 (amended 28th July 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, time and location of exceedance

The recorded PM₁₀ concentration above the emission concentration target (Table 1) according to the Licence L5099/1974/13 for the monitoring period of 1200 hours 16th October 2011 to 1200 hours 17th October 2011 is as follows:

- Site 4: 58.5 µg/m³

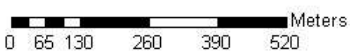


Disclaimer: This map consists of shape files generated by EPSL (2011) and Landgate (2010). This map is not to be used for navigational purposes. Positional accuracy should be considered as approximate.



Title: Location of HVAS/TEOM monitoring sites 1 to 4, HVAS community monitoring site 5, E-Sampler 5 to 8 (EP5-EP8) and EP7 - Meteorological station

Scale: 1:10,000



Date: 5 January 2011

Map no.

Figure 1. Location of air quality monitoring stations.

2.2 Port Activities

The following shipping activities were occurring at the Port during the exceedance period:

- Marine Vessel (MV) Agios Nikolas was alongside Berth 1 between 1430 16th October and 1752 18th October, and was being loaded with barley.

Other activities include:

- 27463 tonnes of iron ore averaged across 3 trains;
- 158 tonnes of nickel sulphide, averaged across 2 trucks; and
- 315 tonnes of formed sulphur was out-loaded across 4 trucks.

2.3 Meteorological Activities

The wind directions for the 24 hour period, between 1200 16th October and 1200 17th October, with winds from the NNW (2%), N (17%), NNE (45%) and ESE (36%) (Figure 2). The maximum hourly average wind speed of 15.5 m/s (55 km/hr) was recorded from the N at 1000 on 17th October. The 'Beaufort Wind Force Scale' is a measure of understanding wind speeds in descriptive terminology. A wind speed of 15.5 m/s is described as 'near gale' winds (BOM, 2011).

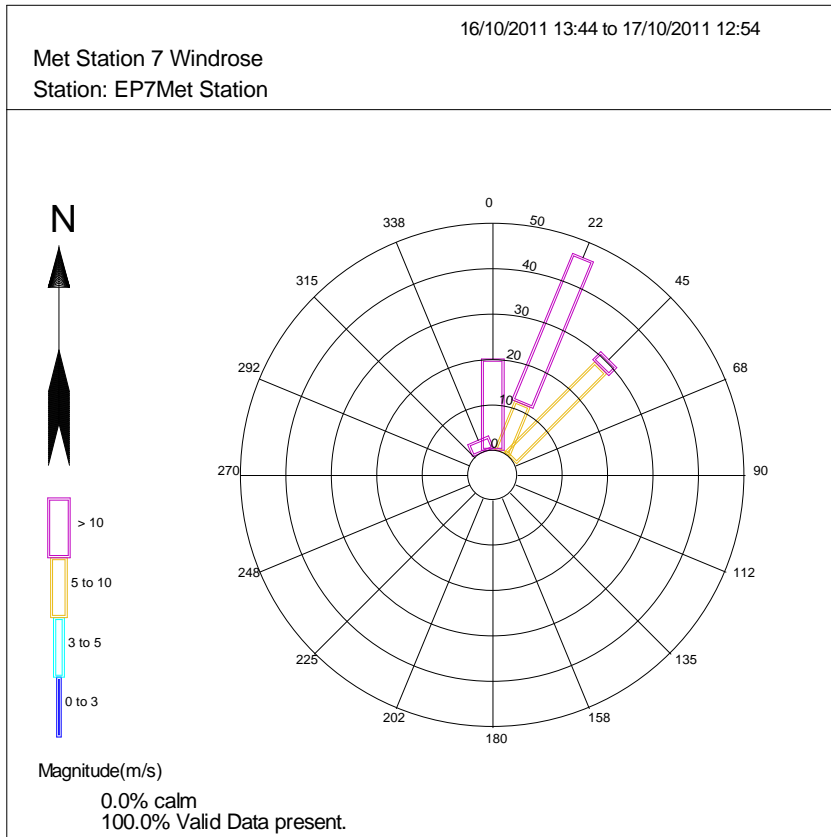


Figure 2: Exceedance A - Windrose for the monitoring period 1344 on 16/10/2011 to 1254 on 17/10/2011. Raw data source: EP7 monitoring station, Berth 3.

2.4 PM₁₀ Dust Levels (24hour period)

The 24 hour PM₁₀ exceedance was due to the peak PM₁₀ dust levels between 1800 to 2300 hours on 16th October 2011 and from a second peak between 0700 and 1100 on 17th October 2011 (**Figure 3**). The first peak in PM₁₀ levels appears to be related to barley loading activities on Berth 1. The peak PM₁₀ levels began at Site 3 at about 1730 hours during strong winds reaching >10 m/s wind from the NE (45°) direction of Berth 1. As the wind shifted to the NNE (approx 25°), peak PM₁₀ levels from the Berth 1 direction occurred at Site 4 until 2300 hours. Barley loading at Berth 1 began just before the peak at 1618 hours on the 16/10/2011 and finished just after the peak at 2337 hours on the 16/10/2011.

A second peak of PM₁₀ occurred at all sites between 0700 and 1100 on 17th October, and may have been associated with barley loading on Berth 1 beginning 0716 hours. During this time winds reached >10 m/s from 33° to 359° direction (N) (**Figure 3**). This wind direction and high wind speed indicates grain dust and particles from unsealed surfaces within the Port may have contributed to the increased PM₁₀ levels.

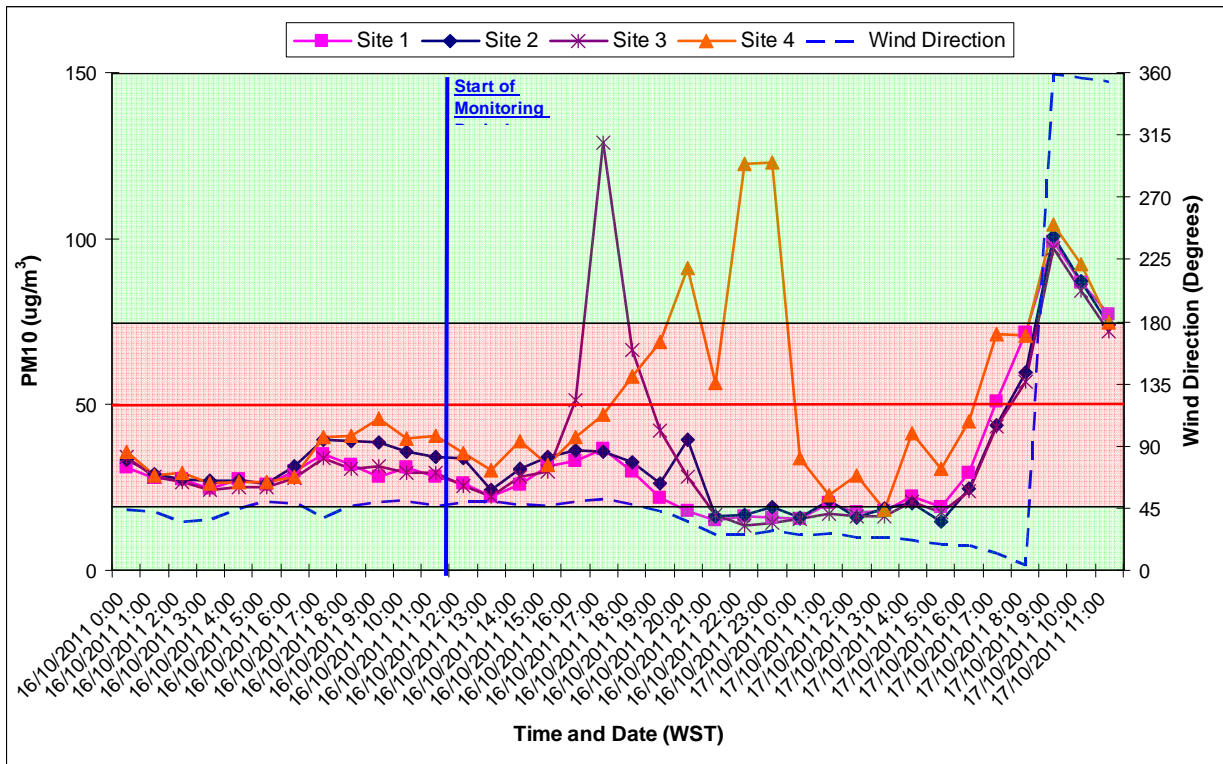


Figure 3. Hourly PM10 results for the monitoring period 1200 hrs 16/10/2011 to 1200 hrs 17/10/2011. Raw data source: TEOM monitoring stations 1, 2, 3 and 4.

3. CONCLUSIONS

The PM10 exceedance of Site 4 1200 on 16 October 2011 to 1200 17th October 2011 is most likely to be a result of grain ship loading. However, contributions from other dust sources including unsealed surfaces within the Port may have contributed to the exceedance. Given barley dust is mostly composed of particulates >10 µm in diameter, it is of no surprise that TSP exceedances were also recorded for this period at sites 3 and 4, the same sites increased PM10 was recorded. The laboratory TSP results were received on 27/10/2011 and a report will be submitted to DEC within seven working days.

3.1 Corrective Action

As a result of frequent dust exceedances recorded in the last few years, during 2011, CBH who control operations on Berth 1, have been in the process of performance monitoring of their existing dust controls. Once these results are known, plans to expand this existing technology will be considered. EPSL already implements a dust binding agent on unsealed surfaces. No further action can be practically taken by EPSL to further reduce dust.