



PM10 EXCEEDANCE REPORT

MONITORING PERIOD

MIDDAY TO MIDDAY

2ND - 3RD JANUARY 2011

Revision	Prepared	Reviewed	Approved	Date	Description
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1. PURPOSE

A daily check undertaken by the Esperance Port Sea and Land (ESPL) indicated PM₁₀ concentration in excess of ambient concentration targets (stipulated by L5099/1974/12). The targets are replicated in **Table 1** below. The exceedance was recorded at Site 1 for the **monitoring period of 1200hrs 2nd of January 2011 to 1200hrs on 3rd of January 2011.**

EPSL checked the PM₁₀ daily averages for the period midday 31st of December 2010 to midday of 3rd of January 2011 and became aware of the exceedance at site 1 on the 4th of January 2011. This report is being submitted to DEC (on 11th of January 2011) within the seven days following becoming aware of the exceedance, which is consistent with the requirement of Condition 4 and 5 of Licence L5099/1974/12.

Table 1: Emission Concentration Targets from DEC Licence Number L5099/1974/12 issued to EPSL on 6 January 2009

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

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 L5099/1974/12 for the monitoring period of **1200 hours 2nd January 2011 to 1200 hours 3rd January** is as follows:

- Site 1: 54.7 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) Hebei Legend was alongside Berth 3 loading with iron between 1734 hours 31st of December 2010 to 2232 hours 3rd of January 2011.
- Marine Vessel (MV) Weaver Arrow was alongside Berth 2 unloading Fertiliser between 1100 2nd of January 2011 to 4th of January 2011.

Other activities include:

- 17,808 tonnes of iron ore, averaged across 2 trains, was delivered to the Port.

2.3 Meteorological Activities

The wind directions for the 24 hour period are in the wind arc from NE to SSE with predominate winds from the E (37%), ENE (28%) and ESE (27%) (**Refer to Figure 2**). These wind directions mean that Berth 3 was upwind of site 1 in the easterly winds. Berth 2 was not upwind of site Site 1 since it is in a more southerly direction (refer to **Figure 1**).

The maximum hourly average wind speed of 14.6 m/s (52.6 km/hr) was recorded from the ESE at 1700 on the 2nd of January, and approximately 34% of the winds rose above 10 m/s. The 'Beaufort Wind Force Scale' is a measure of understanding wind speeds in descriptive terminology. A wind speed of 14.6 m/s is described as a 'near gale' winds (BOM, 2011).

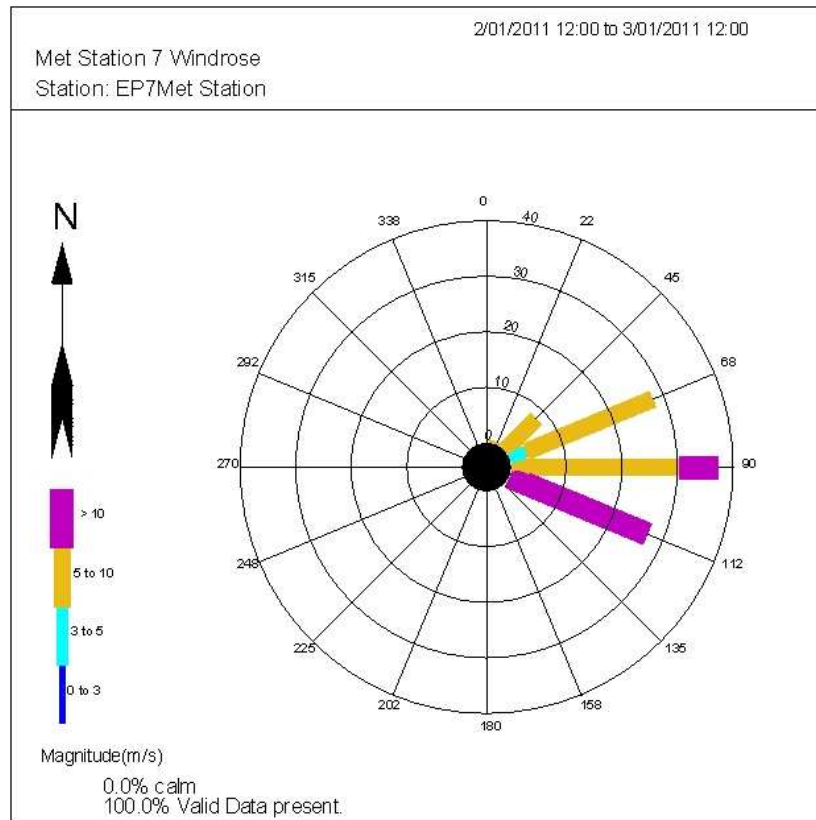


Figure 2 Windrose for the monitoring period 1200 hrs 2/01/2011 to 1200 hrs 3/01/2011. Raw data source: EP7 monitoring station, Berth 3.

2.4 PM₁₀ Dust Levels (24hour period)

The 24 hour PM₁₀ exceedance was due to the peak PM₁₀ dust levels between 1200 to 1800 hours on the 2nd of January (**Figure 3**). The peak levels coincided with the strongest winds reaching >10 m/s wind from the ESE (109°) direction. For the rest of the monitoring period, the PM₁₀ was below the 50ug/m³ ambient concentration target (**Figure 3**). The dust levels at site 1 were influenced by 'near gale' winds mobilising sand and sea spray from the Esperance foreshore beach directly ESE (27% of the time) and the beach ENE to E (65% of the time) from the direction of the Tearooms to the Yacht Club. These winds potentially carried iron ore dust from Berth 3 but this is unlikely since iron ore has a minor PM₁₀ component. The likelihood of this will be indicated once the iron levels on larger TSP particulate are known. These results (MPL laboratory reports) will be reported in the January Monthly Report. Since no physical samples of PM₁₀ are taken, iron levels in PM₁₀ cannot be determined. EPSL will include a discussion of the iron concentration in TSP in relation to this exceedance in the January Monthly Report.

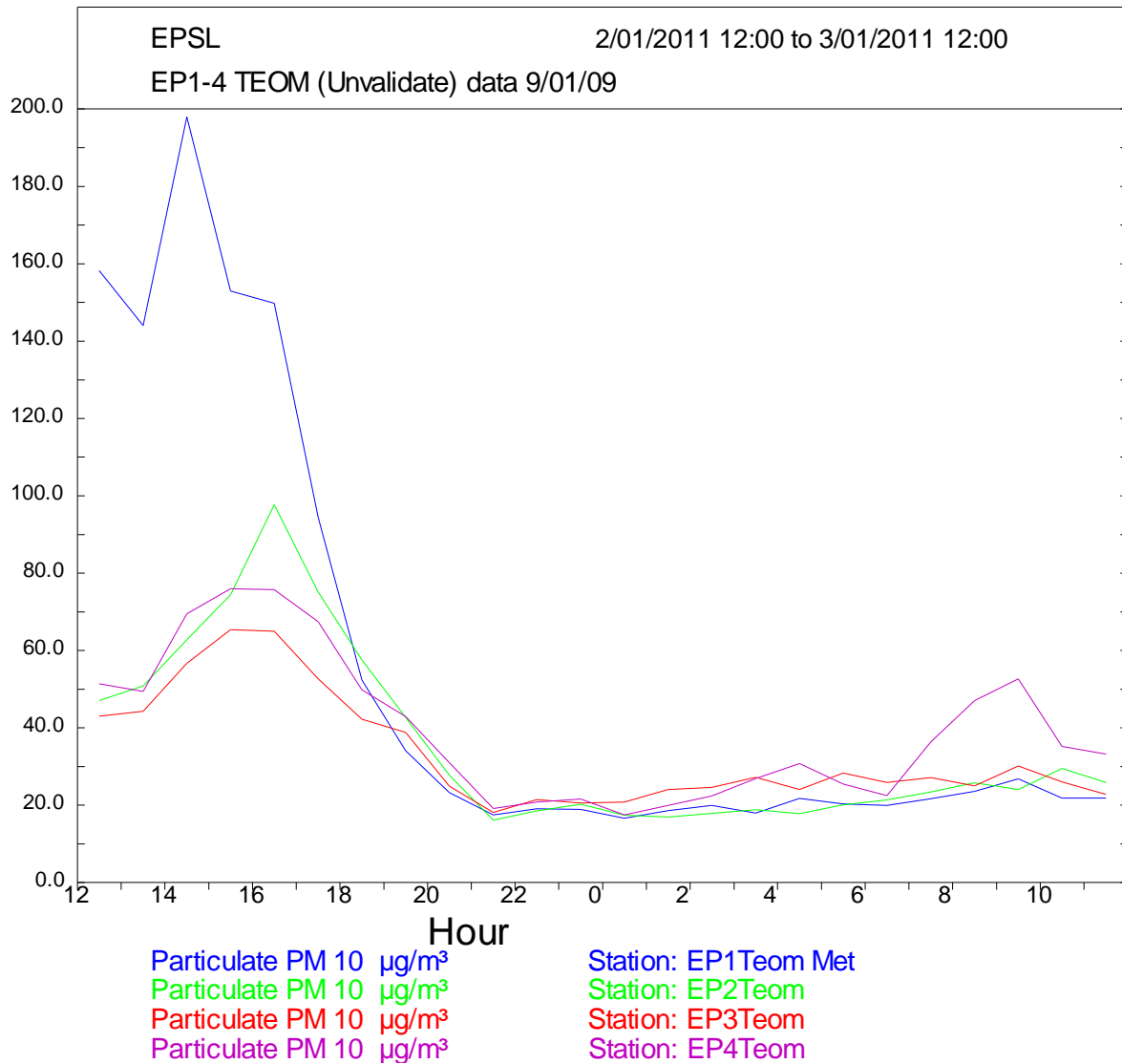


Figure 3 Line graph for the monitoring period 1200 hrs 2/01/2011 to 1200 hrs 3/01/2011. Raw data source: TEOM monitoring stations 1, 2, 3 and 4.

3. CONCLUSIONS

The investigation of the PM10 exceedance of Site 1 1200hr 2/01/2011 to 3/01/2011 cannot be attributed to the Port. The proximity to the Esperance foreshore beach and the meteorological conditions favoured the mobilisation of dust (sand and sea spray) towards Site 1. EPSL will further examine the low possibility of iron ore dust contributing to the PM10 exceedance in the January monthly report, once the TSP iron levels are received from MPL laboratories. This is further supported by the fact that even though the wind conditions were in the red zone (45 to 180 degrees) Sites 2, 3 and 4 were not as affected and the only difference being that they are further from the beach and that the Ports dust suppression measures are working.

3.1 Corrective Action

The cause of the exceedance was due to meteorological conditions and proximity to the Esperance Port Beach and the Port is not the source of the PM10 exceedance so no corrective action is offered.