



EXECUTIVE SUMMARY

North Queensland Bulk Ports commissioned a study on behalf of Dalrymple Bay Coal Terminal and BMA Hay Point Coal Terminal on the environmental dust concentrations in the region surrounding the Port of Hay Point area. The study involved establishing five monitoring sites, where over a fifteen month period samples were collected in three size ranges: TSP, PM₁₀ and PM_{2.5}. In total at each site 38 samples were collected for TSP and PM₁₀ and 24 samples for PM_{2.5}. There were some initial technical difficulties in collecting the PM_{2.5} samples. All the samples were collected over a 48 hour period, in order that sufficient sample volume could be collected for analysis. Sample analysis included anion and cation analysis, as well as petrographic and microscopic analysis. These analyses permitted the sources of the dust to be identified and characterized as coal, minerals or plant and insect matter.

The aim of this report is to analyse the data from the monitoring campaign in an attempt to answer the questions:

- > Does coal dust contribute significantly to the local atmospheric dust concentrations?
- > If so, does the contribution vary with the dust particle size fractions, of particular interest is the contribution to the PM_{2.5}?
- > What are the potential health risk implications for the local community from these dusts?

The results of this survey were:

- > No community sites (Louisa Creek, Salonika Beach and West Mackay) detected PM₁₀ or PM_{2.5} concentrations in excess of the NAAQS 24 hour PM₁₀ standard or PM_{2.5} advisory standard.
- > On only two occasions out of 38 the PM₁₀ concentration at the Hay Point Coal Terminal exceeded the NAAQS, but no measurements exceeded the PM_{2.5} NAAQS 24 hour advisory standard.
- > All sites around the Coal terminals showed a strong correlation between TSP and PM₁₀. This allowed an empiric relationship to be determined that could then be applied to the data from the continuous TSP monitoring system in the region.
- > At all three community sites the dominant source of the dust across all size fractions was insect or plant matter (averaging between 75 and 95% of the dust by mass). At Louisa Creek only three samples out of the 24 PM_{2.5} samples exceeded 10% coal dust, the maximum being 37%. Salonika Beach and West Mackay maximum coal dust was 25% and 5 % respectively. At all three community sites the highest dust concentrations measured corresponded to coal content of less than 5%.
- > At the two Coal terminal sites the dominant source of dust was coal, across all size fractions.
- > On average there was a slightly higher contribution of coal to the overall dust concentrations in the larger particle size fractions. This is consistent with the findings of the literature that mechanical processes create very little fine dust (PM_{2.5}) in comparison to the larger dust sizes.
- > There was a correlation between the coal content of the measured dust and the percentage of the time that the wind was blowing from the coal terminals toward the monitoring sites, for Louisa Creek for all particle size fractions, for Salonika Beach for PM₁₀ and TSP. No significant correlation was found for the West Mackay site due to the low concentrations of coal dust found in all size fractions at this site.
- > The concentrations of dust measured in the community compare favorably with comparable data from other locations in Queensland and interstate.

In summary this study does not indicate that coal dust from the coal terminals would be a significant contributor to any respirable dust related health issue in the local community.