Appendix 3.3 Calculation of Dust Suppression Efficiency

Appendix 3.3: Calculation of Dust Suppression Efficiency

Equation (3-2) in the attached *Control of Open Fugitive Dust Sources Final Report* was adopted for estimating the dust suppression rates with the following assumptions:

p = Potential average hourly daytime evaporation rate = 0.25916 mm/hr

d = Average hourly daytime traffic rate per hour = 2/hr

i = Application intensity = 0.022115 L/m^2

Note:

(a) p = 0.0049 x 52.8898 inch where 52.8898 inch is equivalent to the total evaporation of 1343.4 mm obtained from Hong Kong Observatory's website (http://www.weather.gov.hk/cis/normal/1971_2000/normals_e.htm).

(b) d was based on maximum number of vehicles of haul roads to barging points with 1800 vehicles per day (for haul road HR8A & 8B) which is 150 vehicles per hour with 12 operation hrs at active construction site.

(c) The assumptions provided above are for the purpose of assessment predictions only. Actual figures would be defined by the detailed design stage.

By applying the Equation (3-2) with the above assumptions,

Dust suppression efficiency = 100 – 0.8 x 0.25916 x 2 x t / 0.022115

where t = time between application, hr

Therefore,

For a water spraying frequency of 8 times per day, t = 8/12 = 0.6667/hr and therefore the estimated dust suppression efficiency is 87.5%.