

### Appendix 3.8: 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 = 150/hr

$i$  = Application intensity = 3.7469 L/m<sup>2</sup>

Note:

- (a)  $p = 0.0049 \times 52.8898$  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](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 =  $100 - 0.8 \times 0.25916 \times 150 \times t / 3.7469$

where  $t$  = time between application, hr

Therefore,

For a water spraying frequency of 12 times per day,  $t = 12/12 = 1$ hr and therefore the estimated dust suppression efficiency is 91.7%.