

Appendix 3.1: 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 = 0.23676 mm/hr

d = Average hourly daytime traffic rate per hour = 15/hr

i = Application intensity = 0.856 L/m²

Note:

- (a) p = 0.0049 x 48.31875 inch where 48.31875 inch is equivalent to the total evaporation of 1227.3 mm obtained from Hong Kong Observatory's website (http://www.weather.gov.hk/cis/normal/1981_2010/normals_e.htm).
- (b) d engineering estimate of approximately 8 vehicles on site at any one time
- (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 = $100 - 0.8 \times p \times d \times t / i$

Dust suppression efficiency = $100 - 0.8 \times 0.23676 \times 8 \times t / 0.856$

where t = time between application, hr

Therefore,

For a water spraying frequency of 4 times per day, $t = 10/4 = 2.5$ hr and therefore the estimated dust suppression efficiency is 91.7%.