

### Appendix 5.2.23: 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 = 406/hr

i = Application intensity = 18.53011 L/m<sup>2</sup>

Note:

- (a)  $p = 0.0049 \times 48.31875$  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](http://www.weather.gov.hk/cis/normal/1981_2010/normals_e.htm)).
- (b) 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,

$$\text{Dust suppression efficiency} = 100 - 0.8 \times p \times d \times t / i$$

$$\text{Dust suppression efficiency} = 100 - 0.8 \times 0.23676 \times 406 \times t / 18.53011$$

where t = time between application, hr

Therefore,

For a water spraying frequency of 12 times per day,  $t = 24/12 = 2$  hr and therefore the estimated dust suppression efficiency is 91.7%.