

Project Type	Work Contract	Heavy Construction Activities (Main Dust Generation)	From	To	Active Working Area (m ²)	Monthly active area for each heavy construction activity (m ²)											
						2022											
						Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Concurrent Project	WC01_PL5A	Pedestrian Connectivity - PL5A (SMP Estate to Kwun Tong MTR) * Earthwork (Excavation and Backfill)	Aug-16	Mar-18	200												
Concurrent Project	WC01_PL5B	Pedestrian Connectivity - PL5B (SMP Estate to Kwun Tong MTR) * Earthwork (Excavation and Backfill)	Aug-16	Mar-18	200												
Concurrent Project	WC02_PL7	Pedestrian Connectivity - PL7 (Po Tat Estate To BBI at Tsueng Kwan O Tunnel Road) * Earthwork (Excavation)	Sep-17	May-18	200												
The ARQ Project	WC03_PH1	Site Formation and Engineering Infrastructure at Main Site - Phase 1 area * Earthwork * Roadworks	Sep-16 Mar-17	Dec-17 Oct-18	8000 2000												
The ARQ Project	WC03_PLR	Access Road to Po Lam Road (Connection between Main Site and Po Lam Road) * Earthwork	Sep-16	Feb-18	2000												
The ARQ Project	WC03_DAR	Access Road to Road L1/L2/L3 (Connection between Main Site and DAR) * Retaining Walls * Roadwork	Mar-18 Mar-18	Nov-18 Oct-18	1000 1000												
The ARQ Project	WC04_PH2	Site Formation and Engineering Infrastructure at Main Site - Phase 2 area * Earthwork (Excavation) * Roadwork (Laying Utilities)	Jul-18 Apr-19	Jul-20 Oct-20	8000 2000												
The ARQ Project	WC05	Drainage Retention Tank * Earthwork * Backfilling	Jul-16 Nov-18	Apr-17 Jun-19	500 500												
Concurrent Project	WC06_LTRW	Road Improvement Works - Area 2 (Lin Tak Road Widening) * Earthwork (Excavation and Backfill) * Roadwork (Laying Utilities)	Mar-17 Sep-20	Jun-21 Nov-21	600 600												
Concurrent Project	WC07_A3	Road Improvement Works - Area 3 (Clear Water Bay Road) * Earthwork	Mar-17	Jul-20	500												
Concurrent Project	WC07_A4	Road Improvement Works - Area 4 (Shun Lee Tsuen Road) * Earthwork	Mar-17	Jul-19	120												
Concurrent Project	WC08	Site formation for Cavern * Excavation	Jan-18	Oct-19	150												
Concurrent Project	WC09	Viewing Platform * Site Clearance	Jan-18	Apr-18	150												
Total Area in one month (m ²)						0	0	0	0	0	0	0	0	0	0	0	0
Percentage of Daily Active Operating Area (%)						0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Percentage of Max Daily Active Operating Area (%) [1]						0 (<10%)											
Percentage of Annual Averaged Active Area (%) [2]						0 (<10%)											

Notes:
 [1] 10% active operating area has been adopted for ARQ contracts (WC03 & WC04), while for other work contracts, 100% active operating area is adopted.
 [2] 10% annual averaged works area has been adopted.
 [3] Detail breakdown of construction activities are represented by an asterisk (*)

Calculation of Watering Efficiency (For Heavy Construction and Wind Erosion)

With reference to Cowherd et al., "Control of Open Fugitive Dust Sources, EPA-450/3-88-008, U.S. Environmental Protection Agency, Research Triangle Park, NC, percentage of dust mitigation efficiency is calculated from Equation (3-2) :

$$C = 100 - \frac{0.8pdt}{i}$$

where

p = Potential average hourly daytime evaporation rate, mm/hour = 0.25916 [1]

d = Average hourly daytime traffic rate per hour = 70 per hour [2]

I = Application intensity = 1.75 L/m² [3]

Note:

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

[2] Estimated by Engineer

[3] The assumptions provided are for the purpose of assessment predictions only. Actual figures would be defined in the detailed design stage.

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

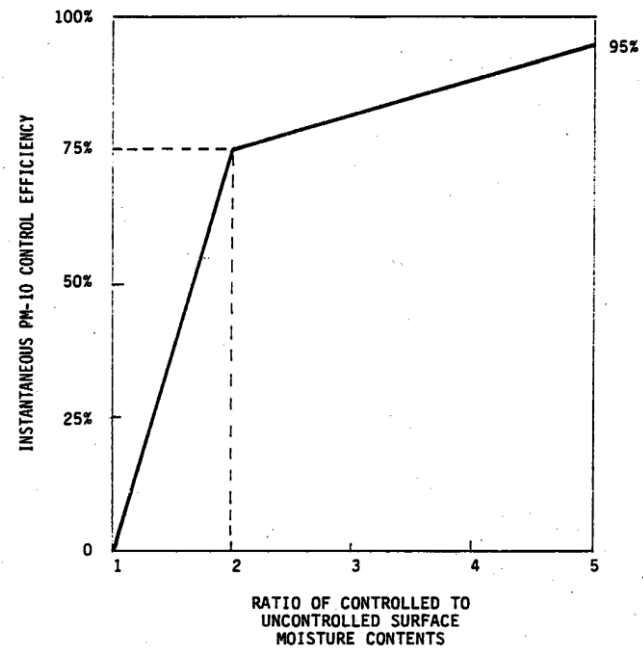
Dust suppression efficiency = $100 - 0.8 \times (0.25916 \times 70 \times t) / 1.75$ [t = time between application, hr]

Therefore,

For watering once per hour (i.e. t =1 hour), the estimated dust suppression efficiency is 91.7%.

Calculation of Watering Efficiency (for Stockpile)

With reference to Cowherd et al., "Control of Open Fugitive Dust Sources, EPA-450/3-88-008, U.S. Environmental Protection Agency, Research Triangle Park, NC, percentage of dust mitigation efficiency is calculated from Equation (3-3) and Figure 3-3 :



$$C = 75 \times (M - 1) \quad [\text{for } 1 \leq M \leq 2]$$

$$C = 62 + 6.7M \quad [\text{for } 2 \leq M \leq 5]$$

where $c =$ Instantaneous control efficiency (%)
 $M =$ Ratio of controlled to uncontrolled surface moisture contents

According to the Equation (3-3), by increasing the surface moisture content by a ratio of 1.67 would achieve 50% dust suppression efficiency :

$$\text{Dust suppression efficiency} = 75 \times (1.67 - 1) = 50\%$$

Watering Intensity

Given

Area of Stockpile	=	15657.3 m ²
Dry Fill Density	=	1700 kg/m ³
Uncontrolled Surface Moisture Content	=	2 %
Controlled Surface Moisture Content	=	3.3 %

Assume

Depth of Water Penetrated into Stockpile	=	0.02 m	see Note [1]
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Therefore,

Weight of Uncontrolled Wet Stockpile Surface	=	$15657.3 \times 1700 \times 0.02 / (1 - 0.02)$	=	543212 kg
Weight of Controlled Wet Stockpile Surface	=	$15657.3 \times 1700 \times 0.02 / (1 - 0.033)$	=	550705 kg
Watering Intensity	=	$(550705 - 543212) / 15657.3$	=	0.5 L/m ² /hour

Note [1] Referenced from the Dennis R. Fitz & Kurt Bumiller (2000) "Evaluation of Watering to Control Dust in High Winds", Journal of the Air & Waste Management Association