

**Proposed Redevelopment of Former Marine Police Headquarters at Tsim Sha Tsui
Environmental Impact Assessment**

Dust emission from wind erosion
(USEPA AP-42 Section 11.9) (10/98)

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| Wind erosion emission factor (Mg/ha/yr), E = | 0.85 |
| Total unmitigated emission rate = | 2.69E-06 g/m ² /s |
| Control efficiency = | 75% |
| <i>Wetting 4 times a day (Wetting twice a day to suppress dust emission by 50% - Control Techniques for Particulate Emissions from Stationary Sources, Vol 2)</i> | |
| Total mitigated emission rate = | 6.73E-07 g/m ² /s |

Dust emission from loading of materials to trucks
(USEPA AP-42 Section 13.2.4)(01/95)

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| Emission factor for truck loading (kg/Mg), E = | $k(0.0016)(U/2.2)^{1.3} / (M/2)^{1.4}$ | | |
| where | k = | particle size multiplier (dimensionless) = | 0.74 |
| | U = | mean wind speed (m/s) = | 3.0 |
| | M = | material moisture content (%) = | 2.0 |
| Emission factor for loading of/ unloading from each truck = | 0.0018 kg/Mg | | |
| Capacity of each truck = | 20.00 Mg | | |
| Emission rate = | 35.1328 g per loading of a truck | | |
| Max. no. of trucks involved per hour = | 16.6667 trucks/hr | | |
| Total unmitigated emission rate = | 0.1627 g/s | | |
| Area of the Site | 11700 m ² | | |
| Total unmitigated emission rate = | 1.39E-05 g/m ² /s | | |
| Control efficiency = | 75% | | |
| <i>Wetting 4 times a day (Wetting twice a day to suppress dust emission by 50% - Control Techniques for Particulate Emissions from Stationary Sources, Vol 2)</i> | | | |
| Total mitigated emission rate = | 3.48E-06 g/m ² /s | | |

Dust emission from excavation
(USEPA AP-42 Section 13.2.4)(01/95)

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| Emission factor for excavation (kg/Mg), E = | $k(0.0016)(U/2.2)^{1.3} / (M/2)^{1.4}$ | | |
| where | k = | particle size multiplier (dimensionless) = | 0.74 |
| | U = | mean wind speed (m/s) = | 3.0 |
| | M = | material moisture content (%) = | 2.0 |
| Emission factor for excavation = | 0.0018 kg/Mg | | |
| max. excavation rate = | 133 m ³ /hr/excavator | | |
| max. excavation rate = | 333 Mg/hr/excavator | | |
| Emission rate = | 0.163 g/s/excavator | | |
| No. of excavators involved = | 1 nos | | |
| Total unmitigated emission rate = | 0.16265 g/s | | |
| Area of the Site | 11700 m ² | | |
| Total unmitigated emission rate = | 1.39E-05 g/m ² /s | | |
| Control efficiency = | 75% | | |
| <i>Wetting 4 times a day (Wetting twice a day to suppress dust emission by 50% - Control Techniques for Particulate Emissions from Stationary Sources, Vol 2)</i> | | | |
| Total mitigated emission rate = | 3.48E-06 g/m ² /s | | |

Dust emission from unpaved road (without dust mitigation measures)

(USEPA AP-42 Section 13.2.2)(09/98)

Emission factor for unpaved road (lb/VMT), E = $k(s/12)^a(W/3)^b/(M/0.2)^c(S/15)$

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| where | k = | 10 |
| | a = | 0.8 |
| | b = | 0.5 |
| | c = | 0.4 |
| | s = | 8.5 |
| | W = | 8 unladen 28 laden |
| | M = | 2.0 |
| | S = | 5.0 mph |

with s = surface material silt content (%)
 W = mean vehicle weight (tons)
 M = surface material moisture content (%)
 S = speed (miles per hour)

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| Emission factor from unpaved road (lb/VMT) = | 1.6446 unladen |
| Emission factor from unpaved road (lb/VMT) = | 3.0767 laden |

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| Emission factor from unpaved road (g/v-m) = | 0.4636 unladen |
| Emission factor from unpaved road (g/v-m) = | 0.8673 laden |
| No. of vehicles active on-site | 17 veh/hr |

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| Emission factor from unpaved road (g/m-s) = | 0.0021 g/m-s | unladen |
| Max distance travelled per unladen truck from Access Point 1 | 146 m | |
| Number of trucks travelling from Access Point 1 per day | 100 | |
| Max distance travelled per unladen truck from Access Point 2 | 137 m | |
| Number of trucks travelling from Access Point 2 per day | 100 | |
| Total distance travelled per day | 28300 m/day | |
| Total distance travelled per second | 0.6550926 m/s | |
| Emission factor from unpaved road (g/s) = | 0.0014 g/s | unladen |
| Area of the Site | 11700 m ² | |
| Total unmitigated emission rate = | 1.2E-07 g/m ² /s | |
| Control efficiency = | 75% | |

Wetting 4 times a day (Wetting twice a day to suppress dust emission by 50% - Control Techniques for Particulate Emissions from Stationary Sources, Vol 2)

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| Total mitigated emission rate = | 3.00E-08 g/m ² /s | unladen |
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| Emission factor from unpaved road (g/m-s) = | 0.0040 g/m-s | laden |
| Max distance travelled per laden truck from Access Point 1 | 146 m | |
| Number of trucks travelling from Access Point 1 per day | 100 | |
| Max distance travelled per laden truck from Access Point 2 | 137 m | |
| Number of trucks travelling from Access Point 2 per day | 100 | |
| Total distance travelled per day | 28300 m/day | |
| Total distance travelled per second | 0.6550926 m/s | |
| Emission factor from unpaved road (g/s) = | 0.0026 g/s | unladen |
| Area of the Site | 11700 m ² | |
| Total unmitigated emission rate = | 2.25E-07 g/m ² /s | |
| Control efficiency = | 75% | |

Wetting 4 times a day (Wetting twice a day to suppress dust emission by 50% - Control Techniques for Particulate Emissions from Stationary Sources, Vol 2)

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| Total mitigated emission rate = | 5.62E-08 g/m ² /s | laden |
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| Overall Total Mitigated Emission Rate = | 7.71E-06 g/m ² /s |
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Average wind speed derived based on HKO98 Meteorological Data

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|----------------|------|-----|
| Number of Data | 8760 | |
| Max. | 10 | m/s |
| Min. | 0.5 | m/s |
| Average | 2.99 | m/s |
| Median | 3 | m/s |
| Mode | 3.5 | m/s |

