

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Hourly & Daily

A) Admiralty Station (ADM)

Works Area	Sources	Parameter	Remarks	
Harcourt Garden	Material handling and storage piles Source ID: A1-A3	Percentage active stockpile area	91.7 %	water suppression 12 times a day k (particle size < 30µm) AP42, Table 13.2.4-1 Annual mean wind speed recorded at HKO headquarter in TST in 2008 $E=k*0.0016*[(U/2.2)^{1.3}/(M/2)^{1.4}]$ Obtained from Section 4.5, Table 4.1, NEX/1039 South Island Line (East) Preliminary Design Report 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons From Final Preliminary Design Report
		Particle size multiplier	0.74	
		Moisture content	4.8 %	
		Average wind speed	2.9 m/s	
		Emission Factor	0.000497764 kg/Mg	
		Maximum daily output	1200 m ³ /day	
		Maximum hourly output	100 m ³ /hr 250 Mg/hr	
		Total works area	8507 m ²	
		Area of stockpile area	851 m ²	
		Emission Rate	4.06192E-05 g/m ² /s (unmitigated) 3.3714E-06 g/m ² /s (mitigated)	
Harcourt Garden	Wind erosion Source ID: A1-A3	Percentage active area	100 % (unmitigated) 20 % (mitigated)	80% stockpile area is covered by impervious sheet From Final Preliminary Design Report AP42, Table 11.9-4
		Emission Factor	0.85 Mg/hectare/year 2.69533E-06 g/m ² /s (unmitigated) 5.39066E-07 g/m ² /s (mitigated)	
Harcourt Garden	Heavy construction (Cut-and-cover section and demolish existing toilets) Source ID: A4-A11, A18-A20	Percentage active area	100 %	Assume 100% works area for construction of cut-and-cover section Water suppression 12 times a day AP42, Section 13.2.3.3
		Mitigation efficiency	91.7 %	
		No. of working days per month	26 days	
		No. of working hours per day	12 hours	
		Emission Factor	2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	
Harcourt Garden	Wind Erosion Source ID: A4-A11, A18-A20	Percentage active area	100 %	AP42, Table 11.9-4
		Emission Factor	0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	
Hong Kong Park	Heavy construction (Construction/ventilation shafts) and slope stabilization works Source ID: A23-A24	Percentage active area	100 %	Assume 100% works area for construction of cut-and-cover section Water suppression 12 times a day AP42, Section 13.2.3.3
		Mitigation efficiency	91.7 %	
		No. of working days per month	26 days	
		No. of working hours per day	12 hours	
		Emission Factor	2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	
Hong Kong Park	Wind erosion Source ID: A23-A24	Percentage active area	100 %	AP42, Table 11.9-4
		Emission Factor	0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	

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B) Nam Fung Tunnel

Works Area	Sources	Parameter	Remarks	
Nam Fung Portal	Slope stabilization works Source ID: A25	Percentage active area	100 %	
		Mitigation efficiency	91.7 %	
	Wind erosion Source ID: A25	No. of working days per month	26 days	
		No. of working hours per day	12 hours	
		Emission Factor	2.69 Mg/hectare/month of activity	
			0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	
	Material handling and storage piles Source ID: A28	Percentage active area	100 %	
			0.74 %	
		Emission Factor	0.85 Mg/hectare/year	
			2.69533E-06 g/m ² /s	
Wind erosion Source ID: A28		Percentage active area	100 % (unmitigated)	
			20 % (mitigated)	
		Emission Factor	0.85 Mg/hectare/year	
			2.69533E-06 g/m ² /s (unmitigated) 5.39066E-07 g/m ² /s (mitigated)	
		Heavy construction (Tunnel box construction) Source ID: A26-A27, A29	Percentage active area	100 %
				91.7 %
	Emission Factor		0.85 Mg/hectare/year	
			2.69533E-06 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	
	Wind erosion Source ID: A26-A27, A29		Percentage active area	100 %
				0.74 %
Emission Factor			0.85 Mg/hectare/year	
			2.69533E-06 g/m ² /s	
Crushing loading Source ID: P1a			Percentage active area	100 %
				99 %
		Emission Factor for RSP	0.000008 kg/Mg	
			0.0000168 kg/Mg	
		Maximum daily output	1100 m ³ /day	
			92 m ³ /hr	
	Maximum hourly output	229 Mg/hr		
		0.001069444 g/s (unmitigated) 1.06944E-05 g/s (mitigated)		
	Secondary crushing Source ID: P1c	Percentage active area	100 %	
			99 %	
Emission Factor for TSP		0.00006 kg/Mg		
		0.000381944 g/s (mitigated)		
Maximum daily output		1100 m ³ /day		
		92 m ³ /hr		
Maximum hourly output		229 Mg/hr		
		0.038194444 g/s (unmitigated) 0.000381944 g/s (mitigated)		
Screening Source ID: P1d		Percentage active area	100 %	
			99 %	
	Emission Factor for TSP	0.0011 kg/Mg		
		0.000700231 g/s (mitigated)		
	Maximum daily output	1100 m ³ /day		
		92 m ³ /hr		
	Maximum hourly output	229 Mg/hr		
		0.070023148 g/s (unmitigated) 0.000700231 g/s (mitigated)		
	Loading point from crushing plant to stockpile Source ID: P1e	Percentage active area	100 %	
			99 %	
Emission Factor for RSP		0.000008 kg/Mg		
		0.0000168 kg/Mg		
Maximum daily output		1100 m ³ /day		
		92 m ³ /hr		
Maximum hourly output		229 Mg/hr		
		0.027492914 g/s (unmitigated) 0.000274929 g/s (mitigated)		

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Hourly & Daily

C) Viaduct (Nam Fung Portal - Ocean Park)

Works Area	Sources	Parameter	Remarks	
Viaduct Section	Heavy construction Source ID: A30, A34	Percentage active area	100 %	Assume 100% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
		Mitigation efficiency	91.7 %	
		No. of working days per month	26 days	
		No. of working hours per day	12 hours	
		Emission Factor	2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	
	Wind erosion Source ID: A30, A34	Percentage active area	100 %	AP42, Section 11.9.2
		Emission Factor	0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	
	Material handling and storage piles Source ID: A31, A32	Percentage active stockpile area	91.7 %	water suppression 12 times a day k (particle size < 30µm) AP42, Section 13.2.4, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 E=k*0.0016*[(U/2.2) ^{1.3} /(M/2) ^{1.4}] From Table 4.1 of Preliminary Design-Draft Final Report 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons From final preliminary design report
		Particle size multiplier	0.74	
		Moisture content	4.8 %	
		Average wind speed	2.6 m/s	
		Emission Factor	0.000431889 kg/Mg	
		Maximum daily output	1050 m ³ /day	
		Maximum hourly output	88 m ³ /hr	
			219 Mg/hr	
		Total works area	8587 m ²	
		Area of the stockpile	859 m ²	
		Emission Rate	3.05509E-05 g/m ² /s (unmitigated) 2.53573E-06 g/m ² /s (mitigated)	
	Wind erosion Source ID: A31, A32	Percentage active area	100 % (unmitigated) 20 % (mitigated)	80% stockpiling area is covered by impervious sheets AP42, Section 11.9.4
		Emission Factor	0.85 Mg/hectare/year 2.69533E-06 g/m ² /s (unmitigated) 5.39066E-07 g/m ² /s (mitigated)	

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D) Ocean Park Station (OCP)

Works Area	Sources	Parameter	Remarks	
OCP Station	Heavy construction Source ID: A36-A37	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A36-A37	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.2

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Hourly & Daily

E) Viaduct (From Ocean Park to Wong Chuk Hang)

Works Area	Sources	Parameter	Remarks	
WCH - OCP Viaduct Section	Heavy construction Source ID: A38-A42	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 day 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A38-A42	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.2

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Hourly & Daily

F) Wong Chuk Hang Station (WCH)

Works Area	Sources	Parameter	Remarks
WCH Station	Heavy construction Source ID: A43-A44	Percentage active area	100 %
		Mitigation efficiency	91.7 %
		No. of working days per month	26 days
		No. of working hours per day	12 hours
		Emission Factor	2.69 Mg/hectare/month of activity
			0.000239494 g/m ² /s (unmitigated)
			1.9878E-05 g/m ² /s (mitigated)
			AP42, Section 13.2.3.3
	Wind erosion Source ID: A43-A44	Percentage active area	100 %
		Emission Factor	0.85 Mg/hectare/year
			2.69533E-06 g/m ² /s
			AP42, Section 11.9.4

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Hourly & Daily

G) Wong Chuk Hang Depot

Works Area	Sources	Parameter	Remarks	
Crushing Activities	Crushing loading Source ID: P2a	Mitigation efficiency	99 %	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) AP42, Section 11.19.2, Table 11-19.2-1 (Source: Truck Unloading - Fragmented Stone) conversion factor = 2.1 (From AP-42, Section 11.19.2 Table 11.19.2-1, 1/95 ed.) Peak output: 1500m ³ /day (from design engineer)
		Emission Factor for RSP	0.000008 kg/Mg	
	Emission Factor for TSP	0.0000168 kg/Mg		
		313 Mg/hr 0.001458333 g/s (unmitigated) 1.45833E-05 g/s (mitigated)		
Secondary crushing Source ID: P2c	Mitigation efficiency	99 %	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) AP42, Section 11.19.2, Table 11-19.2-1 (assume same as the tertiary crushing (controlled)) Peak output: 1500m ³ /day (from design engineer)	
		Emission Factor for TSP		0.0006 kg/Mg 313 Mg/hr 0.052083333 g/s (unmitigated) 0.000520833 g/s (mitigated)
Screening Source ID: P2d	Mitigation efficiency	99 %	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) AP42, Section 11.19.2, Table 11-19.2-1 (assume same as the tertiary crushing (controlled)) Peak output: 1500m ³ /day (from design engineer)	
		Emission Factor for TSP		0.0011 kg/Mg 313 Mg/hr 0.095486111 g/s (unmitigated) 0.000954861 g/s (mitigated)
Loading point from crushing plant to stockpile Source ID: P2e	Mitigation efficiency	99 %	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) k (particle size < 30µm) AP42, Section 13.2.4, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 E=k*0.0016*[(U/2.2) ^{1.3} /(M/2) ^{1.4}] Peak output: 1500m ³ /day (from design engineer)	
		Particle size multiplier		0.74
		Moisture content		4.8 %
		Average wind speed		2.6 m/s
		Emission Factor		0.000431889 kg/Mg 313 Mg/hr 0.037490338 g/s (unmitigated) 0.000374903 g/s (mitigated)
Heavy Construction	Site Formation (Zones C, D & E) + Piling (Zone A) Source ID: A46-A47 A48a-b, A49a-f, A50a-f, A51a-d A52a-c	Percentage active area	100 %	
		Mitigation efficiency	91.7 %	
Heavy Construction	Wind erosion Source ID: A46-A47 A48a-b, A49a-f, A50a-f, A51a-d A52a-c	No. of working days per month	26 days	
		No. of working hours per day	12 hours	
Modification of existing Staunton Creek nullah between Ocean Park Road and Nam Long Shan Road	Heavy construction Source ID: A45, A56	Emission Factor	2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	
		Percentage active area	100 %	
Modification of existing Staunton Creek nullah between Ocean Park Road and Nam Long Shan Road	Wind erosion Source ID: A45, A56	Emission Factor	0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	
		Percentage active area	100 %	
Material handling and storage piles Source ID: A49g	Percentage active stockpile area	91.7 %	water suppression 12 times a day k (particle size < 30µm) AP42, Section 13.2.4, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 E=k*0.0016*[(U/2.2) ^{1.3} /(M/2) ^{1.4}] From Table 4.1 of Preliminary Design-Draft Final Report 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons From final preliminary design report	
		Particle size multiplier		0.74
		Moisture content		4.8 %
		Average wind speed		2.6 m/s
		Emission Factor		0.000431889 kg/Mg 1050 m ³ /day 88 m ³ /hr 219 Mg/hr 8587 m ² 859 m ² 3.05509E-05 g/m ² /s (unmitigated) 2.53573E-06 g/m ² /s (mitigated)
Material handling and storage piles Source ID: A49g	Wind erosion	100 % (unmitigated) 20 % (mitigated)	80% stockpiling area is covered by impervious sheets AP42, Section 11.9.4	
		Emission Factor		0.85 Mg/hectare/year 2.69533E-06 g/m ² /s (unmitigated) 5.39066E-07 g/m ² /s (mitigated)

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H) Viaduct (From WCH to ALC Bridge)

Works Area	Sources	Parameter	Remarks	
Viaduct Section	Heavy construction Source ID: A57-A59, A61a, A61b	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A57-A59, A61a, A61b	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.4
Temporary Bridge (From WCH - ALC Bridge)	Heavy construction Source ID: A60, A62	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A60, A62	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.4

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I) ALC Bridge

Works Area	Sources	Parameter	Remarks	
ALC Bridge	Heavy construction Source ID: A63	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind Erosion Source ID: A63	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.4

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J) Tunnel (From ALC Bridge to LET Station)

Works Area	Sources	Parameter	Remarks
Cut-and-cover Tunnel	Heavy construction (Tunnel portal) Source ID: A64-A67	Percentage active area	100 %
		Mitigation efficiency	91.7 %
		No. of working days per month	26 days
		No. of working hours per day	12 hours
		Emission Factor	2.69 Mg/hectare/month of activity
			0.000239494 g/m ² /s (unmitigated)
			1.9878E-05 g/m ² /s (mitigated)
			AP42, Section 13.2.3.3
	Wind erosion Source ID: A64-A67	Percentage active area	100 %
		Emission Factor	0.85 Mg/hectare/year
			2.69533E-06 g/m ² /s
			AP42, Section 11.9.4

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Hourly & Daily

K) Lei Tung Station (LET)

Works Area	Sources	Parameter	Remarks	
Cut-and-cover and demolish sitting-out area	Heavy construction Source ID: A68	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A68	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.4
LET Ventilation Building and Entrances	Heavy construction for entrance shaft and ventilation building Source ID: A69, A71	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A69, A71	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.4
Slope Stabilization Works	Heavy construction on the existing slope Source ID: A70	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind Erosion Source ID: A70	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.4

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L) South Horizon Station (SOH)

Works Area	Sources	Parameter	Remarks	
SOH Station, Entrances and Ventilation Building	Heavy construction Source ID: A76-A78, A80, A82-A83	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A76-A78, A80, A82-A83	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.2
Cut-and-cover	Heavy construction Source ID: A79, A81	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A79, A81	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.2
Slope Stabilization Works	Heavy construction Source ID: A74-A75	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A74-A75	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.2
	Material handling and storage piles Source ID: A75a	Percentage active stockpile area Particle size multiplier Moisture content Average wind speed Emission Factor Maximum daily output Maximum hourly output Total works area Area of the stockpile Emission Rate	91.7 % 0.74 4.8 % 2.6 m/s 0.000431889 kg/Mg 1050 m ³ /day 88 m ³ /hr 219 Mg/hr 8587 m ² 859 m ² 3.05509E-05 g/m ² /s (unmitigated) 2.53573E-06 g/m ² /s (mitigated)	water suppression 12 times a day k (particle size < 30µm) AP42, Section 13.2.4, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 $E=k*0.0016*[(U/2.2)^{1.3}/(M/2)^{1.4}]$ From Table 4.1 of Preliminary Design-Draft Final Report 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons From final preliminary design report
	Wind erosion Source ID: A75a	Percentage active area Emission Factor	100 % (unmitigated) 20 % (mitigated) 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s (unmitigated) 5.39066E-07 g/m ² /s (mitigated)	80% stockpiling area is covered by impervious sheets AP42, Section 11.9.4

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M) Telegraph Bay Barging Point

Throughput from WCH Depot and Nam Fung Portal

Works Area	Sources	Parameter	Remarks	
Stockpile Area	Material handling and storage piles Source ID: A85	Percentage active stockpile area	91.7 %	water suppression 12 times a day k (particle size < 30µm) AP42, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 $E=k*0.0016*[(U/2.2)^{1.3}/(M/2)^{1.4}]$ Obtained from engineer 10 hours per day Assume capacity of dump truck is 6m ³ and 15 tons
		Particle size multiplier	0.74	
Moisture content		4.8 %		
Average wind speed		2.6 m/s		
Emission Factor		0.000431889 kg/Mg		
Maximum daily output		1500 m ³ /day		
Maximum hourly output		150 m ³ /hr		
		375 Mg/hr		
Total stockpile area		200 m ²		
Emission Rate		0.000224942 g/m ² /s (unmitigated) 1.86702E-05 g/m ² /s (mitigated)		
Wind erosion	Source ID: A85	Percentage active area	100 % (unmitigated) 20 % (mitigated)	80% stockpiling area is covered by impervious sheets AP42, Table 11.9-4
		Emission Factor	0.85 Mg/hectare/year 2.69533E-06 g/m ² /s (unmitigated) 5.39066E-07 g/m ² /s (mitigated)	
Barging Point	Unloading of spoils to barge Source ID: P3	Mitigation efficiency	50 %	3-side with top cover and water spraying system to be provided (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) spray at point of spoil dumping k (particle size < 30µm) AP42, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 $E=k*0.0016*[(U/2.2)^{1.3}/(M/2)^{1.4}]$ Obtained from engineer 10 hours per day Assume capacity of dump truck is 6m ³ and 15 tons
		Particle size multiplier	0.74	
		Moisture content	4.8 %	
		Average wind speed	2.6 m/s	
		Emission Factor	0.000431889 kg/Mg	
		Maximum daily output	1500 m ³ /day	
		Maximum hourly output	150 m ³ /hr	
			375 Mg/hr	
		Emission Rate	0.044988405 g/s (unmitigated) 0.022494203 g/s (mitigated)	

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Hourly & Daily

N) Lee Nam Road Barging Point

Mainly from Ap Lei Chau Work Site (With Conveyor Belt)

Works Area	Sources	Parameter	Remarks
Spoil Disposal	Material handling and storage piles Source ID: A87	Percentage active stockpile area	water suppression 12 times a day k (particle size < 30µm) AP42, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 $E=k*0.0016*((U/2.2)^{1.3}/(M/2)^{1.4})$ Obtained from Section 4.5, Table 4.1, NEX/1039 South Island Line (East) Preliminary Design Report 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons
		Particle size multiplier	
Moisture content	0.74		
Average wind speed	4.8 %		
Emission Factor	2.6 m/s		
Maximum daily output	0.000431889 kg/Mg		
Maximum hourly output	1200 m ³ /day		
Total Works Area	100 m ³ /hr		
Stockpile area	250 Mg/hr		
Emission Rate	450 m ²		
	Wind erosion Source ID: A87	Percentage active area	100 % (unmitigated)
		Emission Factor	20 % (mitigated)
			0.85 Mg/hectare/year
			2.69533E-06 g/m ² /s (unmitigated)
			5.39066E-07 g/m ² /s (mitigated)
LWS Ventilation Building	Heavy construction Source ID: A86	Percentage active area	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
		Mitigation efficiency	
No. of working days per month	26 days		
No. of working hours per day	12 hours		
Emission Factor	2.69 Mg/hectare/month of activity		
			0.000239494 g/m ² /s (unmitigated)
			1.9878E-05 g/m ² /s (mitigated)
	Wind erosion Source ID: A86	Percentage active area	100 %
		Emission Factor	0.85 Mg/hectare/year
			2.69533E-06 g/m ² /s
Slope Stabilization Works	Heavy construction Source ID: A72-A73	Percentage active area	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
		Mitigation efficiency	
No. of working days per month	26 days		
No. of working hours per day	12 hours		
Emission Factor	2.69 Mg/hectare/month of activity		
			0.000239494 g/m ² /s (unmitigated)
			1.9878E-05 g/m ² /s (mitigated)
	Wind erosion Source ID: A72-A73	Percentage active area	100 %
		Emission Factor	0.85 Mg/hectare/year
			2.69533E-06 g/m ² /s
Barging Point	Unloading of spoils to barge Source ID: P6	Mitigation efficiency	50 %
		Particle size multiplier	0.74
		Moisture content	4.8 %
		Average wind speed	2.6 m/s
		Emission Factor	0.000431889 kg/Mg
		Maximum daily output	1440 m ³ /day
		Maximum hourly output	120 m ³ /hr
			300 Mg/hr
		Maximum daily output	1200 m ³ /day
		Maximum hourly output	100 m ³ /hr
Total maximum hourly output	400 m ³ /hr		
Emission Rate	0.047987632 g/s (unmitigated)		
			0.023993816 g/s (mitigated)

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Hourly & Daily

O) Chung Hom Kok Magazine Site

Works Area	Sources	Parameter	Remarks	
Magazine Site	Heavy construction Source ID: A88	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hour 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind Erosion Source ID: A88	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.2

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Hourly & Daily

P) Concurrent Projects - Essential Public Infrastructure Works (EPIW)

Description	Sources	Parameter	Remarks	
Modification of Roads and U-turn Lanes at Wong Chuk Hang	Heavy construction Source ID: A33, A35	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A33, A35	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.2
Widening of Heung Yip Road and associated road improvement works Public Transport Interchange (PTI) underneath Wong Chuk Hang (WCH) Station Footbridge connecting to Heung Yip Road and WCH Road Footbridge connecting to Ap Lei Chau Estate	Heavy construction Source ID: A54-A55	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hour 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A54-A55	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.2
Footbridge (with Lift) over Ap Lei Chau Bridge Road	Heavy construction Source ID: A84	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A84	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.2
Wan Chai Development Phase and Central- Wan Chai Bypass	Heavy construction Source ID: A12a, A12b	Emission Factor	6.23E-05 g/m ² /s (mitigated)	Extract from EIA report of Wan Chai Development Phase II and Central-Wan Chai Bypass (Appendix 3.1 p.7 Scenario 3, (HKCEC2E)), assume 100% active area
	Wind erosion Source ID: A12a, A12b	Emission Factor	2.70E-06 g/m ² /s	Extract from EIA report of Wan Chai Development Phase II and Central-Wan Chai Bypass (Appendix 3.1 p.8 Scenario 3, (HKCEC2E)), assume 100% active area
	Heavy construction Source ID: A13	Emission Factor	6.23E-05 g/m ² /s (mitigated)	Extract from EIA report of Wan Chai Development Phase II and Central-Wan Chai Bypass (Appendix 3.1 p.7 Scenario 3, (HKCEC2W)), assume 100% active area
	Wind erosion Source ID: A13	Emission Factor	2.70E-06 g/m ² /s	Extract from EIA report of Wan Chai Development Phase II and Central-Wan Chai Bypass (Appendix 3.1 p.8 Scenario 3, (HKCEC2W)), assume 100% active area
HATS Stage 2A	Heavy construction Source ID: A85a (Cyberport drop shaft)	Emission Factor	2.08E-04 (Unmitigated)	Extract from EIA report of HATS Stage 2A Appendix 3.1, (source ID: CB-N-1), assume 100% active area
	Wind erosion Source ID: A85a (Cyberport drop shaft)	Emission Factor	2.70E-06 (Unmitigated)	Extract from EIA report of HATS Stage 2A Appendix 3.1, (source ID: CB-N-1), assume 100% active area
Reprovisioning of Bus Terminal	Heavy construction Source ID: A57a	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hour 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A57a	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.2
HK West Drainage Tunnel	Heavy construction Source ID: A89-93	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	100 % 91.7 % 26 days 12 hour 2.69 Mg/hectare/month of activity 0.000239494 g/m ² /s (unmitigated) 1.9878E-05 g/m ² /s (mitigated)	Assume 100% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A89-93	Percentage active area Emission Factor	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Section 11.9.2
	Unloading of spoils to barge Source ID: P7	Mitigation efficiency Particle size multiplier Moisture content Average wind speed Emission Factor Maximum daily output Maximum hourly output Emission Rate	50 % 0.74 4.8 % 2.6 m/s 0.000431889 kg/Mg 1500 m ³ /day 150 m ³ /hr 375 Mg/hr 0.044988405 g/s (unmitigated) 0.022494203 g/s (mitigated)	Assume 3-side with top cover and water spraying system to be provided (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) spray at point of spoil dumping k (particle size < 30µm) AP42, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 E=k*0.0016*[(U/2.2) ^{1.3} /(M/2) ^{1.4}] Obtained from engineer 10 hours per day Assume capacity of dump truck is 6m ³ and 15 tons

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

A) Admiralty Station (ADM)

Works Area	Sources	Parameter	Remarks	
Harcourt Garden	Material handling and storage piles Source ID: A1-A3	Percentage active stockpile area	91.7 %	water suppression 12 times a day k (particle size < 30µm) AP42, Table 13.2.4-1 Annual mean wind speed recorded at HKO headquarter in TST in 2008 $E=k*0.0016*[(U/2.2)^{1.3}/(M/2)^{1.4}]$ Obtained from Section 4.5, Table 4.1, NEX/1039 South Island Line (East) Preliminary Design Report 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons From Final Preliminary Design Report
		Particle size multiplier	0.74	
		Moisture content	4.8 %	
		Average wind speed	2.9 m/s	
		Emission Factor	0.000497764 kg/Mg	
		Maximum daily output	1200 m ³ /day	
		Maximum hourly output	100 m ³ /hr 250 Mg/hr	
		Total works area	8507 m ²	
		Area of stockpile area	851 m ²	
		Emission Rate	4.06192E-05 g/m ² /s (unmitigated) 3.3714E-06 g/m ² /s (mitigated)	
Harcourt Garden	Wind erosion Source ID: A1-A3	Percentage active area	100 % (unmitigated) 20 % (mitigated)	80% stockpile area is covered by impervious sheet From Final Preliminary Design Report AP42, Table 11.9-4
		Emission Factor	0.85 Mg/hectare/year 2.69533E-06 g/m ² /s (unmitigated) 5.39066E-07 g/m ² /s (mitigated)	
Harcourt Garden	Heavy construction (Cut-and-cover section and demolish existing toilets) Source ID: A4-A11, A18-A20	Percentage active area	6 %	Assume 6% works area for construction of cut-and-cover section Water suppression 12 times a day AP42, Section 13.2.3.3
		Mitigation efficiency	91.7 %	
		No. of working days per month	26 days	
		No. of working hours per day	12 hours	
		Emission Factor	2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	
Harcourt Garden	Wind Erosion Source ID: A4-A11, A18-A20	Percentage active area	6 %	AP42, Table 11.9-4
		Emission Factor	0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	
Hong Kong Park	Heavy construction (Construction/ventilation shafts) and slope stabilization works Source ID: A23-A24	Percentage active area	6 %	Assume 6% works area for construction of cut-and-cover section Water suppression 12 times a day AP42, Section 13.2.3.3
		Mitigation efficiency	91.7 %	
		No. of working days per month	26 days	
		No. of working hours per day	12 hours	
		Emission Factor	2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	
Hong Kong Park	Wind erosion Source ID: A23-A24	Percentage active area	6 %	AP42, Table 11.9-4
		Emission Factor	0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

B) Nam Fung Tunnel

Works Area	Sources	Parameter	Remarks	
Nam Fung Portal	Slope stabilization works Source ID: A25	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A25	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.4
	Material handling and storage piles Source ID: A28	Percentage active stockpile area Particle size multiplier Moisture content Average wind speed Emission Factor Maximum daily output Maximum hourly output Total works area Area of the stockpile Emission Rate	91.7 % 0.74 4.8 % 2.6 m/s 0.000431889 kg/Mg 1050 m ³ /day 88 m ³ /hr 219 Mg/hr 8587 m ² 859 m ² 3.05509E-05 g/m ² /s (unmitigated) 2.53573E-06 g/m ² /s (mitigated)	water suppression 12 times a day k (particle size < 30µm) AP42, Section 13.2.4, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 E=k*0.0016*[(U/2.2) ^{1.3} /(M/2) ^{1.4}] From Table 4.1 of Preliminary Design-Draft Final Report 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons From final preliminary design report
	Wind erosion Source ID: A28	Percentage active area Emission Factor	100 % (unmitigated) 20 % (mitigated) 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s (unmitigated) 5.39066E-07 g/m ² /s (mitigated)	80% stockpiling area is covered by impervious sheets AP42, Section 11.9.4
	Heavy construction (Tunnel box construction) Source ID: A26-A27, A29	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A26-A27, A29	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.4
	Crushing loading Source ID: P1a	Mitigation efficiency Emission Factor for RSP Emission Factor for TSP Maximum daily output Maximum hourly output 0.001069444 g/s (unmitigated) 1.06944E-05 g/s (mitigated)	99 % 0.000008 kg/Mg 0.0000168 kg/Mg 1100 m ³ /day 92 m ³ /hr 229 Mg/hr 0.001069444 g/s (unmitigated) 1.06944E-05 g/s (mitigated)	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) AP42, Section 11.19.2, Table 11-19.2-1 (Source: Truck Unloading - Fragmented Stone) conversion factor = 2.1 (From AP-42, Section 11.19.2 Table 11.19.2-1, 1/95 ed.) Obtained from Section 18.1, Table 18.1, NEX/1039 South Island Line (East) Preliminary Design Report 12 hours per day Peak output (from engineer)
	Secondary crushing Source ID: P1c	Mitigation efficiency Emission Factor for TSP Maximum daily output Maximum hourly output 0.038194444 g/s (unmitigated) 0.000381944 g/s (mitigated)	99 % 0.0006 kg/Mg 1100 m ³ /day 92 m ³ /hr 229 Mg/hr 0.038194444 g/s (unmitigated) 0.000381944 g/s (mitigated)	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) AP42, Section 11.19.2, Table 11-19.2-1 (assume same as the tertiary crushing (controlled)) Obtained from Section 18.1, Table 18.1, NEX/1039 South Island Line (East) Preliminary Design Report 12 hours per day Peak output (from engineer)
	Screening Source ID: P1d	Mitigation efficiency Emission Factor for TSP Maximum daily output Maximum hourly output 0.070023148 g/s (unmitigated) 0.000700231 g/s (mitigated)	99 % 0.0011 kg/Mg 1100 m ³ /day 92 m ³ /hr 229 Mg/hr 0.070023148 g/s (unmitigated) 0.000700231 g/s (mitigated)	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) AP42, Section 11.19.2, Table 11-19.2-1 (assume same as the tertiary crushing (controlled)) Obtained from Section 18.1, Table 18.1, NEX/1039 South Island Line (East) Preliminary Design Report 12 hours per day Peak output (from engineer)
	Loading point from crushing plant to stockpile Source ID: P1e	Mitigation efficiency Particle size multiplier Moisture content Average wind speed Emission Factor Maximum daily output Maximum hourly output Emission Rate	99 % 0.74 4.8 % 2.6 m/s 0.000431889 kg/Mg 1100 m ³ /day 92 m ³ /hr 229 Mg/hr 0.027492914 g/s (unmitigated) 0.000274929 g/s (mitigated)	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) k (particle size < 30µm) AP42, Section 13.2.4, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 E=k*0.0016*[(U/2.2) ^{1.3} /(M/2) ^{1.4}] From Table 4.1 of Preliminary Design-Draft Final Report 12 hours per day Peak output (from engineer)

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

C) Viaduct (Nam Fung Portal - Ocean Park)

Works Area	Sources	Parameter	Remarks
Viaduct Section	Heavy construction Source ID: A30, A34	Percentage active area	6 %
		Mitigation efficiency	91.7 %
	No. of working days per month	26 days	Assume 6% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	No. of working hours per day	12 hours	
Emission Factor	2.69 Mg/hectare/month of activity	1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	
Wind erosion Source ID: A30, A34	Percentage active area	6 %	AP42, Section 11.9.2
	Emission Factor	0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	
Material handling and storage piles Source ID: A31, A32	Percentage active stockpile area	91.7 %	water suppression 12 times a day k (particle size < 30µm) AP42, Section 13.2.4, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 E=k*0.0016*[(U/2.2) ^{1.3} /(M/2) ^{1.4}] From Table 4.1 of Preliminary Design-Draft Final Report 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons From final preliminary design report
	Particle size multiplier	0.74	
	Moisture content	4.8 %	
	Average wind speed	2.6 m/s	
	Emission Factor	0.000431889 kg/Mg	
	Maximum daily output	1050 m ³ /day	
	Maximum hourly output	88 m ³ /hr	
	Total works area	219 Mg/hr	
	Area of the stockpile	8587 m ²	
	Emission Rate	3.05509E-05 g/m ² /s (unmitigated) 2.53573E-06 g/m ² /s (mitigated)	
Wind erosion Source ID: A31, A32	Percentage active area	100 % (unmitigated) 20 % (mitigated)	80% stockpiling area is covered by impervious sheets AP42, Section 11.9.4
	Emission Factor	0.85 Mg/hectare/year	
		2.69533E-06 g/m ² /s (unmitigated) 5.39066E-07 g/m ² /s (mitigated)	

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

D) Ocean Park Station (OCP)

Works Area	Sources	Parameter	Remarks	
OCP Station	Heavy construction Source ID: A36-A37	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A36-A37	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.2

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

E) Viaduct (From Ocean Park to Wong Chuk Hang)

Works Area	Sources	Parameter	Remarks	
WCH - OCP Viaduct Section	Heavy construction Source ID: A38-A42	Percentage active area	6 %	Assume 6% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
		Mitigation efficiency	91.7 %	
		No. of working days per month	26 day	
		No. of working hours per day	12 hours	
		Emission Factor	2.69 Mg/hectare/month of activity	
			1.43697E-05 g/m ² /s (unmitigated)	
			1.19268E-06 g/m ² /s (mitigated)	
	Wind erosion Source ID: A38-A42	Percentage active area	6 %	AP42, Section 11.9.2
		Emission Factor	0.85 Mg/hectare/year	
			1.6172E-07 g/m ² /s	

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

F) Wong Chuk Hang Station (WCH)

Works Area	Sources	Parameter	Remarks	
WCH Station	Heavy construction Source ID: A43-A44	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A43-A44	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.4

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

G) Wong Chuk Hang Depot

Works Area	Sources	Parameter	Remarks	
Crushing Activities	Crushing loading Source ID: P2a	Mitigation efficiency	99 %	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) AP42, Section 11.19.2, Table 11-19.2-1 (Source: Truck Unloading - Fragmented Stone) conversion factor = 2.1 (From AP-42, Section 11.19.2 Table 11.19.2-1, 1/95 ed.) Peak output: 1500m ³ /day (from design engineer)
		Emission Factor for RSP	0.000008 kg/Mg	
	Emission Factor for TSP	0.0000168 kg/Mg		
		313 Mg/hr 0.001458333 g/s (unmitigated) 1.45833E-05 g/s (mitigated)		
Secondary crushing Source ID: P2c		Mitigation efficiency	99 %	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) AP42, Section 11.19.2, Table 11-19.2-1 (assume same as the tertiary crushing (controlled)) Peak output: 1500m ³ /day (from design engineer)
		Emission Factor for TSP	0.0006 kg/Mg	
Screening Source ID: P2d		Mitigation efficiency	99 %	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) AP42, Section 11.19.2, Table 11-19.2-1 (assume same as the tertiary crushing (controlled)) Peak output: 1500m ³ /day (from design engineer)
		Emission Factor for TSP	0.0011 kg/Mg	
Loading point from crushing plant to stockpile Source ID: P2e		Mitigation efficiency	99 %	Typical removal efficiency for fabric baghouse/cartidge filter type dust extraction and collection system (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) k (particle size < 30µm) AP42, Section 13.2.4, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 $E=k*0.0016*[(U/2.2)^{1.3}/(M/2)^{1.4}]$ Peak output: 1500m ³ /day (from design engineer)
		Particle size multiplier	0.74	
		Moisture content	4.8 %	
		Average wind speed	2.6 m/s	
	Emission Factor	0.000431889 kg/Mg 313 Mg/hr		
	Emission Rate	0.037490338 g/s (unmitigated) 0.000374903 g/s (mitigated)		
Heavy Construction	Site Formation (Zones C, D & E) + Piling (Zone A) Source ID: A46-A47 A48a-b, A49a-f, A50a-f, A51a-d A52a-c	Percentage active area	6 %	Assume 6% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
		Mitigation efficiency	91.7 %	
		No. of working days per month	26 days	
		No. of working hours per day	12 hours	
		Emission Factor	2.69 Mg/hectare/month of activity	
			1.43697E-05 g/m ² /s (unmitigated)	
			1.19268E-06 g/m ² /s (mitigated)	
Heavy Construction	Wind erosion Source ID: A46-A47 A48a-b, A49a-f, A50a-f, A51a-d A52a-c	Percentage active area	6 %	Assume 6% works area for heavy construction AP42, Section 11.9.4
		Emission Factor	0.85 Mg/hectare/year	
			1.6172E-07 g/m ² /s	
Modification of existing Staunton Creek nullah between Ocean Park Road and Nam Long Shan Road	Heavy construction Source ID: A45, A56	Percentage active area	6 %	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
		Mitigation efficiency	91.7 %	
		No. of working days per month	26 days	
		No. of working hours per day	12 hour	
		Emission Factor	2.69 Mg/hectare/month of activity	
			1.43697E-05 g/m ² /s (unmitigated)	
			1.19268E-06 g/m ² /s (mitigated)	
Modification of existing Staunton Creek nullah between Ocean Park Road and Nam Long Shan Road	Wind erosion Source ID: A45, A56	Percentage active area	6 %	AP42, Section 11.9.2
		Emission Factor	0.85 Mg/hectare/year	
			1.6172E-07 g/m ² /s	
	Material handling and storage piles Source ID: A49g	Percentage active stockpile area	91.7 %	water suppression 12 times a day k (particle size < 30µm) AP42, Section 13.2.4, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 $E=k*0.0016*[(U/2.2)^{1.3}/(M/2)^{1.4}]$ From Table 4.1 of Preliminary Design-Draft Final Report 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons From final preliminary design report
		Particle size multiplier	0.74	
		Moisture content	4.8 %	
		Average wind speed	2.6 m/s	
		Emission Factor	0.000431889 kg/Mg	
		Maximum daily output	1050 m ³ /day	
		Maximum hourly output	88 m ³ /hr	
			219 Mg/hr	
		Total works area	8587 m ²	
		Area of the stockpile	859 m ²	
		Emission Rate	3.05509E-05 g/m ² /s (unmitigated)	
			2.53573E-06 g/m ² /s (mitigated)	
	Wind erosion Source ID: A49g	Percentage active area	100 % (unmitigated) 20 % (mitigated)	80% stockpiling area is covered by impervious sheets AP42, Section 11.9.4
		Emission Factor	0.85 Mg/hectare/year	
			2.69533E-06 g/m ² /s (unmitigated)	
			5.39066E-07 g/m ² /s (mitigated)	

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

H) Viaduct (From WCH to ALC Bridge)

Works Area	Sources	Parameter	Remarks	
Viaduct Section	Heavy construction Source ID: A57-A59, A61a, A61b	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A57-A59, A61a, A61b	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.4
Temporary Bridge (From WCH - ALC Bridge)	Heavy construction Source ID: A60, A62	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A60, A62	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.4

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

I) ALC Bridge

Works Area	Sources	Parameter	Remarks	
ALC Bridge	Heavy construction Source ID: A63	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind Erosion Source ID: A63	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.4

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

J) Tunnel (From ALC Bridge to LET Station)

Works Area	Sources	Parameter	Remarks	
Cut-and-cover Tunnel	Heavy construction (Tunnel portal) Source ID: A64-A67	Percentage active area	6 %	Assume 6% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
		Mitigation efficiency	91.7 %	
		No. of working days per month	26 days	
		No. of working hours per day	12 hours	
		Emission Factor	2.69 Mg/hectare/month of activity	
			1.43697E-05 g/m ² /s (unmitigated)	
			1.19268E-06 g/m ² /s (mitigated)	
	Wind erosion Source ID: A64-A67	Percentage active area	6 %	AP42, Section 11.9.4
		Emission Factor	0.85 Mg/hectare/year	
			1.6172E-07 g/m ² /s	

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

K) Lei Tung Station (LET)

Works Area	Sources	Parameter	Remarks	
Cut-and-cover and demolish sitting-out area	Heavy construction Source ID: A68	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A68	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.4
LET Ventilation Building and Entrances	Heavy construction for entrance shaft and ventilation building Source ID: A69, A71	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A69, A71	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.4
Slope Stabilization Works	Heavy construction on the existing slope Source ID: A70	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind Erosion Source ID: A70	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.4

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

L) South Horizon Station (SOH)

Works Area	Sources	Parameter	Remarks	
SOH Station, Entrances and Ventilation Building	Heavy construction Source ID: A76-A78, A80, A82-A83	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A76-A78, A80, A82-A83	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.2
Cut-and-cover	Heavy construction Source ID: A79, A81	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A79, A81	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.2
Slope Stabilization Works	Heavy construction Source ID: A74-A75	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A74-A75	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.2
	Material handling and storage piles Source ID: A75a	Percentage active stockpile area Particle size multiplier Moisture content Average wind speed Emission Factor Maximum daily output Maximum hourly output Total works area Area of the stockpile Emission Rate	91.7 % 0.74 4.8 % 2.6 m/s 0.000431889 kg/Mg 1050 m ³ /day 88 m ³ /hr 219 Mg/hr 8587 m ² 859 m ² 3.05509E-05 g/m ² /s (unmitigated) 2.53573E-06 g/m ² /s (mitigated)	water suppression 12 times a day k (particle size < 30µm) AP42, Section 13.2.4, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 $E=k*0.0016*[(U/2.2)^{1.3}/(M/2)^{1.4}]$ From Table 4.1 of Preliminary Design-Draft Final Report 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons From final preliminary design report
	Wind erosion Source ID: A75a	Percentage active area Emission Factor	100 % (unmitigated) 20 % (mitigated) 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s (unmitigated) 5.39066E-07 g/m ² /s (mitigated)	80% stockpiling area is covered by impervious sheets AP42, Section 11.9.4

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

M) Telegraph Bay Barging Point

Throughput from WCH Depot and Nam Fung Portal

Works Area	Sources	Parameter	Remarks
Stockpile Area	Material handling and storage piles Source ID: A85	Percentage active stockpile area	water suppression 12 times a day k (particle size < 30µm) AP42, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 E= $k \cdot 0.0016 \cdot [(U/2.2)^{1.3} / (M/2)^{1.4}]$ Obtained from engineer 10 hours per day Assume capacity of dump truck is 6m ³ and 15 tons
		Particle size multiplier	
Moisture content	4.8 %		
Average wind speed	2.6 m/s		
Emission Factor	0.000431889 kg/Mg		
Maximum daily output	1500 m ³ /day		
Maximum hourly output	150 m ³ /hr		
Total stockpile area	375 Mg/hr 200 m ²		
Emission Rate	0.000224942 g/m ² /s (unmitigated) 1.86702E-05 g/m ² /s (mitigated)		
Wind erosion	Source ID: A85	Percentage active area	
		Emission Factor	0.85 Mg/hectare/year 2.69533E-06 g/m ² /s (unmitigated) 5.39066E-07 g/m ² /s (mitigated)
Barging Point	Unloading of spoils to barge Source ID: P3	Mitigation efficiency	3-side with top cover and water spraying system to be provided (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) spray at point of spoil dumping k (particle size < 30µm) AP42, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 E= $k \cdot 0.0016 \cdot [(U/2.2)^{1.3} / (M/2)^{1.4}]$ Obtained from engineer 10 hours per day Assume capacity of dump truck is 6m ³ and 15 tons
		Particle size multiplier	
Moisture content	4.8 %		
Average wind speed	2.6 m/s		
Emission Factor	0.000431889 kg/Mg		
Maximum daily output	1500 m ³ /day		
Maximum hourly output	150 m ³ /hr		
Emission Rate	375 Mg/hr 0.044988405 g/s (unmitigated) 0.022494203 g/s (mitigated)		

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

N) Lee Nam Road Barging Point

Mainly from Ap Lei Chau Work Site (With Conveyor Belt)

Works Area	Sources	Parameter	Remarks	
Spoil Disposal	Material handling and storage piles Source ID: A87	Percentage active stockpile area	water suppression 12 times a day k (particle size < 30µm) AP42, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 $E=k*0.0016*[(U/2.2)^{1.3}/(M/2)^{1.4}]$ Obtained from Section 4.5, Table 4.1, NEX/1039 South Island Line (East) Preliminary Design Report 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons	
		Particle size multiplier		91.7 %
Moisture content	0.74			
Average wind speed	4.8 %			
Emission Factor	2.6 m/s			
Maximum daily output	0.000431889 kg/Mg			
Maximum hourly output	1200 m ³ /day			
Total Works Area	100 m ³ /hr			
Stockpile area	250 Mg/hr			
Emission Rate	450 m ²			
		0.000666495 g/m ² /s (unmitigated)		
		5.53191E-05 g/m ² /s (mitigated)		
	Wind erosion Source ID: A87	Percentage active area	100 % (unmitigated)	
		Emission Factor	20 % (mitigated)	
		0.85 Mg/hectare/year	80% stockpiling area is covered by impervious sheets AP42, Table 11.9-4	
		2.69533E-06 g/m ² /s (unmitigated)		
		5.39066E-07 g/m ² /s (mitigated)		
LWS Ventilation Building	Heavy construction Source ID: A86	Percentage active area	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3	
		Mitigation efficiency		6 %
No. of working days per month	91.7 %			
No. of working hours per day	26 days			
Emission Factor	12 hours			
	2.69 Mg/hectare/month of activity			
		1.43697E-05 g/m ² /s (unmitigated)		
		1.19268E-06 g/m ² /s (mitigated)		
	Wind erosion Source ID: A86	Percentage active area	6 %	
		Emission Factor	0.85 Mg/hectare/year	
		1.6172E-07 g/m ² /s	AP42, Section 11.9.2	
Slope Stabilization Works	Heavy construction Source ID: A72-A73	Percentage active area	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3	
		Mitigation efficiency		6 %
No. of working days per month	91.7 %			
No. of working hours per day	26 days			
Emission Factor	12 hours			
	2.69 Mg/hectare/month of activity			
		1.43697E-05 g/m ² /s (unmitigated)		
		1.19268E-06 g/m ² /s (mitigated)		
	Wind erosion Source ID: A72-A73	Percentage active area	6 %	
		Emission Factor	0.85 Mg/hectare/year	
		1.6172E-07 g/m ² /s	AP42, Section 11.9.2	
Barging Point	Unloading of spoils to barge Source ID: P6	Mitigation efficiency	3-side with top cover and water spraying system to be provided (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) k (particle size < 30µm) AP42, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 AP42, Section 13.2.4 Assume 240 truck trips per day (Spoils to barge transferred from road traffic) 12 hours per day Assume capacity of dump truck is 6m ³ and 15 tons Obtained from Section 4.5, Table 4.1, NEX/1039 South Island Line (East) Preliminary Design Report (Spoils to barge transferred from conveyor belt) 12 hours per day	
		Particle size multiplier		50 %
		Moisture content		0.74
		Average wind speed		4.8 %
		Emission Factor		2.6 m/s
		Maximum daily output		0.000431889 kg/Mg
		Maximum hourly output		1440 m ³ /day
		Maximum daily output		120 m ³ /hr
		Maximum hourly output		300 Mg/hr
		Total maximum hourly output		1200 m ³ /day
		Emission Rate		100 m ³ /hr
	400 m ³ /hr			
	0.047987632 g/s (unmitigated)			
	0.023993816 g/s (mitigated)			

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

O) Chung Hom Kok Magazine Site

Works Area	Sources	Parameter	Remarks	
Magazine Site	Heavy construction Source ID: A88	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hour 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind Erosion Source ID: A88	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.2

Appendix 10.2: Detailed Calculation of Emission Factors for FDM Model - Annual

P) Concurrent Projects - Essential Public Infrastructure Works (EPIW)

Description	Sources	Parameter	Remarks	
Modification of Roads and U-turn Lanes at Wong Chuk Hang	Heavy construction Source ID: A33, A35	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A33, A35	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.2
Widening of Heung Yip Road and associated road improvement works Public Transport Interchange (PTI) underneath Wong Chuk Hang (WCH) Station	Heavy construction Source ID: A54-A55	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hour 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A54-A55	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.2
Footbridge connecting to Heung Yip Road and WCH Road	Heavy construction Source ID: A84	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
Footbridge connecting to Ap Lei Chau Estate	Wind erosion Source ID: A84	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.2
Footbridge (with Lift) over Ap Lei Chau Bridge Road	Heavy construction Source ID: A84	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hours 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A84	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.2
Wan Chai Development Phase and Central- Wan Chai Bypass	Heavy construction Source ID: A12a, A12b	Emission Factor	3.74E-06 g/m ² /s (mitigated)	Extract from EIA report of Wan Chai Development Phase II and Central-Wan Chai Bypass (Appendix 3.1 p.7 Scenario 3, (HKCEC2E)), assume 6% active area
	Wind erosion Source ID: A12a, A12b	Emission Factor	2.70E-06 g/m ² /s	Extract from EIA report of Wan Chai Development Phase II and Central-Wan Chai Bypass (Appendix 3.1 p.8 Scenario 3, (HKCEC2E)), assume 100% active area
	Heavy construction Source ID: A13	Emission Factor	3.74E-06 g/m ² /s (mitigated)	Extract from EIA report of Wan Chai Development Phase II and Central-Wan Chai Bypass (Appendix 3.1 p.7 Scenario 3, (HKCEC2W)), assume 6% active area
	Wind erosion Source ID: A13	Emission Factor	2.70E-06 g/m ² /s	Extract from EIA report of Wan Chai Development Phase II and Central-Wan Chai Bypass (Appendix 3.1 p.8 Scenario 3, (HKCEC2W)), assume 100% active area
HATS Stage 2A	Heavy construction Source ID: A85a (Cyberport drop shaft)	Emission Factor	1.25E-05 (Unmitigated)	Extract from EIA report of HATS Stage 2A Appendix 3.1, (source ID: CB-N-1), assume 6% active area
	Wind erosion Source ID: A85a (Cyberport drop shaft)	Emission Factor	2.70E-06 (Unmitigated)	Extract from EIA report of HATS Stage 2A Appendix 3.1, (source ID: CB-N-1), assume 100% active area
Reprovisioning of Bus Terminal	Heavy construction Source ID: A57a	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hour 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A57a	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.2
HK West Drainage Tunnel	Heavy construction Source ID: A89-93	Percentage active area Mitigation efficiency No. of working days per month No. of working hours per day Emission Factor	6 % 91.7 % 26 days 12 hour 2.69 Mg/hectare/month of activity 1.43697E-05 g/m ² /s (unmitigated) 1.19268E-06 g/m ² /s (mitigated)	Assume 6% active area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3
	Wind erosion Source ID: A89-93	Percentage active area Emission Factor	6 % 0.85 Mg/hectare/year 1.6172E-07 g/m ² /s	AP42, Section 11.9.2
	Unloading of spoils to barge Source ID: P7	Mitigation efficiency Particle size multiplier Moisture content Average wind speed Emission Factor Maximum daily output Maximum hourly output Emission Rate	50 % 0.74 4.8 % 2.6 m/s 0.000431889 kg/Mg 1500 m ³ /day 150 m ³ /hr 375 Mg/hr 0.044988405 g/s (unmitigated) 0.022494203 g/s (mitigated)	Assume 3-side with top cover and water spraying system to be provided (From Control Techniques for Particulate Emissions from Stationary Sources Vol.2) spray at point of spoil dumping k (particle size < 30µm) AP42, Table 13.2.4-1 Annual mean wind speed recorded at Wong Chuk Hang in 2008 E=k*0.0016*[(U/2.2) ^{1.3} /(M/2) ^{1.4}] Obtained from engineer 10 hours per day Assume capacity of dump truck is 6m ³ and 15 tons