

Appendix 3.2 - Details of Dust Emission Sources for 1-hour and Daily TSP Assessment (Tier 2) at Year 2015

West Kowloon Cultural District

Works Area	Sources	Parameter		Remarks
West Kowloon Cultural District	Heavy construction Source ID: TE1-TE9, Te1- Te7, EB1-EB5	Percentage active area, p Mitigation efficiency No. of working days per month, d No. of working hours per day, h Emission Factor Emission Rate	100% 91.7% 26 days 12 hour 2.69 0.000239494 1.9878E-05	Assume 100% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3 =2.69*1000000/(10000*d*h*60*60)*p/100
	Wind Erosion Source ID: TE1-TE9, Te1- Te7, EB1-EB5	Percentage active area, p Emission Factor Emission Rate	100% 0.85 2.69533E-06	AP42, Table 11.9-4 =0.85*1000000/(10000*365*24*60*60)*p/100
West Kowloon Cultural District Barging Point (Construction Site)	Haul road to barging points Source ID: HR7A3, HR7B, HR7C1 HR8A-B HR9 HR10A-C HR11 HR12A	Particle size multiplier, k Road surface silt loading, sL	3.23 g/VKT 8.2 g/m2	AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. Mean Silt Loading of Quarry, AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Uncontrolled total loading range from 4.2+1.9g/m2, for a mixture of sand and native soil, to 11.0+3.8g/m2 for native soil alone, Page 10 of Improved Activity Levels for National Emission Inventories of Fugitive Dust from Paved and Unpaved Roads. Average weigh of the vehicles traveling the road, extracted from SP License E=k x (sL)^0.91x (W)^1.02 (AP-42, section 13.2.1, 01/11 ed.) Extracted from SP License of Express Rail Link (Appendix C) For road HR7A-C For road HR8A-B For road HR9 For road HR10A-C For road HR11 For road HR12A From 7:00 to 19:00, extracted from SP License of Express Rail Link (Appendix C) Extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 900, extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 1800, extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 1440, extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 1080, extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 720, extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 360, extracted from SP License of Express Rail Link (Appendix C)
		Average truck weight, W	16 tons	
		TSP emission factor, E	370.7 g/VKT	
		No. of truck trips per day	900 veh/day 1800 veh/day 1440 veh/day 1080 veh/day 720 veh/day 360 veh/day	
		No. of operation hour	12 hr	
		% of dust suppression	97.5 %	
		Emission Rate	4.75E-14 g/m/s (mitigated)	
			9.49E-14 g/m/s (mitigated)	
			7.59E-14 g/m/s (mitigated)	
			5.70E-14 g/m/s (mitigated)	
			3.80E-14 g/m/s (mitigated)	
			1.90E-14 g/m/s (mitigated)	
West Kowloon Cultural District Barging Point	Unloading of spoils to barge Source ID: BP4-7	--	4.27E-03 g/s (mitigated)	Extract from EIA report of Express Rail Link (Appendix 12.1 p.3) , assume 12 hours of operation
West Kowloon Cultural District Concrete Batching Plant (Construction Site)	Paved haul road outside concrete batching plant - For Laden Vehicle Source ID: EP11 EP12 EP13	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W	3.23 g/VKT 12 g/m2 36 tons 45 tons 30.8 tons	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Full loading of Aggregate Tipper Truck Full loading of Cement Tanker Full loading of Concrete Mixer E=k x (sL)^0.91x (W)^1.02 (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tpper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 2, and 6 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 6 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 6 veh/hr respectively.
		TSP emission factor, E	1199 g/VKT 1505 g/VKT 1022 g/VKT	
		No. of operation hour	12 hr	
		% of dust suppression	97.5 %	
		Sum of Emission Rate	1.63E-04 g/m/s (mitigated)	
			1.42E-04 g/m/s (mitigated)	
	6.35E-05 g/m/s (mitigated)			
West Kowloon Cultural District Concrete Batching Plant (Construction Site)	Paved haul road outside concrete batching plant - For Laden Vehicle Source ID: EP14 EP15 EP16 EP17	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W	3.23 g/VKT 12 g/m2 36 tons 45 tons 30.8 tons	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Full loading of Aggregate Tipper Truck Full loading of Cement Tanker Full loading of Concrete Mixer E=k x (sL)^0.91x (W)^1.02 (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tpper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 0, and 6 veh/hr respectively.
		TSP emission factor, E	1199 g/VKT 1505 g/VKT 1022 g/VKT	
		No. of operation hour	12 hr	
		% of dust suppression	99.0 %	
		Sum of Emission Rate	8.36E-06 g/m/s (mitigated)	
			4.00E-05 g/m/s (mitigated)	
	1.70E-05 g/m/s (mitigated)			
	8.52E-06 g/m/s (mitigated)			

Appendix 3.2 - Details of Dust Emission Sources for 1-hour and Daily TSP Assessment (Tier 2) at Year 2015

West Kowloon Cultural District

Works Area	Sources	Parameter		Remarks	
West Kowloon Cultural District Concrete Batching Plant (Construction Site)	Paved haul road outside concrete batching plant - For Unladen Vehicle	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W TSP emission factor, E No. of operation hour % of dust suppression Sum of Emission Rate	3.23	g/VKT	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Unladen weight of Aggregate Tipper Truck Unladen weight of Cement Tanker Unladen weight of Concrete Mixer $E=k \times (sL)^{0.91} \times (W)^{1.02}$ (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 2, and 6 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 6 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 6 veh/hr respectively.
			12	g/m ²	
			14	tons	
			15	tons	
			12	tons	
			457	g/VKT	
			491	g/VKT	
391	g/VKT				
12	hr				
97.5	%				
Source ID:					
EP18		6.12E-05	g/m/s (mitigated)		
EP19		5.44E-05	g/m/s (mitigated)		
EP20		2.31E-05	g/m/s (mitigated)		
West Kowloon Cultural District Concrete Batching Plant (Construction Site)	Paved haul road within concrete batching plant - For Unladen Vehicle	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W TSP emission factor, E No. of operation hour % of dust suppression Sum of Emission Rate	3.23	g/VKT	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Unladen weight of Aggregate Tipper Truck Unladen weight of Cement Tanker Unladen weight of Concrete Mixer $E=k \times (sL)^{0.91} \times (W)^{1.02}$ (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 0, and 3 veh/hr respectively.
			12	g/m ²	
			14	tons	
			15	tons	
			12	tons	
			457	g/VKT	
			491	g/VKT	
391	g/VKT				
12	hr				
99.0	%				
Source ID:					
EP21		2.73E-06	g/m/s (mitigated)		
EP22		1.52E-05	g/m/s (mitigated)		
EP23		3.26E-06	g/m/s (mitigated)		
West Kowloon Cultural District Concrete Batching Plant (Unloading of raw materials)	Unloading aggregate Source ID: EP9-EP10	Consumption Rate Particle size multiplier, k Moisture content, M Mean wind speed, U Emission Factor, E Mitigation efficiency Emission Rate	272000	kg/h	Extracted from SP License of Express Rail Link (Appendix C). For TSP, AP-42, section 13.2.4, 11/06 ed. Extracted from Specified Processes License (checked on 13 Jan 2012) PATH year 2010 mean wind speed $E=k \times (0.0016) \times ((U/2.2)^{1.3}/(M/2)^{1.4})$ (AP-42, section 13.2.4, 11/06 ed.) Extracted from Specified Processes License (checked on 13 Jan 2012)
			272	Mg/h	
			0.74		
			2	%	
			3.5	m/s	
			0.002165163	kg/Mg	
			0.588924442	kg/hr	
99	%				
1.64E-03	g/s (mitigated)				
West Kowloon Cultural District Concrete Batching Plant (Cement / PFA Silos)	Small Cementitious Material Silos Source ID: EP5-EP8	TSP emission factor Dust extraction flow rate for each mixer No. of operation hour No. of small cement silos Emission height Emission Rate	30	mg/m ³	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). From 7:00 to 19:00 EP5: 21m, EP6-EP8: 22m
			1300	m ³ /hr	
			12	hr	
			4		
	PFA weight Hopper Source ID: EP3-EP4	Production rate Density Emission Factor Emission Rate	160	m ³ /hr	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). Weight hopper loading, AP-42, section 11.12-4, Table 11.12-1, 6/06 ed.
			0.001989	mg/m ³	
			2.60E-03	kg/Mg	
	2.30E-04	g/s (mitigated)			
West Kowloon Cultural District Concrete Batching Plant (Mixing Tower)	Mixer Source ID: EP1-EP2	TSP emission factor Dust extraction flow rate for each mixer No. of operation hour No. of small cement silos Emission height Emission Rate	40	mg/m ³	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). From 7:00 to 19:00 Extracted from Specified Processes License (checked on 13 Jan 2012)
			1500	m ³ /hr	
			12	hr	
			2		
			13		
	1.67E-02	g/s (mitigated)			

Appendix 3.2 - Details of Dust Emission Sources for 1-hour and Daily TSP Assessment (Tier 2)

Concurrent Projects - at Year 2015

Description	Sources	Parameter	Emission Rate	Remarks
West Kowloon Highway Scheme HIJ	Heavy construction Source ID: AA9-12	--	2.99368E-05 g/m ² /s (mitigated)	Extract from PER report of Scheme HIJ and Junction JRD/FST/CRD (Appendix 3.2), assume 100% active area
	Wind Erosion Source ID: AA9-12	--	2.69533E-06 g/m ² /s	Extract from PER report of Scheme HIJ and Junction JRD/FST/CRD (Appendix 3.2), assume 100% active area
West Kowloon Highway Scheme Q (Interim)	Heavy construction Source ID: FF1-FF9	--	2.99368E-05 g/m ² /s (mitigated)	Extract from PER report of Scheme Q (Appendix 3.2), assume 100% active area
	Wind Erosion Source ID: FF1-FF9	--	2.69533E-06 g/m ² /s	Extract from PER report of Scheme Q (Appendix 3.2), assume 100% active area

Appendix 3.2 - Details of Dust Emission Sources for 1-hour and Daily TSP Assessment (Tier 2) at Year 2016

West Kowloon Cultural District

Works Area	Sources	Parameter	Remarks	
West Kowloon Cultural District	Heavy construction Source ID: TF1-TF16, Tf1-Tf6, FB1-FB5	Percentage active area, p Mitigation efficiency No. of working days per month, d No. of working hours per day, h Emission Factor Emission Rate	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% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3 =2.69*1000000/(10000*d*h*60*60)*p/100
	Wind Erosion Source ID: TF1-TF16, Tf1-Tf6, FB1-FB5	Percentage active area, p Emission Factor Emission Rate	100% 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Table 11.9-4 =0.85*1000000/(10000*365*24*60*60)*p/100
West Kowloon Cultural District Barging Point (Construction Site)	Haul road to barging points Source ID: HR7A-C HR8A-B HR9 HR10A-C HR11 HR12A	Particle size multiplier, k Road surface silt loading, sL	3.23 g/VKT 8.2 g/m ²	AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. Mean Silt Loading of Quarry, AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Uncontrolled total loading range from 4.2+1.9g/m ² , for a mixture of sand and native soil, to 11.0+3.8g/m ² for native soil alone, Page 10 of Improved Activity Levels for National Emission Inventories of Fugitive Dust from Paved and Unpaved Roads. Average weigh of the vehicles traveling the road, extracted from SP License E=k x (sL) ^{0.91} x (W) ^{1.02} (AP-42, section 13.2.1, 01/11 ed.) Extracted from SP License of Express Rail Link (Appendix C) For road HR7A-C For road HR8A-B For road HR9 For road HR10A-C For road HR11 For road HR12A From 7:00 to 19:00, extracted from SP License of Express Rail Link (Appendix C) Extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 900, extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 1800, extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 1440, extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 1080, extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 720, extracted from SP License of Express Rail Link (Appendix C) No. of truck per day: 360, extracted from SP License of Express Rail Link (Appendix C)
		Average truck weight, W	16 tons	
		TSP emission factor, E	370.7 g/VKT	
		No. of truck trips per day	900 veh/day 1800 veh/day 1440 veh/day 1080 veh/day 720 veh/day 360 veh/day	
		No. of operation hour	12 hr	
		% of dust suppression	97.5 %	
		Emission Rate	4.75E-14 g/m/s (mitigated)	
			9.49E-14 g/m/s (mitigated)	
			7.59E-14 g/m/s (mitigated)	
			5.70E-14 g/m/s (mitigated)	
	3.80E-14 g/m/s (mitigated)			
	1.90E-14 g/m/s (mitigated)			
West Kowloon Cultural District Barging Point	Unloading of spoils to barge Source ID: BP4-7	--	4.27E-03 g/s (mitigated)	Extract from SP License of Express Rail Link (Appendix C), assume 12 hours of operation
West Kowloon Cultural District Terminus Concrete Batching Plant (Construction Site)	Paved haul road outside concrete batching plant - For Laden Vehicle	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W	3.23 g/VKT 12 g/m ² 36 tons 45 tons 30.8 tons	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Full loading of Aggregate Tipper Truck Full loading of Cement Tanker Full loading of Concrete Mixer Aggregate Tpper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 2, and 6 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 6 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 6 veh/hr respectively.
		No. of truck trips per day	12 veh/hr 2 veh/hr 6 veh/hr	
		No. of operation hour	12 hr	
		% of dust suppression	97.5 %	
		Sum of Emission Rate	1.63E-04 g/m/s (mitigated)	
Source ID: EP11	1.42E-04 g/m/s (mitigated)			
EP12	6.35E-05 g/m/s (mitigated)			
EP13				
West Kowloon Cultural District Terminus Concrete Batching Plant (Construction Site)	Paved haul road outside concrete batching plant - For Laden Vehicle	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W	3.23 g/VKT 12 g/m ² 36 tons 45 tons 30.8 tons	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Full loading of Aggregate Tipper Truck Full loading of Cement Tanker Full loading of Concrete Mixer Aggregate Tpper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 0, and 6 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 0, and 3 veh/hr respectively.
		TSP emission factor, E	1199 g/VKT 1505 g/VKT 1022 g/VKT	
		No. of operation hour	12 hr	
		% of dust suppression	99.0 %	
		Sum of Emission Rate	8.36E-06 g/m/s (mitigated)	
		Source ID: EP14	4.00E-05 g/m/s (mitigated)	
		EP15	1.70E-05 g/m/s (mitigated)	
		EP16	8.52E-06 g/m/s (mitigated)	
EP17				

Appendix 3.2 - Details of Dust Emission Sources for 1-hour and Daily TSP Assessment (Tier 2) at Year 2016

West Kowloon Cultural District

Works Area	Sources	Parameter	Remarks	
West Kowloon Cultural District Concrete Batching Plant (Construction Site)	Paved haul road outside concrete batching plant - For Unladen Vehicle	Particle size multiplier, k	3.23 g/VKT	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Unladen weight of Aggregate Tipper Truck Unladen weight of Cement Tanker Unladen weight of Concrete Mixer $E=k \times (sL)^{0.91} \times (W)^{1.02}$ (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 2, and 6 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 6 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 6 veh/hr respectively.
		Road surface silt loading, sL	12 g/m ²	
		Average truck weight, W	14 tons 15 tons 12 tons	
		TSP emission factor, E	457 g/VKT 491 g/VKT 391 g/VKT	
		No. of operation hour	12 hr	
		% of dust suppression	97.5 %	
Source ID:	Sum of Emission Rate			
EP18		6.12E-05 g/m/s (mitigated)		
EP19		5.44E-05 g/m/s (mitigated)		
EP20		2.31E-05 g/m/s (mitigated)		
West Kowloon Cultural District Concrete Batching Plant (Construction Site)	Paved haul road within concrete batching plant - For Unladen Vehicle	Particle size multiplier, k	3.23 g/VKT	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Unladen weight of Aggregate Tipper Truck Unladen weight of Cement Tanker Unladen weight of Concrete Mixer $E=k \times (sL)^{0.91} \times (W)^{1.02}$ (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 0, and 3 veh/hr respectively.
		Road surface silt loading, sL	12 g/m ²	
		Average truck weight, W	14 tons 15 tons 12 tons	
		TSP emission factor, E	457 g/VKT 491 g/VKT 391 g/VKT	
		No. of operation hour	12 hr	
		% of dust suppression	99.0 %	
Source ID:	Sum of Emission Rate			
EP21		2.73E-06 g/m/s (mitigated)		
EP22		1.52E-05 g/m/s (mitigated)		
EP23		3.26E-06 g/m/s (mitigated)		
West Kowloon Cultural District Concrete Batching Plant (Unloading of raw materials)	Unloading aggregate Source ID: EP9-EP10	Consumption Rate	272000 kg/h 272 Mg/h	Extracted from SP License of Express Rail Link (Appendix C). For TSP, AP-42, section 13.2.4, 11/06 ed. Extracted from SP License of Express Rail Link (Appendix C). PATH Year 2010 mean wind speed $E=k \times (0.0016) \times ((U/2.2)^{1.3} / (M/2)^{1.4})$ (AP-42, section 13.2.4, 11/06 ed.) Extracted from SP License of Express Rail Link (Appendix C).
		Particle size multiplier, k	0.74	
		Moisture content, M	2 %	
		Mean wind speed, U	3.5 m/s	
		Emission Factor, E	0.002165163 kg/Mg	
		Mitigation efficiency	0.588924442 kg/hr 99 %	
Emission Rate	1.64E-03 g/s (mitigated)			
West Kowloon Cultural District Concrete Batching Plant (Cement / PFA Silos)	Small Cementitious Material Silos Source ID: EP5-EP8	TSP emission factor	30 mg/m ³	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). From 7:00 to 19:00 EP5: 21m, EP6-EP8: 22m
		Dust extraction flow rate for each mixer	1300 m ³ /hr	
		No. of operation hour	12 hr	
	PFA weight Hopper Source ID: EP3-EP4	No. of small cement silos	4	
		Emission height	21 or 22	
		Emission Rate	1.08E-02 g/s (mitigated)	
PFA weight Hopper Source ID: EP3-EP4	Production rate	160 m ³ /hr	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). Weight hopper loading, AP-42, section 11.12-4, Table 11.12-1, 6/06 ed.	
	Density	0.001989 mg/m ³		
	Emission Factor	2.60E-03 kg/Mg		
	Emission Rate	2.30E-04 g/s (mitigated)		
West Kowloon Cultural District Concrete Batching Plant (Mixing Tower)	Mixer Source ID: EP1-EP2	TSP emission factor	40 mg/m ³	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). From 7:00 to 19:00
		Dust extraction flow rate for each	1500 m ³ /hr	
		No. of operation hour	12 hr	
		No. of small cement silos	2	
		Emission height	13	
		Emission Rate	1.67E-02 g/s (mitigated)	

Appendix 3.2 - Details of Dust Emission Sources for 1-hour and Daily TSP Assessment (Tier 2) at Year 2017

West Kowloon Cultural District

Works Area	Sources	Parameter	Remarks	
West Kowloon Cultural District	Heavy construction Source ID: TH1-TH7, Th1 - Th9, HB1-HB5	Percentage active area, p Mitigation efficiency No. of working days per month, d No. of working hours per day, h Emission Factor Emission Rate	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% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3 =2.69*1000000/(10000*d*h*60*60)*p/100
	Wind Erosion Source ID: TH1-TH7, Th1 - Th9, HB1-HB5	Percentage active area, p Emission Factor Emission Rate	100 % 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Table 11.9-4 =0.85*1000000/(10000*365*24*60*60)*p/100
West Kowloon Cultural District Concrete Batching Plant (Construction Site)	Paved haul road outside concrete batching plant - For Laden Vehicle Source ID: CBH1-CBH4	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W No. of truck trips per day No. of operation hour % of dust suppression Sum of Emission Rate	3.23 g/VKT 12 g/m ² 36 tons 45 tons 30.8 tons 12 veh/hr 2 veh/hr 6 veh/hr 12 hr 97.5 % 1.63E-04 g/m/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Full loading of Aggregate Tipper Truck Full loading of Cement Tanker Full loading of Concrete Mixer Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 2, and 6 veh/hr respectively.
West Kowloon Terminus Concrete Batching Plant	Paved haul road outside concrete batching plant - For Laden Vehicle Source ID: EP14 EP15 EP16 EP17	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W TSP emission factor, E No. of truck trips per day No. of operation hour % of dust suppression Emission Rate Sum of Emission Rate	3.23 g/VKT 12 g/m ² 36 tons 45 tons 30.8 tons 1199 g/VKT 1505 g/VKT 1022 g/VKT 0 veh/hr 2 veh/hr 0 veh/hr 12 hr 99.0 % 0.00E+00 g/m/s (mitigated) 8.36E-06 g/m/s (mitigated) 0.00E+00 g/m/s (mitigated) 8.36E-06 g/m/s (mitigated) 4.00E-05 g/m/s (mitigated) 1.70E-05 g/m/s (mitigated) 8.52E-06 g/m/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Full loading of Aggregate Tipper Truck Full loading of Cement Tanker Full loading of Concrete Mixer E=k x (sL) ^{0.91} x (W) ^{1.02} (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tipper Truck Cement Tanker Concrete Mixer Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Aggregate Tipper Truck Cement Tanker Concrete Mixer Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 0, and 6 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 0, and 3 veh/hr respectively.

Appendix 3.2 - Details of Dust Emission Sources for 1-hour and Daily TSP Assessment (Tier 2) at Year 2017

West Kowloon Cultural District

Works Area	Sources	Parameter	Remarks	
West Kowloon Cultural District Concrete Batching Plant (Construction Site)	Paved haul road outside concrete batching plant - For Unladen Vehicle Source ID: CBX1-CBX4	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W TSP emission factor, E No. of operation hour % of dust suppression Sum of Emission Rate	3.23 g/VKT 12 g/m ² 14 tons 15 tons 12 tons 457 g/VKT 491 g/VKT 391 g/VKT 12 hr 97.5 % 6.12E-05 g/m/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Unladen weight of Aggregate Tipper Truck Unladen weight of Cement Tanker Unladen weight of Concrete Mixer E=k x (sL) ^{0.91} x (W) ^{1.02} (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 2, and 6 veh/hr respectively.
West Kowloon Terminus Concrete Batching Plant	Paved haul road within concrete batching plant - For Unladen Vehicle Source ID: EP21 EP22 EP23	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W TSP emission factor, E No. of truck trips per day No. of operation hour % of dust suppression Emission Rate Sum of Emission Rate	3.23 g/VKT 12 g/m ² 14 tons 15 tons 12 tons 457 g/VKT 491 g/VKT 391 g/VKT 0 veh/hr 2 veh/hr 0 veh/hr 12 hr 99.0 % 0.00E+00 g/m/s (mitigated) 2.73E-06 g/m/s (mitigated) 0.00E+00 g/m/s (mitigated) 2.73E-06 g/m/s (mitigated) 1.52E-05 g/m/s (mitigated) 3.26E-06 g/m/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Unladen weight of Aggregate Tipper Truck Unladen weight of Cement Tanker Unladen weight of Concrete Mixer E=k x (sL) ^{0.91} x (W) ^{1.02} (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tipper Truck Cement Tanker Concrete Mixer Extracted from Specified Processes License (checked on 13 Jan 2012) Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Aggregate Tipper Truck Cement Tanker Concrete Mixer Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 0, and 3 veh/hr respectively.
West Kowloon Cultural District Concrete Batching Plant (Unloading of raw materials)	Unloading aggregate Source ID: EP9	Consumption Rate Particle size multiplier, k Moisture content, M Mean wind speed, U Emission Factor, E Mitigation efficiency Emission Rate	272000 kg/h 272 Mg/h 0.74 2 % 3.5 m/s 0.002165163 kg/Mg 0.588924442 kg/hr 99 % 1.64E-03 g/s (mitigated)	Extracted from SP License of Express Rail Link (Appendix C). For TSP, AP-42, section 13.2.4, 11/06 ed. Extracted from SP License of Express Rail Link (Appendix C). PATH Year 2010 mean wind speed E=k x (0.0016) x ((U/2.2) ^{1.3} /(M/2) ^{1.4}) (AP-42, section 13.2.4, 11/06 ed.) Extracted from SP License of Express Rail Link (Appendix C).
West Kowloon Cultural District Concrete Batching Plant (Cement / PFA Silos)	Small Cementitious Material Silos Source ID: EP5-EP8 PFA weight Hopper Source ID: EP3-EP4	TSP emission factor Dust extraction flow rate for each mixer No. of operation hour No. of small cement silos Emission height Emission Rate Production rate Density Emission Factor Emission Rate	30 mg/m ³ 1300 m ³ /hr 12 hr 4 21 or 22 1.08E-02 g/s (mitigated) 160 m ³ /hr 0.001989 mg/m ³ 2.60E-03 kg/Mg 2.30E-04 g/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). From 7:00 to 19:00 EP5: 21m, EP6-EP8: 22m All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). Weight hopper loading, AP-42, section 11.12-4, Table 11.12-1, 6/06 ed.
West Kowloon Cultural District Concrete Batching Plant (Mixing Tower)	Mixer Source ID: EP1-EP2	TSP emission factor Dust extraction flow rate for each No. of operation hour No. of small cement silos Emission height Emission Rate	40 mg/m ³ 1500 m ³ /hr 12 hr 2 13 1.67E-02 g/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). From 7:00 to 19:00

Appendix 3.2 - Details of Dust Emission Sources for 1-hour and Daily TSP Assessment (Tier 2) at Year 2018

West Kowloon Cultural District

Works Area	Sources	Parameter	Remarks	
West Kowloon Cultural District	Heavy construction Source ID: Ti1-Ti7 IB3-IB5	Percentage active area, p Mitigation efficiency No. of working days per month, d No. of working hours per day, h Emission Factor Emission Rate	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% works area for heavy construction Water suppression 12 times a day AP42, Section 13.2.3.3 =2.69*1000000/(10000*d*h*60*60)*p/100
	Wind Erosion Source ID: Ti1-Ti7 IB3-IB5	Percentage active area, p Emission Factor Emission Rate	100% 0.85 Mg/hectare/year 2.69533E-06 g/m ² /s	AP42, Table 11.9-4 =0.85*1000000/(10000*365*24*60*60)*p/100
West Kowloon Cultural District Concrete Batching Plant (Construction Site)	Paved haul road outside concrete batching plant - For Laden Vehicle Source ID: CBH1-CBH4	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W No. of truck trips per day No. of operation hour % of dust suppression Sum of Emission Rate	3.23 g/VKT 12 g/m ² 36 tons 45 tons 30.8 tons 12 veh/hr 2 veh/hr 6 veh/hr 12 hr 97.5% 1.63E-04 g/m/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Full loading of Aggregate Tipper Truck Full loading of Cement Tanker Full loading of Concrete Mixer Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 2, and 6 veh/hr respectively.
West Kowloon Terminus Concrete Batching Plant	Paved haul road outside concrete batching plant - For Laden Vehicle Source ID: EP14 EP15 EP16 EP17	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W TSP emission factor, E No. of truck trips per day No. of operation hour % of dust suppression Emission Rate Sum of Emission Rate	3.23 g/VKT 12 g/m ² 36 tons 45 tons 30.8 tons 1199 g/VKT 1505 g/VKT 1022 g/VKT 0 veh/hr 2 veh/hr 0 veh/hr 12 hr 99.0% 0.00E+00 g/m/s (mitigated) 8.36E-06 g/m/s (mitigated) 0.00E+00 g/m/s (mitigated) 8.36E-06 g/m/s (mitigated) 4.00E-05 g/m/s (mitigated) 1.70E-05 g/m/s (mitigated) 8.52E-06 g/m/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Full loading of Aggregate Tipper Truck Full loading of Cement Tanker Full loading of Concrete Mixer E=k x (sL) ^{0.91} x (W) ^{1.02} (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tipper Truck Cement Tanker Concrete Mixer Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Aggregate Tipper Truck Cement Tanker Concrete Mixer Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 0, and 6 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 0, and 3 veh/hr respectively.

Appendix 3.2 - Details of Dust Emission Sources for 1-hour and Daily TSP Assessment (Tier 2) at Year 2018

West Kowloon Cultural District

Works Area	Sources	Parameter	Remarks	
West Kowloon Cultural District Concrete Batching Plant (Construction Site)	Paved haul road outside concrete batching plant - For Unladen Vehicle Source ID: CBX1-CBX4	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W TSP emission factor, E No. of operation hour % of dust suppression Sum of Emission Rate	3.23 g/VKT 12 g/m ² 14 tons 15 tons 12 tons 457 g/VKT 491 g/VKT 391 g/VKT 12 hr 97.5 % 6.12E-05 g/m/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Unladen weight of Aggregate Tipper Truck Unladen weight of Cement Tanker Unladen weight of Concrete Mixer E=k x (sL) ^{0.91} x (W) ^{1.02} (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 2, and 6 veh/hr respectively.
West Kowloon Terminus Concrete Batching Plant	Paved haul road within concrete batching plant - For Unladen Vehicle Source ID: EP21 EP22 EP23	Particle size multiplier, k Road surface silt loading, sL Average truck weight, W TSP emission factor, E No. of truck trips per day No. of operation hour % of dust suppression Emission Rate Sum of Emission Rate	3.23 g/VKT 12 g/m ² 14 tons 15 tons 12 tons 457 g/VKT 491 g/VKT 391 g/VKT 0 veh/hr 2 veh/hr 0 veh/hr 12 hr 99.0 % 0.00E+00 g/m/s (mitigated) 2.73E-06 g/m/s (mitigated) 0.00E+00 g/m/s (mitigated) 2.73E-06 g/m/s (mitigated) 1.52E-05 g/m/s (mitigated) 3.26E-06 g/m/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). AP-42, Section 13.2.1, Table 13.2.1-1, 01/11 ed. AP-42, Section 13.2.1, Table 13.2.1-3, 01/11 ed. Unladen weight of Aggregate Tipper Truck Unladen weight of Cement Tanker Unladen weight of Concrete Mixer E=k x (sL) ^{0.91} x (W) ^{1.02} (AP-42, section 13.2.1, 01/11 ed.) Aggregate Tipper Truck Cement Tanker Concrete Mixer Extracted from Specified Processes License (checked on 13 Jan 2012) Aggregate Tipper Truck Cement Tanker Concrete Mixer From 7:00-19:00 Aggregate Tipper Truck Cement Tanker Concrete Mixer Sum of emission rate of aggregate tipper truck, cement tanker and concrete mixer. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 2, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 12, 0, and 0 veh/hr respectively. No. of vehicle of aggregate tipper truck, cement tanker and concrete mixer are 0, 0, and 3 veh/hr respectively.
West Kowloon Cultural District Concrete Batching Plant (Unloading of raw materials)	Unloading aggregate Source ID: EP9	Consumption Rate Particle size multiplier, k Moisture content, M Mean wind speed, U Emission Factor, E Mitigation efficiency Emission Rate	272000 kg/h 272 Mg/h 0.74 2 % 3.5 m/s 0.002165163 kg/Mg 0.588924442 kg/hr 99 % 1.64E-03 g/s (mitigated)	Extracted from SP License of Express Rail Link (Appendix C). For TSP, AP-42, section 13.2.4, 11/06 ed. Extracted from SP License of Express Rail Link (Appendix C). PATH Year 2010 mean wind speed E=k x (0.0016) x ((U/2.2) ^{1.3} /(M/2) ^{1.4}) (AP-42, section 13.2.4, 11/06 ed.) Extracted from SP License of Express Rail Link (Appendix C).
West Kowloon Cultural District Concrete Batching Plant (Cement / PFA Silos)	Small Cementitious Material Silos Source ID: EP5-EP8 PFA weight Hopper Source ID: EP3-EP4	TSP emission factor Dust extraction flow rate for each mixer No. of operation hour No. of small cement silos Emission height Emission Rate Production rate Density Emission Factor Emission Rate	30 mg/m ³ 1300 m ³ /hr 12 hr 4 21 or 22 1.08E-02 g/s (mitigated) 160 m ³ /hr 0.001989 mg/m ³ 2.60E-03 kg/Mg 2.30E-04 g/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). From 7:00 to 19:00 EP5: 21m, EP6-EP8: 22m All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). Weight hopper loading, AP-42, section 11.12-4, Table 11.12-1, 6/06 ed.
West Kowloon Cultural District Concrete Batching Plant (Mixing Tower)	Mixer Source ID: EP1-EP2	TSP emission factor Dust extraction flow rate for each No. of operation hour No. of small cement silos Emission height Emission Rate	40 mg/m ³ 1500 m ³ /hr 12 hr 2 13 1.67E-02 g/s (mitigated)	All calculations and assumptions are extracted from SP License of Express Rail Link (Appendix C). From 7:00 to 19:00