

Appendix 5.2 Calculations of Emission Rates for SCL Protection Works
Short-Term Assessment (1-hr & 24-hr)

Location	Source	Emission Rates	(Unmitigated)	(Mitigated)	Parameters	Remarks
Causeway Bay Typhoon Shelter (SCL Protection Works)	Tunnel Construction (Cut & Cover) ID: CBTS, CBTSR	Heavy Construction Area Source (g/m ² -s)	2.49074E-04	2.06731E-05	TSP emission factor (Mg/hectare/month of activity) Percentage area actively operating (%) no. of operation hour (hr) % of dust suppression	2.69 from AP-42, S13.2.3, 1/95 ed. 100 from engineer 10 from engineer 91.7 for watering once on the construction areas for every working hour
		Wind erosion (night time) (g/m ² -s)	2.69533E-06	2.69533E-06	TSP emission factor (Mg/hectare/yr) Percentage area exposed (%)	0.85 from AP-42, Table 11.9.4, 5th edition 100 from engineer

Remarks: Percentage of Dust Suppression is derived from the equation $C = 100 - 0.8pd/t$ (USEPA, Control of Open Fugitive Dust Sources, 1998)
where p = potential average hourly daytime evaporation rate, mm/h = 0.25916 (http://www.weather.gov.hk/cis/normal/1971_2000/normals_e.htm)
d = average hourly daytime traffic rate per hour = 36.25
i = application intensity, L/m² = 0.905463
t = time between applications, hr = 1

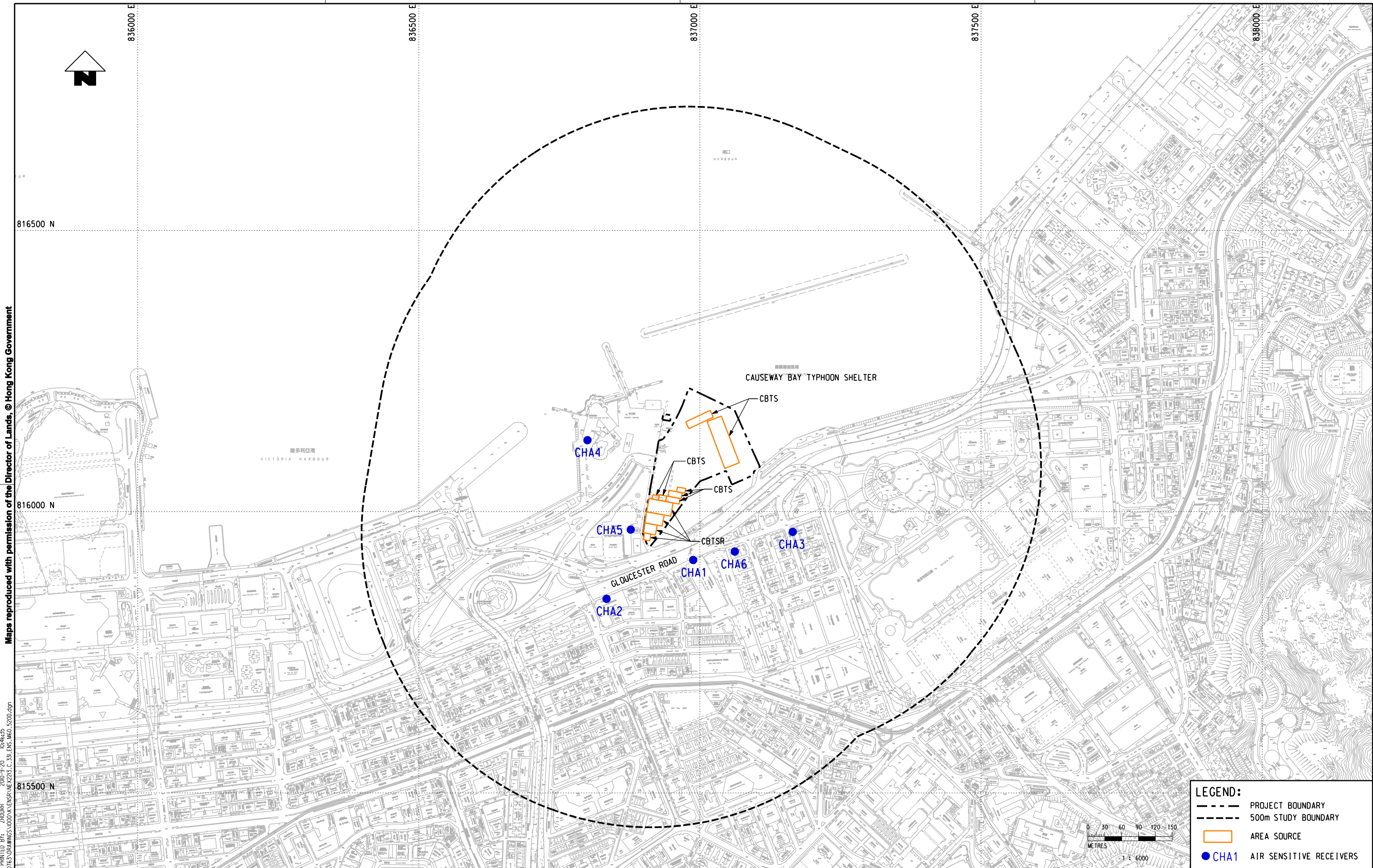
**Appendix 5.2 Calculations of Emission Rates for SCL Protection Works
Annual Assessment**

Location	Source	Emission Rates	(Unmitigated)	(Mitigated)	Parameters	Remarks
Causeway Bay Typhoon Shelter	Tunnel Construction (Cut & Cover) ID: CBTS	Heavy Construction Area Source (g/m ² -s)	1.49444E-05	1.24039E-06	TSP emission factor (Mg/hectare/month of activity) Percentage area actively operating (%) no. of operation hour (hr) % of dust suppression	2.69 from AP-42, S13.2.3, 1/95 ed. 6 Refer to Appendix 5.3 10 from engineer 91.7 for watering once on the construction areas for every working hour
		Wind erosion (daytime) (g/m ² -s)	1.34767E-06	1.11856E-07	TSP emission factor (Mg/hectare/yr) Percentage area exposed (%) % of dust suppression	0.85 from AP-42, Table 11.9.4, 5th edition 50 As the worst assumption with reference to WDII & CWB EIA 91.7 for watering once on the construction areas for every working hour
		Wind erosion (night time) (g/m ² -s)	1.34767E-06	1.34767E-06	TSP emission factor (Mg/hectare/yr) Percentage area exposed (%)	0.85 from AP-42, Table 11.9.4, 5th edition 50 As the worst assumption with reference to WDII & CWB EIA
Causeway Bay Typhoon Shelter - Retained temporary land (Filling behind temporary seawall for 2 months)	Tunnel Construction (Cut & Cover) ID: CBTSR	Heavy Construction Area Source (g/m ² -s)	4.98148E-05	4.13463E-06	TSP emission factor (Mg/hectare/month of activity) Percentage area actively operating (%) no. of operation hour (hr) % of dust suppression	2.69 from AP-42, S13.2.3, 1/95 ed. 20 from engineer 10 from engineer 91.7 for watering once on the construction areas for every working hour
		Wind erosion (daytime) (g/m ² -s)	5.39066E-07	4.47425E-08	TSP emission factor (Mg/hectare/yr) Percentage area exposed (%) % of dust suppression	0.85 from AP-42, Table 11.9.4, 5th edition 20 from engineer 91.7 for watering once on the construction areas for every working hour
		Wind erosion (night time) (g/m ² -s)	5.39066E-07	5.39066E-07	TSP emission factor (Mg/hectare/yr) Percentage area exposed (%)	0.85 from AP-42, Table 11.9.4, 5th edition 20 from engineer

Remarks: Percentage of Dust Suppression is derived from the equation $C = 100 - 0.8pdt/i$ (USEPA, Control of Open Fugitive Dust Sources, 1998)
where p = potential average hourly daytime evaporation rate, mm/h = 0.25916 (http://www.weather.gov.hk/cis/normal/1971_2000/normals_e.htm)
d = average hourly daytime traffic rate per hour = 36.25
i = application intensity, L/m² = 0.905463
t = time between applications, hr = 1

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LEGEND:

- PROJECT BOUNDARY
- 500m STUDY BOUNDARY
- AREA SOURCE
- CHA1 AIR SENSITIVE RECEIVERS

	DRAWN YJP DESIGNED --- CHECKED --- APPROVED --- DATE 02/JUL/2010	 MTR SHATIN TO CENTRAL LINK AECOM	TITLE NEX/2213 EIA STUDY FOR SCL PROTECTION WORKS AT CBTS LOCATIONS OF DUST EMISSION SOURCES																										
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Appendix 5.2 Calculations of Emission Rates for SCL Protection Works

Unmitigated Scenario

CBTS									Short-term		Annual	
Source	Type	X1	Y1	X2	Y2	Height	Width / Angle	Working Hour	Working hour	Non-working hour	Working hour	Non-working hour
CBTS	Area	836999.25	816163.72	48.01	13.35	0	25.29	08:00 - 18:00	2.491E-04	0.000E+00	1.494E-05	0.000E+00
CBTS	Area	837041.06	816123.33	26.97	89.02	0	21.22	08:00 - 18:00	2.491E-04	0.000E+00	1.494E-05	0.000E+00
CBTS	Area	836921.30	816025.19	7.88	11.43	0	79.52	08:00 - 18:00	2.491E-04	0.000E+00	1.494E-05	0.000E+00
CBTS	Area	836951.67	816020.64	9.99	24.13	0	79.52	08:00 - 18:00	2.491E-04	0.000E+00	1.494E-05	0.000E+00
CBTS	Area	836933.46	816024.01	9.99	12.92	0	79.52	08:00 - 18:00	2.491E-04	0.000E+00	1.494E-05	0.000E+00
CBTS	Area	836955.81	816030.50	10.75	23.98	0	79.52	08:00 - 18:00	2.491E-04	0.000E+00	1.494E-05	0.000E+00
CBTS	Area	836966.67	816038.27	8.45	15.02	0	79.52	08:00 - 18:00	2.491E-04	0.000E+00	1.494E-05	0.000E+00
CBTS - Wind erosion	Area	836999.25	816163.72	48.01	13.35	0	25.29	08:00 - 18:00	0.000E+00	2.695E-06	1.348E-06	1.348E-06
CBTS - Wind erosion	Area	837041.06	816123.33	26.97	89.02	0	21.22	08:00 - 18:00	0.000E+00	2.695E-06	1.348E-06	1.348E-06
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CBTS-Retained Area

CBTS-Retained Area									Short-term		Annual	
Source	Type	X1	Y1	X2	Y2	Height	Width / Angle	Working Hour	Working hour	Non-working hour	Working hour	Non-working hour
CBTSR	Area	836928.75	816007.54	23.96	43.31	0	79.52	08:00 - 18:00	2.491E-04	0.000E+00	4.981E-05	0.000E+00
CBTSR	Area	836919.05	815986.98	19.99	31.71	0	79.52	08:00 - 18:00	2.491E-04	0.000E+00	4.981E-05	0.000E+00
CBTSR	Area	836911.27	815969.31	17.59	22.83	0	79.52	08:00 - 18:00	2.491E-04	0.000E+00	4.981E-05	0.000E+00
CBTSR	Area	836905.99	815955.09	12.21	11.64	0	79.52	08:00 - 18:00	2.491E-04	0.000E+00	4.981E-05	0.000E+00
CBTSR - Wind Erosion	Area	836928.75	816007.54	23.96	43.31	0	79.52	08:00 - 18:00	0.000E+00	2.695E-06	5.391E-07	5.391E-07
CBTSR - Wind Erosion	Area	836919.05	815986.98	19.99	31.71	0	79.52	08:00 - 18:00	0.000E+00	2.695E-06	5.391E-07	5.391E-07
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Appendix 5.2 Calculations of Emission Rates for SCL Protection Works

Mitigated Scenario

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										Working hour	Non-working hour	Working hour	Non-working hour
Source	Type	X1	Y1	X2	Y2	Height	Width / Angle	Working Hour					
CBTS	Area	836999.25	816163.72	48.01	13.35	0	25.29	08:00 - 18:00	2.067E-05	0.000E+00	1.240E-06	0.000E+00	
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