

**Appendix 5.4 Calculations of Emission Rates for Wan Chai Development Phase II & Central-Wan Chai Bypass Annual Assessment**

Description of Dust Emission Source	Emission Rate	Parameters	Remarks
Heavy Construction Activities Area Source - TCBR1W & TPCWAE (g/m <sup>2</sup> -s)	<b>1.2404E-06</b>	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 Enhance dust suppression measures had been agreed by CWB, for watering once on the construction areas for every working hour
Wind erosion (daytime) (g/m <sup>2</sup> -s)	<b>1.1186E-07</b>	TSP emission factor (Mg/hectare/yr) Percentage area exposed (%) % of dust suppression	0.85 from AP-42, Table 11.9.4, 5th edition 50 from WDII & CWB EIA 91.7 Enhance dust suppression measures had been agreed by CWB, for watering once on the construction areas for every working hour
Wind erosion (g/m <sup>2</sup> -s)	<b>1.3477E-06</b>	TSP emission factor (Mg/hectare/yr) Percentage area exposed (%)	0.85 from AP-42, Table 11.9.4, 5th edition 50 from WDII & CWB EIA
Heavy Construction Activities Area Source - TCBR1E, TCBR2, TCBR3, WCR1 (g/m <sup>2</sup> -s)	<b>3.7361E-06</b>	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 75 from WDII & CWB EIA, for watering four times a day
Wind erosion (g/m <sup>2</sup> -s)	<b>1.3477E-06</b>	TSP emission factor (Mg/hectare/yr) Percentage area exposed (%)	0.85 from AP-42, Table 11.9.4, 5th edition 50 from WDII & CWB EIA

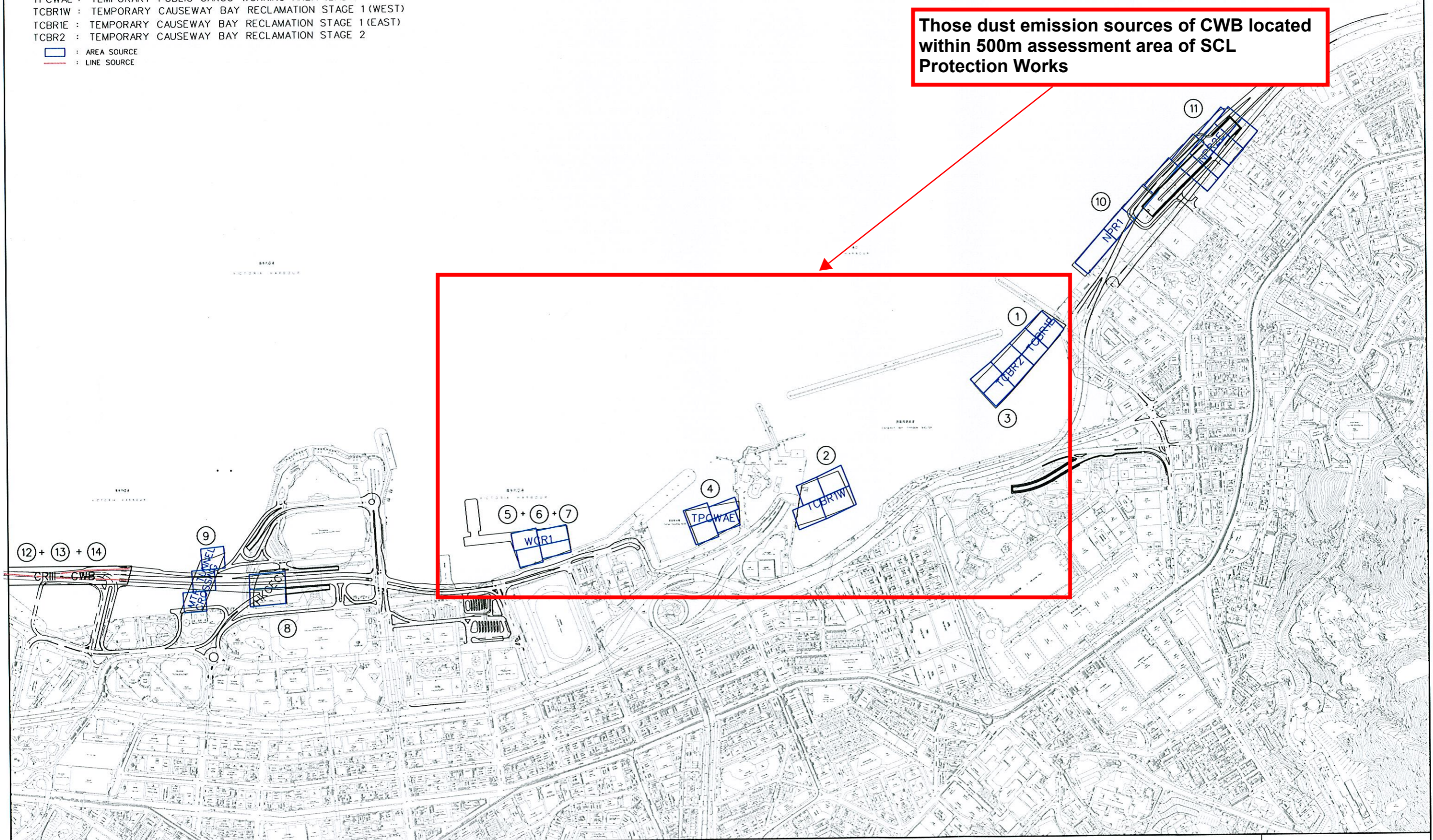
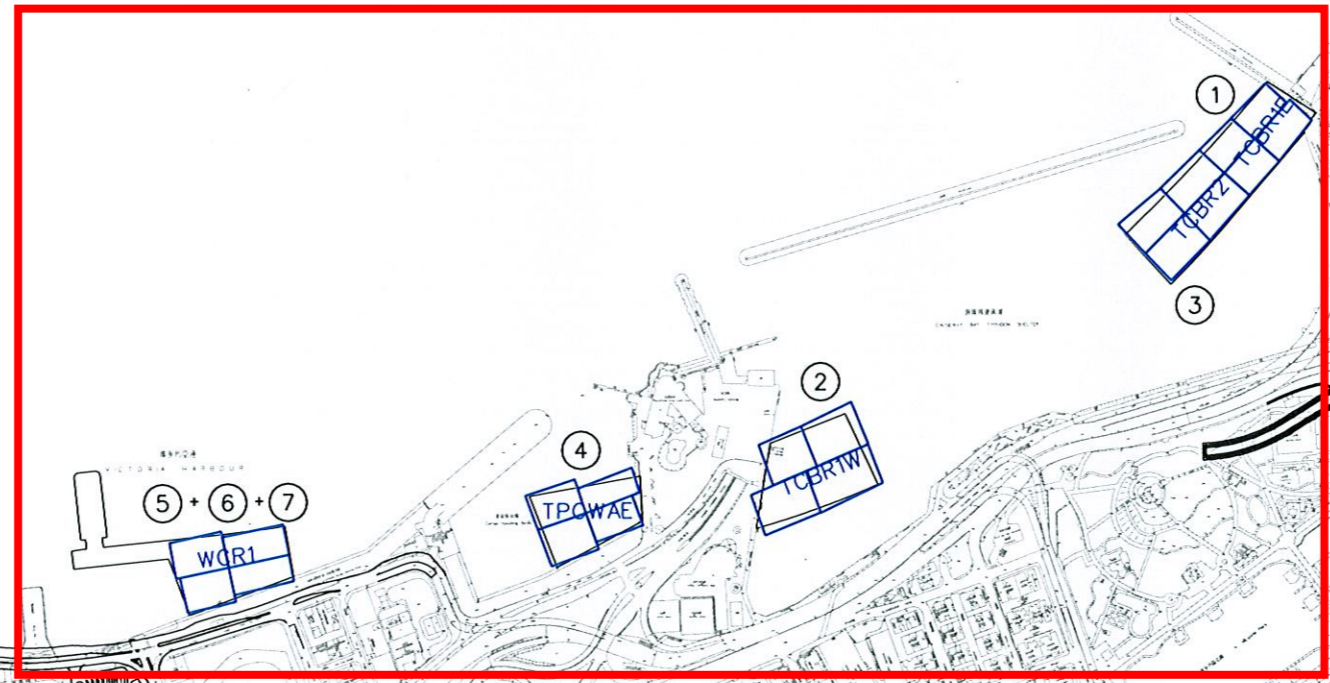
Remarks: Percentage of Dust Suppression is derived from the equation  $C = 100 - 0.8pdt/i$  (USEPA, Control of Open Fugitive Dust Sources, 1998)  
 where p = potential average hourly daytime evaporation rate, mm/h = 0.25916 ([http://www.weather.gov.hk/cis/normal/1971\\_2000/normals\\_e.htm](http://www.weather.gov.hk/cis/normal/1971_2000/normals_e.htm))  
 d = average hourly daytime traffic rate per hour = 36.25  
 i = application intensity, L/m<sup>2</sup> = 0.905463  
 t = time between applications, hr = 1

LEGEND:

- HKCEC1 : HKCEC RECLAMATION STAGE 1
- WCR1 : WAN CHAI RECLAMATION STAGE 1
- NPR1 : NORTH POINT RECLAMATION STAGE 1
- NPR2E : NORTH POINT RECLAMATION STAGE 2 (EAST)
- TPCWAE : TEMPORARY PUBLIC CARGO WORKING AREA (EAST)
- TCBR1W : TEMPORARY CAUSEWAY BAY RECLAMATION STAGE 1 (WEST)
- TCBR1E : TEMPORARY CAUSEWAY BAY RECLAMATION STAGE 1 (EAST)
- TCBR2 : TEMPORARY CAUSEWAY BAY RECLAMATION STAGE 2
- : AREA SOURCE
- : LINE SOURCE



Those dust emission sources of CWB located within 500m assessment area of SCL Protection Works



WAN CHAI DEVELOPMENT PHASE II - PLANNING AND ENGINEERING REVIEW

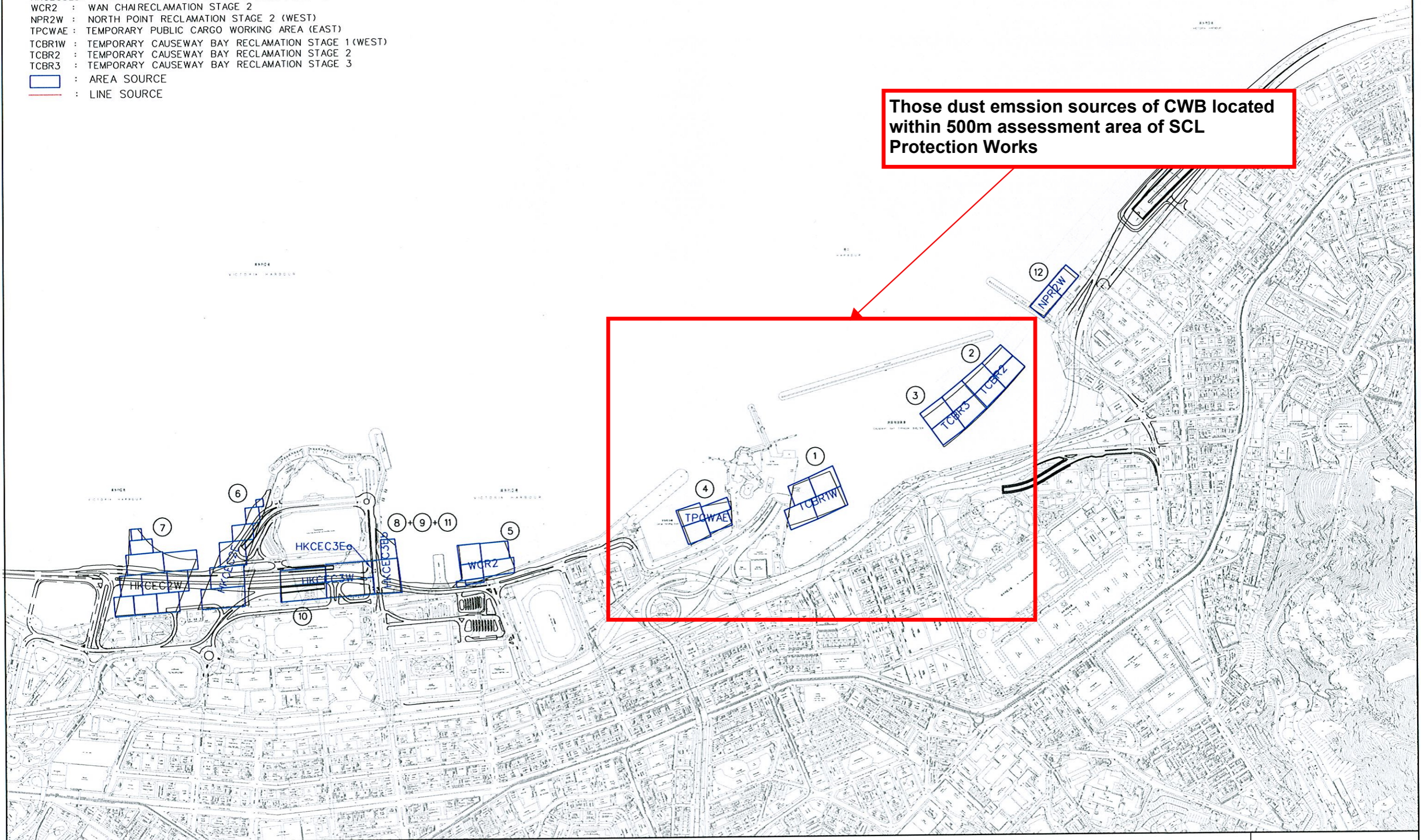
LOCATION OF FUGITIVE DUST EMISSION SOURCES (SCENARIO 2)\*

FIGURE A3.2

**\*Original number in WDII/CWB EIA, which is equivalent to Scenario 1 of SCL Protection Works**

LEGEND:

- HKCEC2W: HKCEC RECLAMATION STAGE 2 (WEST)
- HKCEC2E: HKCEC RECLAMATION STAGE 2 (EAST)
- HKCEC3W: HKCEC RECLAMATION STAGE 3 (WEST)
- HKCEC3Ea: HKCEC RECLAMATION STAGE 3 (EAST) PART a
- HKCEC3Eb: HKCEC RECLAMATION STAGE 3 (EAST) PART b
- WCR2 : WAN CHAI RECLAMATION STAGE 2
- NPR2W : NORTH POINT RECLAMATION STAGE 2 (WEST)
- TPCWAE : TEMPORARY PUBLIC CARGO WORKING AREA (EAST)
- TCBR1W : TEMPORARY CAUSEWAY BAY RECLAMATION STAGE 1 (WEST)
- TCBR2 : TEMPORARY CAUSEWAY BAY RECLAMATION STAGE 2
- TCBR3 : TEMPORARY CAUSEWAY BAY RECLAMATION STAGE 3
- : AREA SOURCE
- : LINE SOURCE



WAN CHAI DEVELOPMENT PHASE II - PLANNING AND ENGINEERING REVIEW

LOCATION OF FUGITIVE DUST EMISSION SOURCES (SCENARIO 3)\*

FIGURE A3.3

**\*Original number in WDII/CWB EIA, which is equivalent to Scenario 2 of SCL Protection Works**

## Appendix 5.4 Calculations of Emission Rates for Wan Chai Development Phase II & Central-Wan Chai Bypass

### Annual Assessment

#### WDII Scenario 2 Sources

Source	Type	X1	Y1	X2	Y2	Height	Width / Angle	Working Hour	Emission Rates	
									Working hour	Non-working hour
TCBR1W	Area	836993.30	816128.58	59.11	46.97	0	23.13	08:00 - 18:00	1.240E-06	0.000E+00
TCBR1W	Area	837003.50	816082.60	72.25	45.37	0	25.23	08:00 - 18:00	1.240E-06	0.000E+00
TCBR1W	Area	836943.18	816106.78	50.21	45.66	0	22.9	08:00 - 18:00	1.240E-06	0.000E+00
TCBR1W	Area	836940.98	816055.85	63.87	46.16	0	21.65	08:00 - 18:00	1.240E-06	0.000E+00
TCBR1E	Area	837448.88	816466.70	51.54	32.23	0.5	47.61	08:00 - 18:00	3.736E-06	0.000E+00
TCBR1E	Area	837474.60	816446.15	55.76	33.68	0.5	50.91	08:00 - 18:00	3.736E-06	0.000E+00
TCBR1E	Area	837414.40	816430.82	47.94	34.51	0.5	47.94	08:00 - 18:00	3.736E-06	0.000E+00
TCBR1E	Area	837440.55	816407.30	48.08	35.49	0.5	48.21	08:00 - 18:00	3.736E-06	0.000E+00
TPCWAE	Area	836752.52	816071.85	61.18	27.60	0.5	20.4	08:00 - 18:00	1.240E-06	0.000E+00
TPCWAE	Area	836758.18	816041.50	52.56	33.42	0.5	19.12	08:00 - 18:00	1.240E-06	0.000E+00
TPCWAE	Area	836696.57	816057.52	54.27	38.17	0.5	18.54	08:00 - 18:00	1.240E-06	0.000E+00
TPCWAE	Area	836709.50	816020.15	53.07	41.05	0.5	19.5	08:00 - 18:00	1.240E-06	0.000E+00
TCBR2	Area	837376.83	816392.95	58.87	36.76	0.5	44.66	08:00 - 18:00	3.736E-06	0.000E+00
TCBR2	Area	837403.02	816366.95	62.09	37.55	0.5	47.92	08:00 - 18:00	3.736E-06	0.000E+00
TCBR2	Area	837333.95	816352.50	59.03	39.69	0.5	45	08:00 - 18:00	3.736E-06	0.000E+00
TCBR2	Area	837361.00	816323.58	58.87	39.45	0.5	44.86	08:00 - 18:00	3.736E-06	0.000E+00
WCR1	Area	836377.58	816016.68	65.64	32.91	0.5	11.55	08:00 - 18:00	3.736E-06	0.000E+00
WCR1	Area	836383.40	815986.20	65.14	29.10	0.5	12.41	08:00 - 18:00	3.736E-06	0.000E+00
WCR1	Area	836317.17	816007.35	56.53	39.02	0.5	11.31	08:00 - 18:00	3.736E-06	0.000E+00
WCR1	Area	836326.57	815970.25	52.54	37.49	0.5	12.91	08:00 - 18:00	3.736E-06	0.000E+00
TCBR1W - Wind erosion	Area	836993.30	816128.58	59.11	46.97	0	23.13	08:00 - 18:00	1.119E-07	1.348E-06
TCBR1W - Wind erosion	Area	837003.50	816082.60	72.25	45.37	0	25.23	08:00 - 18:00	1.119E-07	1.348E-06
TCBR1W - Wind erosion	Area	836943.18	816106.78	50.21	45.66	0	22.9	08:00 - 18:00	1.119E-07	1.348E-06
TCBR1W - Wind erosion	Area	836940.98	816055.85	63.87	46.16	0	21.65	08:00 - 18:00	1.119E-07	1.348E-06
TCBR1E-wind erosion	Area	837448.88	816466.70	51.54	32.23	0.5	47.61	08:00 - 18:00	1.348E-06	1.348E-06
TCBR1E-wind erosion	Area	837474.60	816446.15	55.76	33.68	0.5	50.91	08:00 - 18:00	1.348E-06	1.348E-06
TCBR1E-wind erosion	Area	837414.40	816430.82	47.94	34.51	0.5	47.94	08:00 - 18:00	1.348E-06	1.348E-06
TCBR1E-wind erosion	Area	837440.55	816407.30	48.08	35.49	0.5	48.21	08:00 - 18:00	1.348E-06	1.348E-06

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### Annual Assessment

#### WDII Scenario 2 Sources

Source	Type	X1	Y1	X2	Y2	Height	Width / Angle	Working Hour	Emission Rates	
									Working hour	Non-working hour
TPCWAE-wind erosion	Area	836752.52	816071.85	61.18	27.60	0.5	20.4	08:00 - 18:00	1.119E-07	1.348E-06
TPCWAE-wind erosion	Area	836758.18	816041.50	52.56	33.42	0.5	19.12	08:00 - 18:00	1.119E-07	1.348E-06
TPCWAE-wind erosion	Area	836696.57	816057.52	54.27	38.17	0.5	18.54	08:00 - 18:00	1.119E-07	1.348E-06
TPCWAE-wind erosion	Area	836709.50	816020.15	53.07	41.05	0.5	19.5	08:00 - 18:00	1.119E-07	1.348E-06
TCBR2-wind erosion	Area	837376.83	816392.95	58.87	36.76	0.5	44.66	08:00 - 18:00	1.348E-06	1.348E-06
TCBR2-wind erosion	Area	837403.02	816366.95	62.09	37.55	0.5	47.92	08:00 - 18:00	1.348E-06	1.348E-06
TCBR2-wind erosion	Area	837333.95	816352.50	59.03	39.69	0.5	45	08:00 - 18:00	1.348E-06	1.348E-06
TCBR2-wind erosion	Area	837361.00	816323.58	58.87	39.45	0.5	44.86	08:00 - 18:00	1.348E-06	1.348E-06
WCR1-wind erosion	Area	836377.58	816016.68	65.64	32.91	0.5	11.55	08:00 - 18:00	1.348E-06	1.348E-06
WCR1-wind erosion	Area	836383.40	815986.20	65.14	29.10	0.5	12.41	08:00 - 18:00	1.348E-06	1.348E-06
WCR1-wind erosion	Area	836317.17	816007.35	56.53	39.02	0.5	11.31	08:00 - 18:00	1.348E-06	1.348E-06
WCR1-wind erosion	Area	836326.57	815970.25	52.54	37.49	0.5	12.91	08:00 - 18:00	1.348E-06	1.348E-06

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#### WDII Scenario 3 Sources

Source	Type	X1	Y1	X2	Y2	Height	Width / Angle	Working Hour	Emission Rates	
									Working hour	Non-working hour
TCBR1W	Area	836993.30	816128.58	59.11	46.97	0	23.13	08:00 - 18:00	1.240E-06	0.000E+00
TCBR1W	Area	837003.50	816082.60	72.25	45.37	0	25.23	08:00 - 18:00	1.240E-06	0.000E+00
TCBR1W	Area	836943.18	816106.78	50.21	45.66	0	22.9	08:00 - 18:00	1.240E-06	0.000E+00
TCBR1W	Area	836940.98	816055.85	63.87	46.16	0	21.65	08:00 - 18:00	1.240E-06	0.000E+00
TCBR2	Area	837376.83	816392.95	58.87	36.76	0.5	44.66	08:00 - 18:00	3.736E-06	0.000E+00
TCBR2	Area	837403.02	816366.95	62.09	37.55	0.5	47.92	08:00 - 18:00	3.736E-06	0.000E+00
TCBR2	Area	837333.95	816352.50	59.03	39.69	0.5	45	08:00 - 18:00	3.736E-06	0.000E+00
TCBR2	Area	837361.00	816323.58	58.87	39.45	0.5	44.86	08:00 - 18:00	3.736E-06	0.000E+00
TCBR3	Area	837288.98	816313.90	59.65	42.08	0.5	38.16	08:00 - 18:00	3.736E-06	0.000E+00
TCBR3	Area	837315.75	816281.57	64.62	42.16	0.5	42.83	08:00 - 18:00	3.736E-06	0.000E+00
TCBR3	Area	837241.58	816276.82	60.75	42.47	0.5	37.74	08:00 - 18:00	3.736E-06	0.000E+00
TCBR3	Area	837267.18	816242.03	61.02	43.99	0.5	36.23	08:00 - 18:00	3.736E-06	0.000E+00
TPCWAE	Area	836752.52	816071.85	61.18	27.60	0.5	20.4	08:00 - 18:00	1.240E-06	0.000E+00
TPCWAE	Area	836758.18	816041.50	52.56	33.42	0.5	19.12	08:00 - 18:00	1.240E-06	0.000E+00
TPCWAE	Area	836696.57	816057.52	54.27	38.17	0.5	18.54	08:00 - 18:00	1.240E-06	0.000E+00
TPCWAE	Area	836709.50	816020.15	53.07	41.05	0.5	19.5	08:00 - 18:00	1.240E-06	0.000E+00
TCBR1W - Wind erosion	Area	836993.30	816128.58	59.11	46.97	0	23.13	08:00 - 18:00	1.119E-07	1.348E-06
TCBR1W - Wind erosion	Area	837003.50	816082.60	72.25	45.37	0	25.23	08:00 - 18:00	1.119E-07	1.348E-06
TCBR1W - Wind erosion	Area	836943.18	816106.78	50.21	45.66	0	22.9	08:00 - 18:00	1.119E-07	1.348E-06
TCBR1W - Wind erosion	Area	836940.98	816055.85	63.87	46.16	0	21.65	08:00 - 18:00	1.119E-07	1.348E-06
TCBR2-wind erosion	Area	837376.83	816392.95	58.87	36.76	0.5	44.66	08:00 - 18:00	1.348E-06	1.348E-06
TCBR2-wind erosion	Area	837403.02	816366.95	62.09	37.55	0.5	47.92	08:00 - 18:00	1.348E-06	1.348E-06
TCBR2-wind erosion	Area	837333.95	816352.50	59.03	39.69	0.5	45	08:00 - 18:00	1.348E-06	1.348E-06
TCBR2-wind erosion	Area	837361.00	816323.58	58.87	39.45	0.5	44.86	08:00 - 18:00	1.348E-06	1.348E-06
TCBR3-wind erosion	Area	837288.98	816313.90	59.65	42.08	0.5	38.16	08:00 - 18:00	1.348E-06	1.348E-06
TCBR3-wind erosion	Area	837315.75	816281.57	64.62	42.16	0.5	42.83	08:00 - 18:00	1.348E-06	1.348E-06
TCBR3-wind erosion	Area	837241.58	816276.82	60.75	42.47	0.5	37.74	08:00 - 18:00	1.348E-06	1.348E-06
TCBR3-wind erosion	Area	837267.18	816242.03	61.02	43.99	0.5	36.23	08:00 - 18:00	1.348E-06	1.348E-06
TPCWAE-wind erosion	Area	836752.52	816071.85	61.18	27.60	0.5	20.4	08:00 - 18:00	1.119E-07	1.348E-06
TPCWAE-wind erosion	Area	836758.18	816041.50	52.56	33.42	0.5	19.12	08:00 - 18:00	1.119E-07	1.348E-06

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#### WDII Scenario 3 Sources

Source	Type	X1	Y1	X2	Y2	Height	Width / Angle	Working Hour	Emission Rates	
									Working hour	Non-working hour
TPCWAE-wind erosion	Area	836696.57	816057.52	54.27	38.17	0.5	18.54	08:00 - 18:00	1.119E-07	1.348E-06
TPCWAE-wind erosion	Area	836709.50	816020.15	53.07	41.05	0.5	19.5	08:00 - 18:00	1.119E-07	1.348E-06