

## Appendix 5.4 Emission Inventory of KTE

### Calculations of Emission Factors of the Construction Works for KTE for 1-hour and 24-hour Average TSP Modeling

<b>Heavy Construction</b>			
Work Item Related: 1A, 2A, 2C, 2E, 3A, 3I, 3J, 4A, 5A, 5C and 5D			
Source IDs: GA-1 to GA-9, WAB-1 to WAB-8, HOM-1 to HOM-13 and WP-1 to WP-24			
TSP Emission Factor	2.6900	(Mg/ha/month activity)	from EPA AP-42, 5th ed. Sec13.2.3.3
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 30 working days per month and 12 hours per day
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 100% of Area Activity Operating
Source Emission Rate (w/. Mitigation)	<u>1.7228E-05</u>	(g/m <sup>2</sup> /s)	Assuming 91.7% of Dust Suppression for watering once per hour
<b>Wind Erosion of Exposed Areas for Daytime</b>			
Work Item Related: 1A, 2A, 2C, 2E, 3A, 3I, 3J, 4A, 5A, 5C and 5D			
Source IDs: GA-1 to GA-9, WAB-1 to WAB-8, HOM-1 to HOM-13 and WP-1 to WP-24			
TSP Emission Factor	0.8500	(Mg/ha/Yr)	from EPA AP-42, 5th ed. Sec11 Table 11.9.4
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming Wind Erosion in 365 days and 24 hrs per day
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming 100% of Area Activity Operating
Source Emission Rate (w/. Mitigation)	<u>2.2371E-07</u>	(g/m <sup>2</sup> /s)	Assuming 91.7% of Dust Suppression for watering once per hour
<b>Wind Erosion of Exposed Areas for Nighttime</b>			
Work Item Related: 1A, 2A, 2C, 2E, 3A, 3I, 3J, 4A, 5A, 5C and 5D			
Source IDs: GA-1 to GA-9, WAB-1 to WAB-8, HOM-1 to HOM-13 and WP-1 to WP-24			
TSP Emission Factor	0.8500	(Mg/ha/Yr)	from EPA AP-42, 5th ed. Sec11 Table 11.9.4
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming Wind Erosion in 365 days and 24 hrs per day
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming 100% of Area Activity Operating
Source Emission Rate (w/. Mitigation)	<u>2.6953E-06</u>	(g/m <sup>2</sup> /s)	Assuming 0% of Dust Suppression for no watering
<b>Rock Crushing Equipment at HOM Station</b>			
<b>Crusher Loading Point (From Truck Unloading to Ground Hopper)</b>			
Work Item Related: 3A			
Source IDs: LP-1			
RSP Emission Factor	0.000008	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
RSP to TSP factor	2.1		from EPA AP-42 5th ed 1/95 ed., Section 11.19.2, Table 11.19.2-1
Crushing rate	800	(tonne/hr)	Maximum capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate	<u>3.7333E-05</u>	(g/s)	Assuming 99% dust suppression for typical removal efficiency for Dust Collector Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
Source IDs: CP-1			
<b>Crushing</b>			
TSP Emission Factor	0.0027	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
Crushing rate	800	(tonne/hr)	Maximum capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate	0.0060	(g/s)	Assuming 99% dust suppression for typical removal efficiency for Dust Collector Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<b>Screening</b>			
TSP Emission Factor	0.0125	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
Crushing rate	800	(tonne/hr)	Maximum capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate	0.0278	(g/s)	Assuming 99% dust suppression for typical removal efficiency for Dust Collector Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<b>Overall Emission Rate</b>	<u>0.0338</u>	(g/s)	Summation of emission rates of crushing and screening
<b>Haul Road at the Crushing Facilities of HOM Station</b>			
Work Item Related: 3A			
Source IDs: HOMHR-1			
TSP Emission Factor	2.6900	(Mg/ha/month activity)	from EPA AP-42, 5th ed. Sec13.2.3.3
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 30 working days per month and 12 hours per day
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 100% of Area Activity Operating
Source Emission Rate (w/. Mitigation)	<u>1.7228E-05</u>	(g/m <sup>2</sup> /s)	Assuming 91.7% of Dust Suppression for watering once per hour

## Appendix 5.4 Emission Inventory of KTE

### Calculations of Emission Factors of the Construction Works for KTE for 1-hour and 24-hour Average TSP Modeling

<u>Rock Crushing Equipment at Hung Hom Figner Pier</u>			
Work Item Related: 6A			
Source IDs: C-2			
<u>Crusher Loading Point (From Truck Unloading to Ground Hopper)</u>			
RSP Emission Factor	0.000008	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
RSP to TSP factor	2.1		from EPA AP-42 5th ed 1/95 ed., Section 11.19.2, Table 11.19.2-1
Crushing rate	800	(tonne/hr)	Maximum Capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate - a	3.7333E-05	(g/s)	Assuming 99% dust suppression for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<u>Crushing</u>			
TSP Emission Factor	0.0027	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
Crushing rate	800	(tonne/hr)	Maximum Capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate - b	0.0060	(g/s)	Assuming 99% dust suppression for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<u>Screening</u>			
TSP Emission Factor	0.0125	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
Crushing rate	800	(tonne/hr)	Maximum Capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate - c	0.0278	(g/s)	Assuming 99% dust suppression for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<u>Haul Roads within the Area of the Rock Crushing Facilities</u>			
TSP Emission Factor	2.6900	(Mg/ha/month activity)	from EPA AP-42, 5th ed. Sec13.2.3.3
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 30 working days per month and 12 hours per day
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 100% of Area Activity Operating
Source Emission Rate (w/ Mitigation)	2.0756E-06	(g/m <sup>2</sup> /s)	Assuming 99% of Dust Suppression
Total Area of Haul Roads	1392	(m <sup>2</sup> )	for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system
Emission rate - d	0.0029	(g/s)	Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<u>Overall Emission Rate</u>	<u>0.0705</u>	(g/s)	Overall Emission rate = a x 2 + b x 2 + c x 2 + d

## Appendix 5.4 Emission Inventory of KTE

### Calculations of Emission Factors of the Construction Works for KTE for Annual Average TSP Modeling

<b>Heavy Construction</b>			
Work Item Related: 1A, 2A, 2C, 2E, 3A, 3I, 3J, 4A, 5A, 5C and 5D			
Source IDs: GA-1 to GA-9, WAB-1 to WAB-8, HOM-1 to HOM-13 and WP-1 to WP-24			
TSP Emission Factor	2.6900	(Mg/ha/month activity)	from EPA AP-42, 5th ed. Sec13.2.3.3
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 30 working days per month and 12 hours per day
Source Emission Rate	1.2454E-05	(g/m <sup>2</sup> /s)	Assuming 6% of Area Activity Operating
Source Emission Rate (w/ Mitigation)	<u>1.0337E-06</u>	(g/m <sup>2</sup> /s)	Assuming 91.7% of Dust Suppression for watering once per hour
<b>Wind Erosion of Exposed Areas for Daytime</b>			
Work Item Related: 1A, 2A, 2C, 2E, 3A, 3I, 3J, 4A, 5A, 5C and 5D			
Source IDs: GA-1 to GA-9, WAB-1 to WAB-8, HOM-1 to HOM-13 and WP-1 to WP-24			
TSP Emission Factor	0.8500	(Mg/ha/Yr)	from EPA AP-42, 5th ed. Sec11 Table 11.9.4
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming Wind Erosion in 365 days and 24 hrs per day
Source Emission Rate	1.6172E-07	(g/m <sup>2</sup> /s)	Assuming 6% of Area Activity Operating
Source Emission Rate (w/ Mitigation)	<u>1.3423E-08</u>	(g/m <sup>2</sup> /s)	Assuming 91.7% of Dust Suppression for watering once per hour
<b>Wind Erosion of Exposed Areas for Nighttime</b>			
Work Item Related: 1A, 2A, 2C, 2E, 3A, 3I, 3J, 4A, 5A, 5C and 5D			
Source IDs: GA-1 to GA-9, WAB-1 to WAB-8, HOM-1 to HOM-13 and WP-1 to WP-24			
TSP Emission Factor	0.8500	(Mg/ha/Yr)	from EPA AP-42, 5th ed. Sec11 Table 11.9.4
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming Wind Erosion in 365 days and 24 hrs per day
Source Emission Rate	1.6172E-07	(g/m <sup>2</sup> /s)	Assuming 6% of Area Activity Operating
Source Emission Rate (w/o. Mitigation)	<u>1.6172E-07</u>	(g/m <sup>2</sup> /s)	Assuming 0% of Dust Suppression for no watering
<b>Rock Crushing Equipment at HOM Station</b>			
Work Item Related: 3A			
Source IDs: C-1			
<b>Crusher Loading Point (From Truck Unloading to Ground Hopper)</b>			
RSP Emission Factor	0.000008	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
RSP to TSP factor	2.1		from EPA AP-42 5th ed 1/95 ed., Section 11.19.2, Table 11.19.2-1
Crushing rate	800	(tonne/hr)	Maximum Capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate - a	3.7333E-05	(g/s)	Assuming 99% dust suppression for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<b>Crushing</b>			
TSP Emission Factor	0.0027	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
Crushing rate	800	(tonne/hr)	Maximum Capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate - b	0.0060	(g/s)	Assuming 99% dust suppression for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<b>Screening</b>			
TSP Emission Factor	0.0125	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
Crushing rate	800	(tonne/hr)	Maximum Capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate - c	0.0278	(g/s)	Assuming 99% dust suppression for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<b>Haul Roads within the Area of the Rock Crushing Facilities</b>			
TSP Emission Factor	2.6900	(Mg/ha/month activity)	from EPA AP-42, 5th ed. Sec13.2.3.3
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 30 working days per month and 12 hours per day
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 100% of Area Activity Operating
Source Emission Rate (w/ Mitigation)	2.0756E-06	(g/m <sup>2</sup> /s)	Assuming 99% of Dust Suppression
Total Area of Haul Roads	588		for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system
Emission rate - d	0.0012	(g/s)	Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<b>Overall Emission Rate</b>	<u>0.0350</u>	(g/s)	Overall Emission rate = a + b + c + d

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### Calculations of Emission Factors of the Construction Works for KTE for Annual Average TSP Modeling

<u>Rock Crushing Equipment at Hung Hom Figner Pier</u>			
Work Item Related: 6A			
Source IDs: C-2			
<u>Crusher Loading Point (From Truck Unloading to Ground Hopper)</u>			
RSP Emission Factor	0.000008	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
RSP to TSP factor	2.1		from EPA AP-42 5th ed 1/95 ed., Section 11.19.2, Table 11.19.2-1
Crushing rate	800	(tonne/hr)	Maximum Capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate - a	3.7333E-05	(g/s)	Assuming 99% dust suppression for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<u>Crushing</u>			
TSP Emission Factor	0.0027	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
Crushing rate	800	(tonne/hr)	Maximum Capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate - b	0.0060	(g/s)	Assuming 99% dust suppression for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<u>Screening</u>			
TSP Emission Factor	0.0125	(kg/Mg)	from EPA AP-42, 5th ed. Sec11.19.2, Table 11.19.2-1, 8/04 ed.
Crushing rate	800	(tonne/hr)	Maximum Capacity provided from Engineer
No. of operation hour	12	(hr)	
Emission rate - c	0.0278	(g/s)	Assuming 99% dust suppression for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<u>Haul Roads within the Area of the Rock Crushing Facilities</u>			
TSP Emission Factor	2.6900	(Mg/ha/month activity)	from EPA AP-42, 5th ed. Sec13.2.3.3
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 30 working days per month and 12 hours per day
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 100% of Area Activity Operating
Source Emission Rate (w/ Mitigation)	2.0756E-06	(g/m <sup>2</sup> /s)	Assuming 99% of Dust Suppression
Total Area of Haul Roads	1392	(m <sup>2</sup> )	for typical removal efficiency for fabric baghouse/cartridge filter type dust extraction and collection system
Emission rate - d	0.0029	(g/s)	Control Techniques for Particulate Emissions from Stationary Sources Vol. 2, Section 9.7.1.2.2
<u>Overall Emission Rate</u>	<u>0.0705</u>	(g/s)	Overall Emission rate = a x 2 + b x 2 + c x 2 + d

## Appendix 5.4 Emission Inventory of KTE

### Calculations of Emission Factors of the Construction Works for KTE for 1-hour and 24-hour Average TSP Modeling

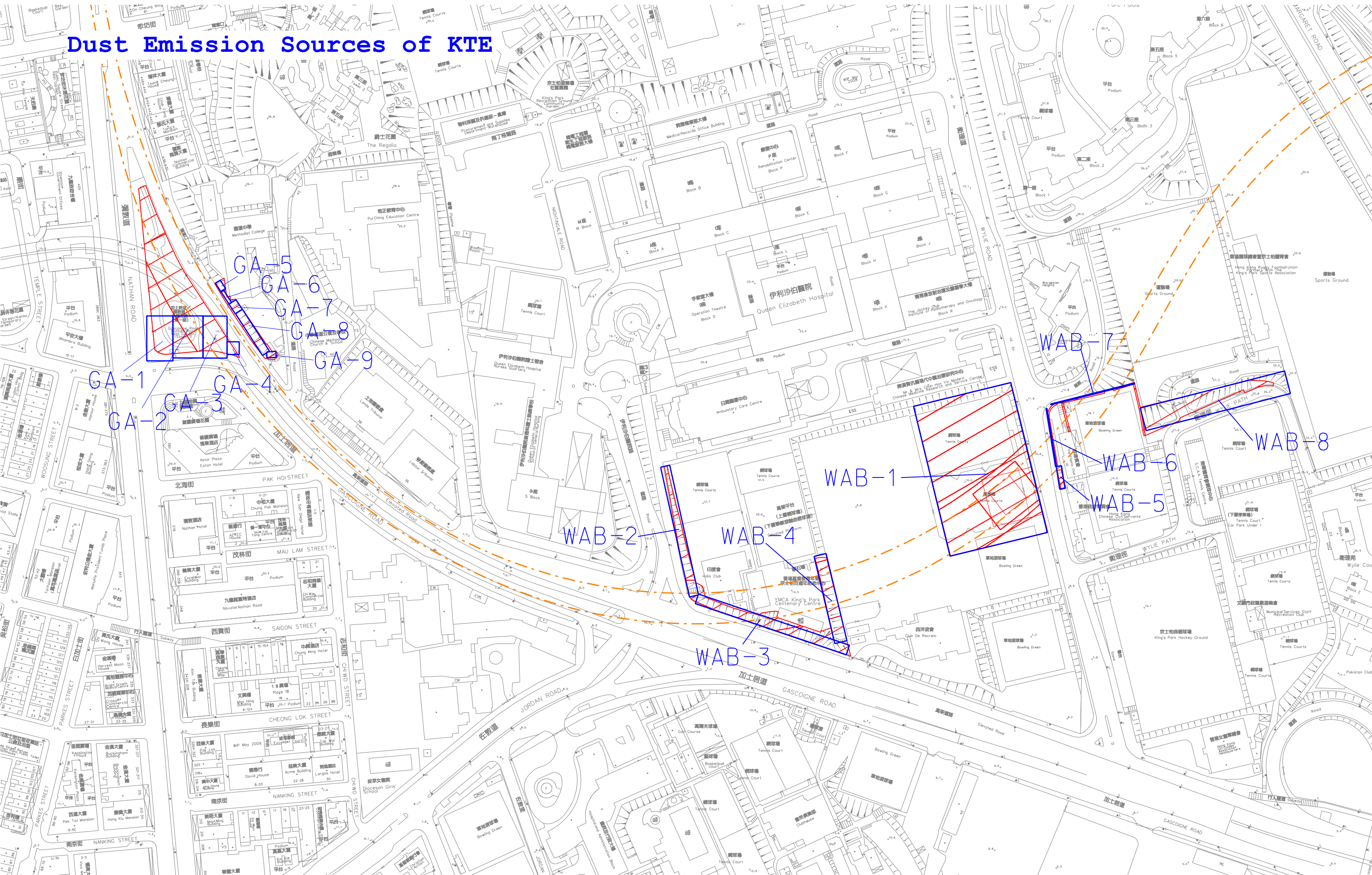
<u>Heavy Construction</u>			
Source IDs: EPIW-1 to EPIW-12, EPIW-16 to EPIW-17			
TSP Emission Factor	2.6900	(Mg/ha/month activity)	from EPA AP-42, 5th ed. Sec13.2.3.3
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 30 working days per month and 12 hours per day
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 100% of Area Activity Operating
Source Emission Rate (w/. Mitigation)	<u>1.7228E-05</u>	(g/m <sup>2</sup> /s)	Assuming 91.7% of Dust Suppression <b>for watering once per hour</b>
<u>Wind Erosion of Exposed Areas for Daytime</u>			
Source IDs: EPIW-1 to EPIW-12, EPIW-16 to EPIW-17			
TSP Emission Factor	0.8500	(Mg/ha/Yr)	from EPA AP-42, 5th ed. Sec11 Table 11.9.4
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming Wind Erosion in 365 days and 24 hrs per day
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming 100% of Area Activity Operating
Source Emission Rate (w/. Mitigation)	<u>2.2371E-07</u>	(g/m <sup>2</sup> /s)	Assuming 91.7% of Dust Suppression <b>for watering once per hour</b>
<u>Wind Erosion of Exposed Areas for Nighttime</u>			
Source IDs: EPIW-1 to EPIW-12, EPIW-16 to EPIW-17			
TSP Emission Factor	0.8500	(Mg/ha/Yr)	from EPA AP-42, 5th ed. Sec11 Table 11.9.4
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming Wind Erosion in 365 days and 24 hrs per day
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming 100% of Area Activity Operating
Source Emission Rate (w/. Mitigation)	<u>2.6953E-06</u>	(g/m <sup>2</sup> /s)	Assuming 0% of Dust Suppression <b>for no watering</b>

## Appendix 5.4 Emission Inventory of KTE

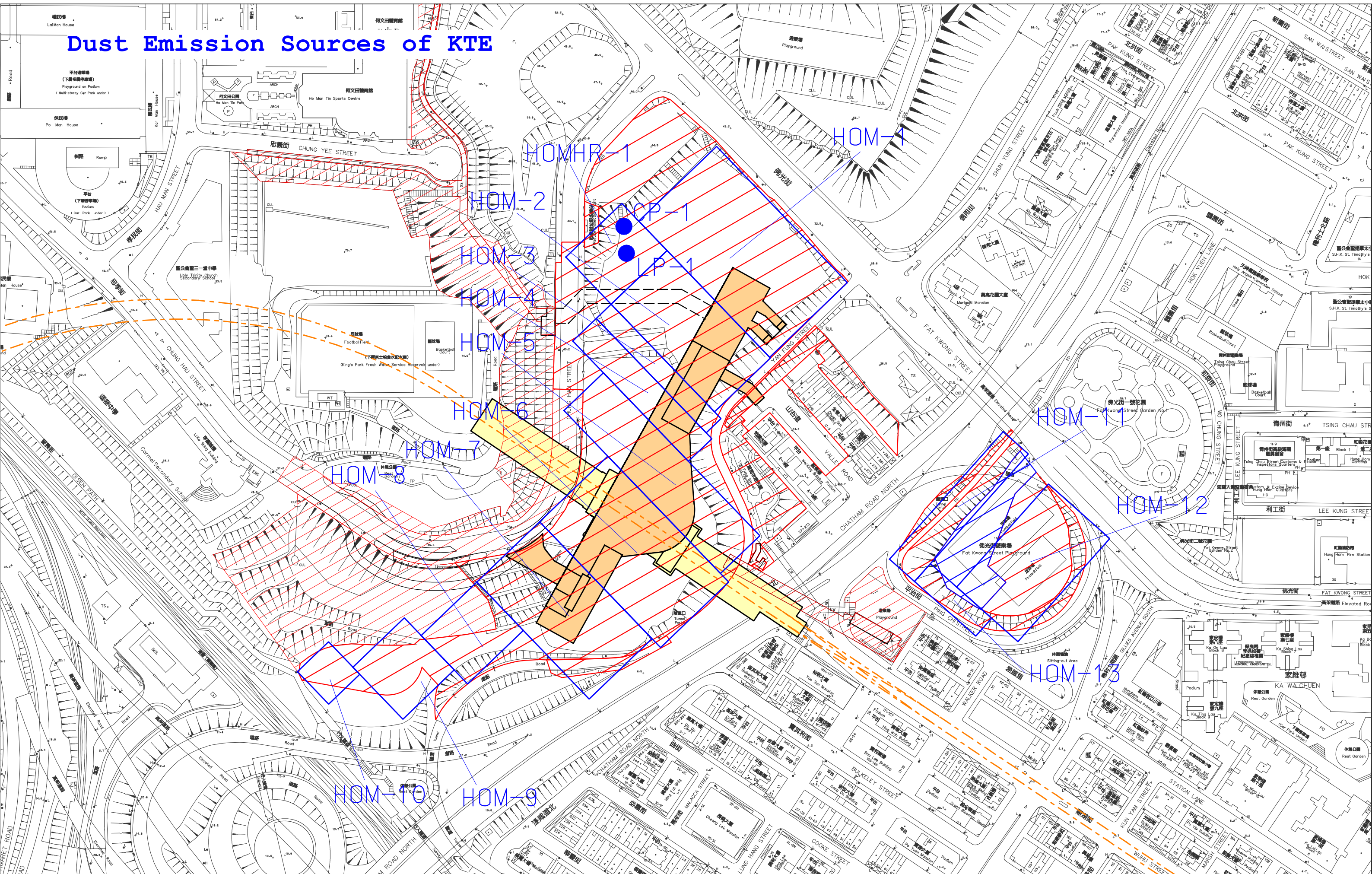
### Calculations of Emission Factors of the Construction Works for KTE for Annual Average TSP Modeling

<u>Heavy Construction</u>			
Source IDs: EPIW-1 to EPIW-12, EPIW-16 to EPIW-17			
TSP Emission Factor	2.6900	(Mg/ha/month activity)	from EPA AP-42, 5th ed. Sec13.2.3.3
Source Emission Rate	2.0756E-04	(g/m <sup>2</sup> /s)	Assuming 30 working days per month and 12 hours per day
Source Emission Rate	1.2454E-05	(g/m <sup>2</sup> /s)	Assuming 6% of Area Activity Operating
Source Emission Rate (w/. Mitigation)	<u>1.0337E-06</u>	(g/m <sup>2</sup> /s)	Assuming 91.7% of Dust Suppression <b>for watering once per hour</b>
<u>Wind Erosion of Exposed Areas for Daytime</u>			
Source IDs: EPIW-1 to EPIW-12, EPIW-16 to EPIW-17			
TSP Emission Factor	0.8500	(Mg/ha/Yr)	from EPA AP-42, 5th ed. Sec11 Table 11.9.4
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming Wind Erosion in 365 days and 24 hrs per day
Source Emission Rate	1.6172E-07	(g/m <sup>2</sup> /s)	Assuming 6% of Area Activity Operating
Source Emission Rate (w/. Mitigation)	<u>1.3423E-08</u>	(g/m <sup>2</sup> /s)	Assuming 91.7% of Dust Suppression <b>for watering once per hour</b>
<u>Wind Erosion of Exposed Areas for Nighttime</u>			
Source IDs: EPIW-1 to EPIW-12, EPIW-16 to EPIW-17			
TSP Emission Factor	0.8500	(Mg/ha/Yr)	from EPA AP-42, 5th ed. Sec11 Table 11.9.4
Source Emission Rate	2.6953E-06	(g/m <sup>2</sup> /s)	Assuming Wind Erosion in 365 days and 24 hrs per day
Source Emission Rate	1.6172E-07	(g/m <sup>2</sup> /s)	Assuming 6% of Area Activity Operating
Source Emission Rate (w/. Mitigation)	<u>1.6172E-07</u>	(g/m <sup>2</sup> /s)	Assuming 0% of Dust Suppression <b>for no watering</b>

# Dust Emission Sources of KTE

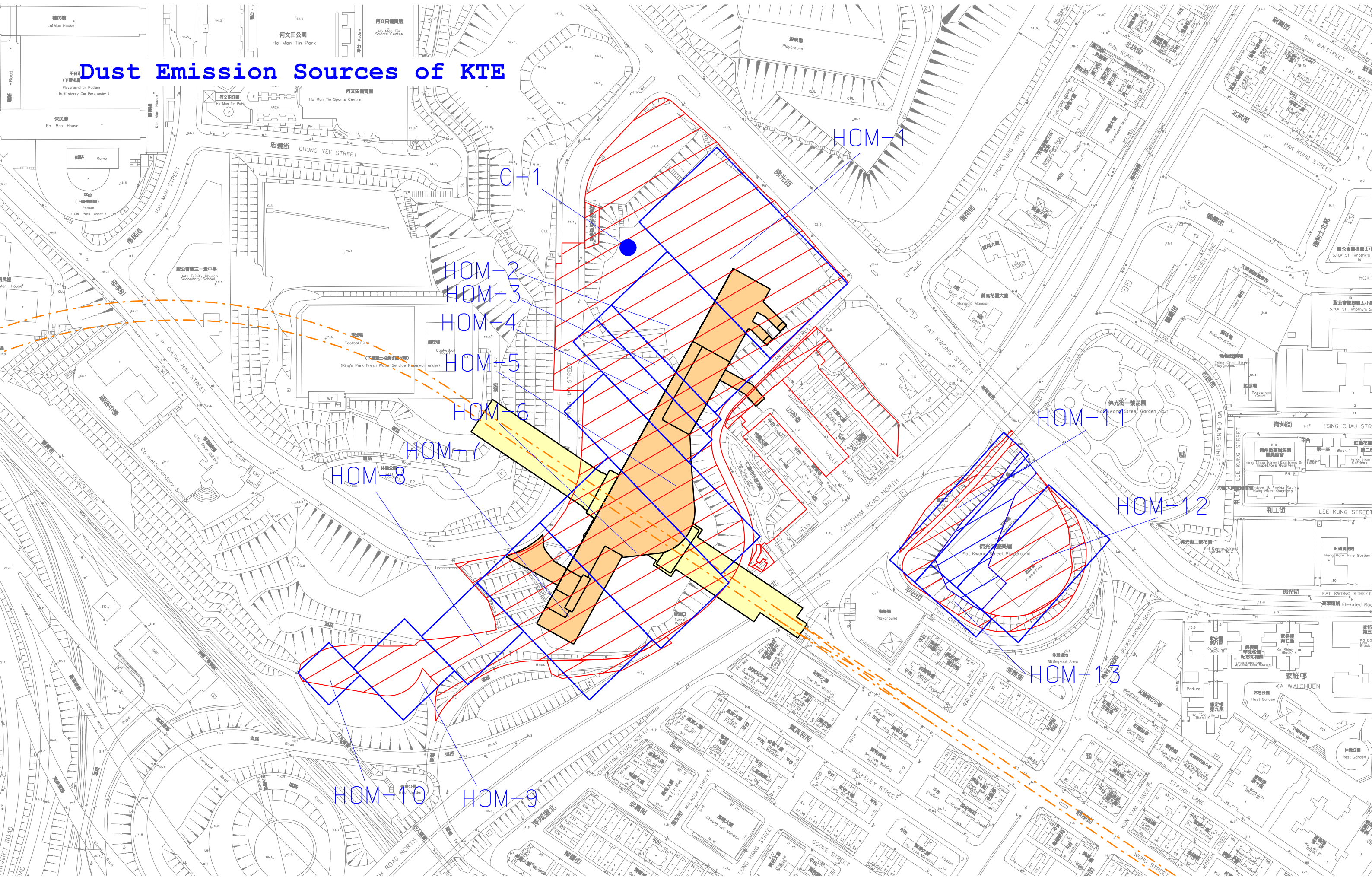


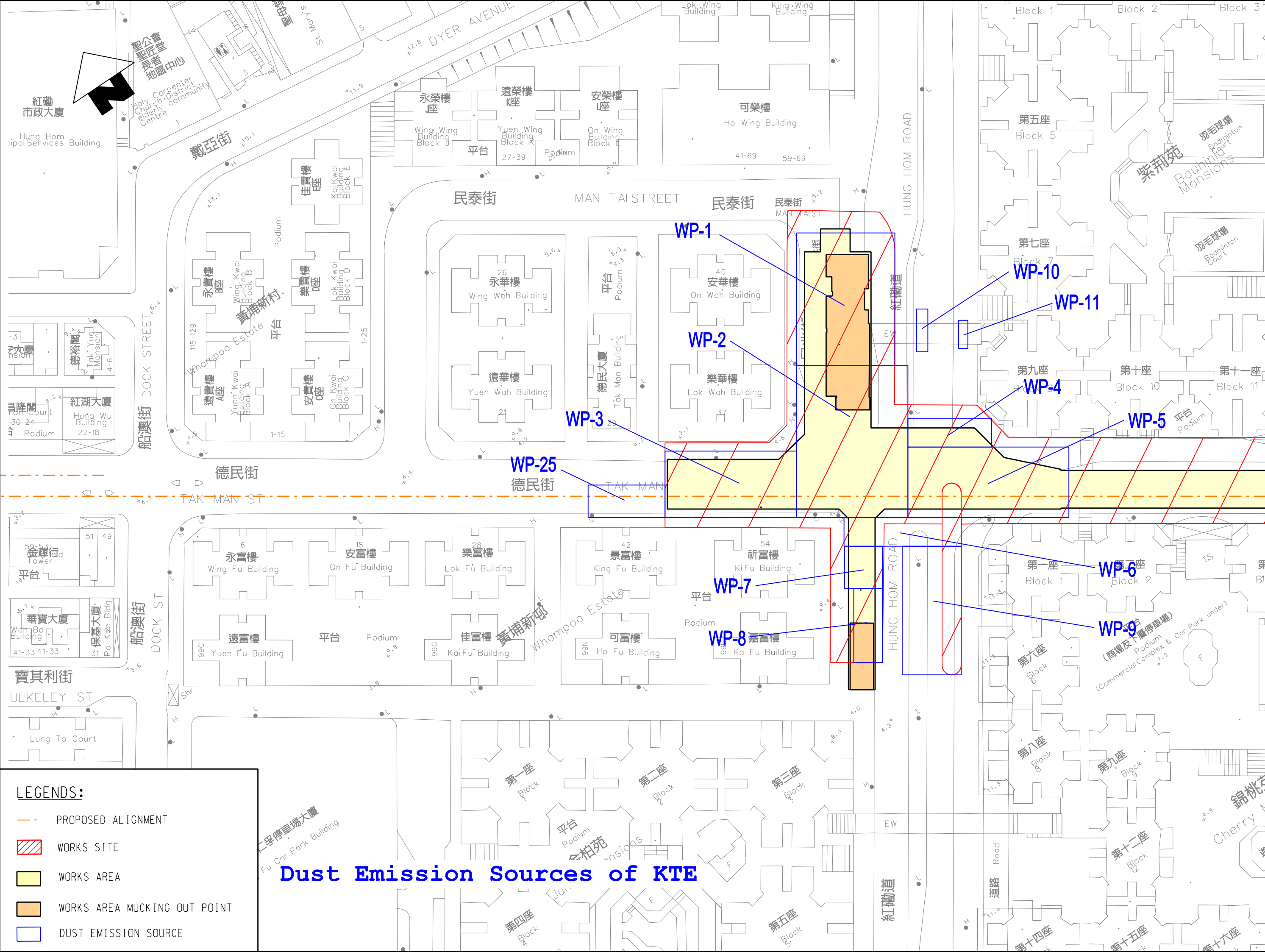
# Dust Emission Sources of KTE





# Dust Emission Sources of KTE

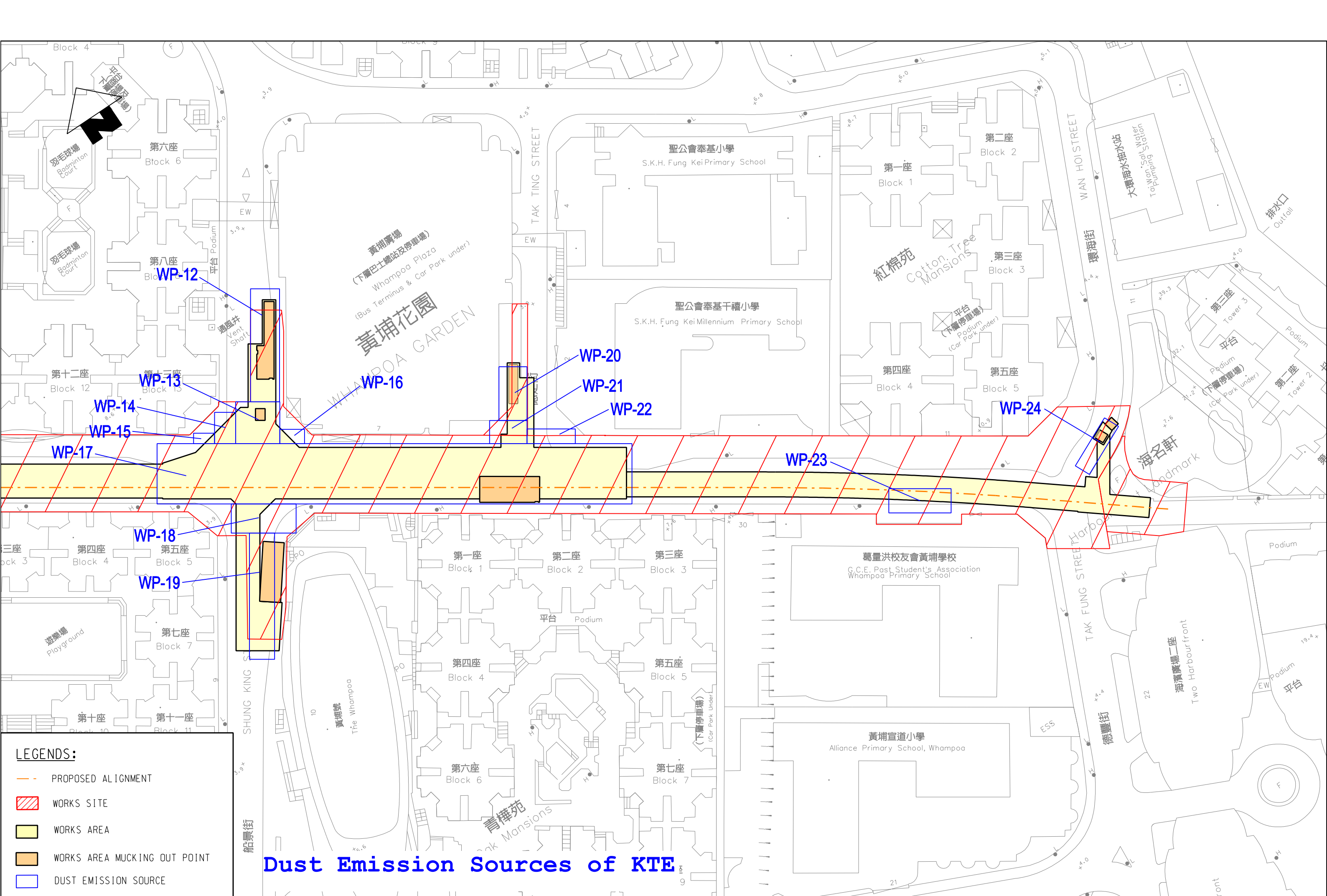




**LEGENDS:**

- - - PROPOSED ALIGNMENT
- WORKS SITE
- WORKS AREA
- WORKS AREA MUCKING OUT POINT
- DUST EMISSION SOURCE

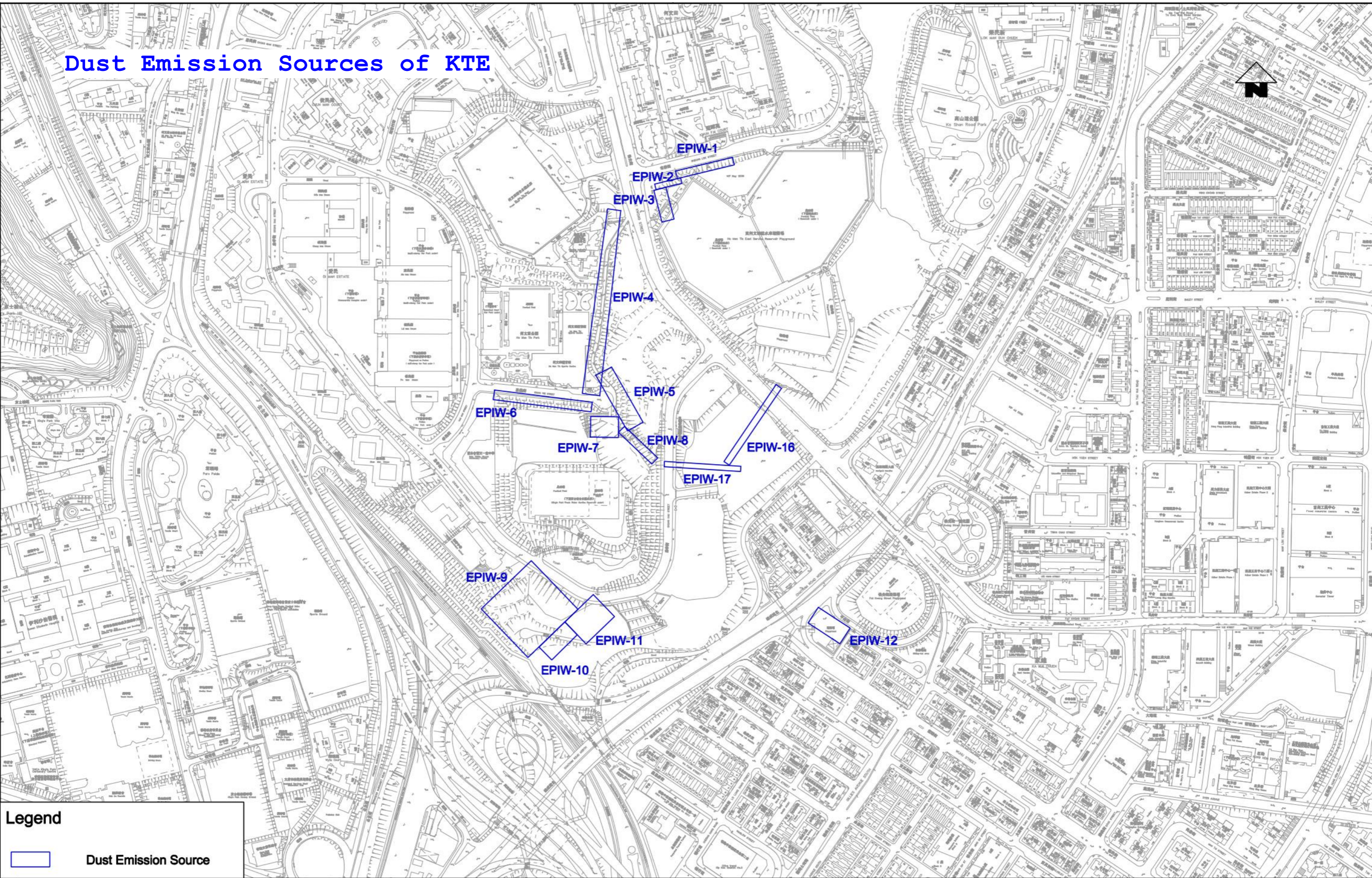
**Dust Emission Sources of KTE**




- LEGENDS:**
- PROPOSED ALIGNMENT
  - WORKS SITE
  - WORKS AREA
  - WORKS AREA MUCKING OUT POINT
  - DUST EMISSION SOURCE

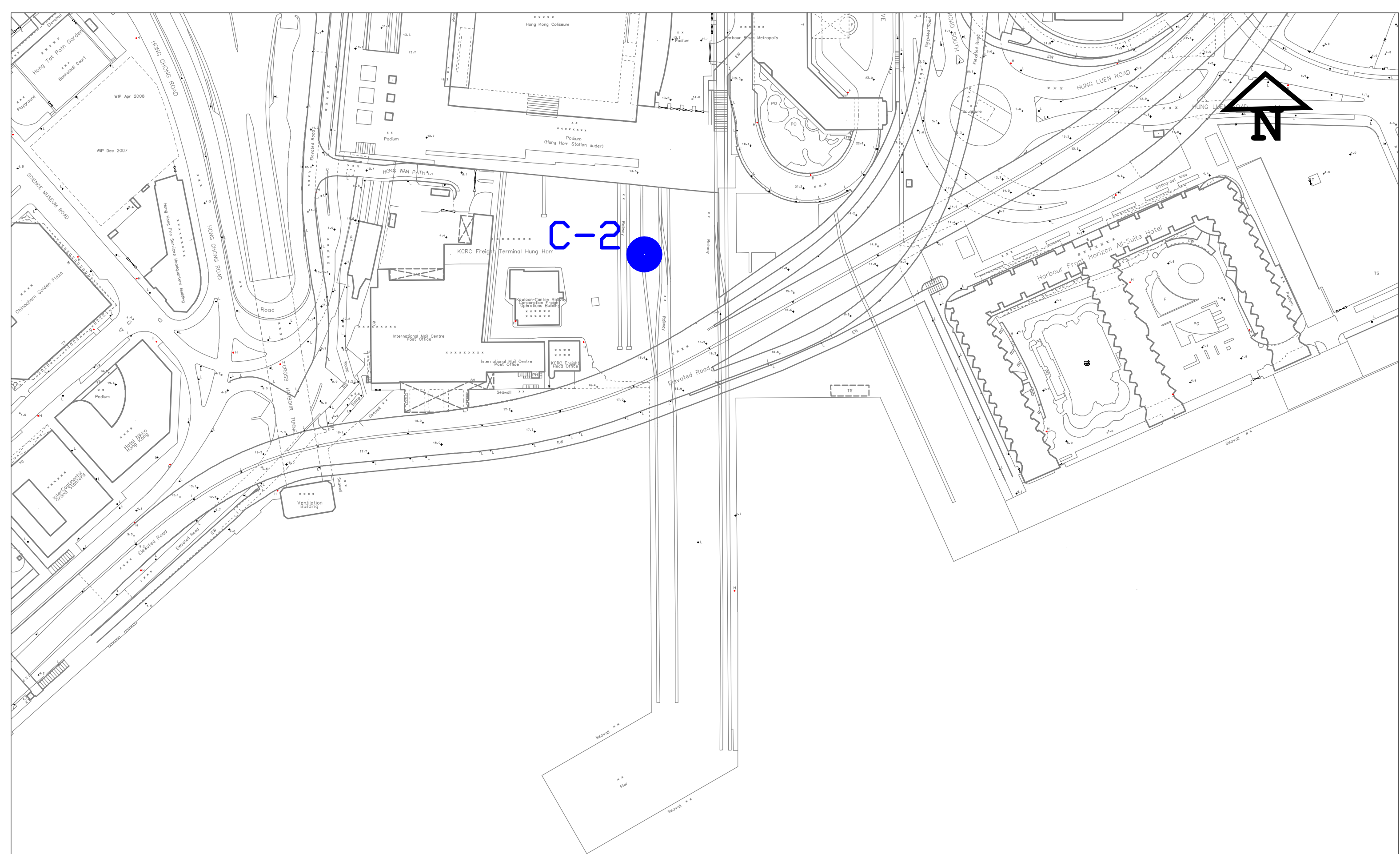
**Dust Emission Sources of KTE**

# Dust Emission Sources of KTE



**Legend**

 Dust Emission Source



Dust Emission Source of KTE

## Appendix 5.4 Emission Inventory of KTE

Dust Sources of KTE for 1-hour and 24-hour Average TSP Modeling (Tier 1)

Source ID	Source Type	Coordinates of		Dimension (m)		Height (m)	Angle / Width (deg / m)	Emission Rate (g/s or g/s/sq.m)								
		X1	Y1	X2	Y2			Heavy Construction		Stockpiling		Wind Erosion		Barging Point / Rock Crusher		
		(m)	(m)	(m)	(m)			Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours	
LP-1	Point	836859.2	819102.4			20									0.000037333	
CP-1	Point	836860.7	819086.3			20									0.033777778	
C-2	Point	836852	817922.9			10									0.070498725	
GA-1	Area	835713.1	818853.1	15.6	26.9	2.14	0.0	0.000017228					0.000000224	0.000002695		
GA-2	Area	835730.0	818854.0	18.1	25.2	2.14	0.0	0.000017228					0.000000224	0.000002695		
GA-3	Area	835746.2	818853.9	14.4	25.2	2.14	0.0	0.000017228					0.000000224	0.000002695		
GA-4	Area	835757.1	818847.3	7.3	7.6	2.14	0.0	0.000017228					0.000000224	0.000002695		
GA-5	Area	835749.5	818884.6	3.4	5.9	6.84	32.9	0.000017228					0.000000224	0.000002695		
GA-6	Area	835752.9	818877.9	1.8	9	6.84	32.9	0.000017228					0.000000224	0.000002695		
GA-7	Area	835758.5	818872.1	5	6.9	6.84	32.9	0.000017228					0.000000224	0.000002695		
GA-8	Area	835768.6	818856.7	5	29.8	6.84	32.9	0.000017228					0.000000224	0.000002695		
GA-9	Area	835780.0	818843.4	5.6	3.5	6.84	3.4	0.000017228					0.000000224	0.000002695		
WAB-1	Area	836205.3	818774.6	60	92.5	6.24	13.7	0.000017228					0.000000224	0.000002695		
WAB-2	Area	836024.9	818737.6	5.6	79.7	8.04	12.5	0.000017228					0.000000224	0.000002695		
WAB-3	Area	836080.5	818681.6	95.6	6	7.54	-18.7	0.000017228					0.000000224	0.000002695		
WAB-4	Area	836115.4	818697.1	7.5	53.8	8.44	13.4	0.000017228					0.000000224	0.000002695		
WAB-5	Area	836253.5	818769.8	3.2	13.7	8.94	8.9	0.000017228					0.000000224	0.000002695		
WAB-6	Area	836247.9	818793.7	0.6	35.2	11.34	9.3	0.000017228					0.000000224	0.000002695		
WAB-7	Area	836272.7	818819.8	52	0.5	11.34	14.1	0.000017228					0.000000224	0.000002695		
WAB-8	Area	836346.3	818815.7	89.4	13.9	20	14.4	0.000017228					0.000000224	0.000002695		
HOM-1	Area	836930.7	819087.2	64.7	113.3	20	43.9	0.000017228					0.000000224	0.000002695		
HOM-2	Area	836899.3	819039.6	46.5	89.5	20	43.9	0.000017228					0.000000224	0.000002695		
HOM-3	Area	836880.1	819017.2	12.3	95.1	20	43.9	0.000017228					0.000000224	0.000002695		
HOM-4	Area	836870.3	819004.4	19.6	100.1	18.24	43.9	0.000017228					0.000000224	0.000002695		
HOM-5	Area	836882.0	818954.5	32.7	135.5	20	43.9	0.000017228					0.000000224	0.000002695		
HOM-6	Area	836865.4	818907.2	56.8	104.7	20	43.9	0.000017228					0.000000224	0.000002695		
HOM-7	Area	836823.5	818872.1	52.2	97.3	20	43.9	0.000017228					0.000000224	0.000002695		
HOM-8	Area	836768.2	818858.6	46.3	40.2	20	43.9	0.000017228					0.000000224	0.000002695		
HOM-9	Area	836727.0	818837.2	42.7	43.3	18.24	43.9	0.000017228					0.000000224	0.000002695		
HOM-10	Area	836682.0	818834.6	25.8	27.1	9.54	43.9	0.000017228					0.000000224	0.000002695		
HOM-11	Area	837060.2	818934.4	102.5	20.2	15.74	48.3	0.000017228					0.000000224	0.000002695		
HOM-12	Area	837104.8	818900.6	82.8	49.2	15.74	48.3	0.000017228					0.000000224	0.000002695		
HOM-13	Area	837056.7	818878.4	14.4	49.2	15.74	48.3	0.000017228					0.000000224	0.000002695		
HOMHR-1	Area	836854.7	819086.0	46.5	39.2	20	43.9	0.000017228					0.000000224	0.000002695		
WP-1	Area	837503.8	818558.0	25.6	34.5	0.64	-33.9	0.000017228					0.000000224	0.000002695		
WP-2	Area	837484.6	818526.3	29	39.5	0.64	-33.9	0.000017228					0.000000224	0.000002695		
WP-3	Area	837452.1	818534.7	34.2	17.3	0.64	-33.9	0.000017228					0.000000224	0.000002695		
WP-4	Area	837506.9	818514.1	21.8	7.5	0.64	-33.9	0.000017228					0.000000224	0.000002695		
WP-5	Area	837508.1	818497.8	41.9	18.3	0.64	-33.9	0.000017228					0.000000224	0.000002695		
WP-6	Area	837482.4	818499.5	30.5	7.5	0.64	-33.9	0.000017228					0.000000224	0.000002695		
WP-7	Area	837468.7	818497.5	9.9	11	0.64	-33.9	0.000017228					0.000000224	0.000002695		
WP-8	Area	837461.3	818484.3	7.5	19.2	0.64	-33.9	0.000017228					0.000000224	0.000002695		
WP-9	Area	837477.2	818478.3	15.4	33.4	0.64	-33.9	0.000017228					0.000000224	0.000002695		
WP-10	Area	837515.8	818540.2	3	11.1	0.64	-33.9	0.000017228					0.000000224	0.000002695		
WP-11	Area	837524.1	818533.4	2.4	7.3	0.64	-33.9	0.000017228					0.000000224	0.000002695		
WP-12	Area	837652.4	818446.0	8.4	32.7	0.24	-33.9	0.000017228					0.000000224	0.000002695		
WP-13	Area	837638.1	818428.6	12.8	12.1	0.24	-33.9	0.000017228					0.000000224	0.000002695		
WP-14	Area	837629.5	818432.6	6.1	9.1	0.24	-33.9	0.000017228					0.000000224	0.000002695		
WP-15	Area	837622.7	818433.5	6.1	3	0.24	-33.9	0.000017228					0.000000224	0.000002695		
WP-16	Area	837644.2	818419.8	7.1	4.1	0.24	-33.9	0.000017228					0.000000224	0.000002695		
WP-17	Area	837662.7	818394.4	137.2	17.4	0.24	-33.9	0.000017228					0.000000224	0.000002695		

**Appendix 5.4 Emission Inventory of KTE**

Source ID	Source Type	Coordinates of		Dimension (m)		Height (m)	Angle / Width (deg / m)	Emission Rate (g/s or g/s/sq.m)								
		X1	Y1	X2	Y2			Heavy Construction		Stockpiling		Wind Erosion		Barging Point / Rock Crusher		
		(m)	(m)	(m)	(m)			Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours	
WP-18	Area	837624.1	818404.7	18.7	8.4	0.24	-33.9	0.000017228					0.000000224	0.000002695		
WP-19	Area	837611.2	818386.3	7.3	36.5	0.24	-33.9	0.000017228					0.000000224	0.000002695		
WP-20	Area	837704.1	818394.5	8.1	15.6	0.24	-33.9	0.000017228					0.000000224	0.000002695		
WP-21	Area	837696.7	818386.1	10.8	6.7	0.24	-33.9	0.000017228					0.000000224	0.000002695		
WP-22	Area	837706.4	818378.1	13.9	4.2	0.24	-33.9	0.000017228					0.000000224	0.000002695		
WP-23	Area	837784.5	818303.3	18	7	0.24	-33.9	0.000017228					0.000000224	0.000002695		
WP-24	Area	837835.7	818287.9	4.7	16.2	0.24	-65.1	0.000017228					0.000000224	0.000002695		
WP-25	Area	837427.2	818546.1	20	8.4	0.24	-33.9	0.000017228					0.000000224	0.000002695		

**Dust Sources of KTE for Annual Average TSP Modeling**

Source ID	Source Type	Coordinates of		Dimension (m)		Height (m)	Angle / Width (deg / m)	Emission Rate (g/s or g/s/sq.m)								
		X1	Y1	X2	Y2			Heavy Construction		Stockpiling		Wind Erosion		Barging Point		
		(m)	(m)	(m)	(m)			Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours	
C-1	Point	836861.5	819090.2			20									0.035035574	
C-2	Point	836852	817922.9			10									0.070498725	
GA-1	Area	835713.1	818853.1	15.6	26.9	2.14	0.0	0.000001034					0.000000013	0.000000162		
GA-2	Area	835730.0	818854.0	18.1	25.2	2.14	0.0	0.000001034					0.000000013	0.000000162		
GA-3	Area	835746.2	818853.9	14.4	25.2	2.14	0.0	0.000001034					0.000000013	0.000000162		
GA-4	Area	835757.1	818847.3	7.3	7.6	2.14	0.0	0.000001034					0.000000013	0.000000162		
GA-5	Area	835749.5	818884.6	3.4	5.9	6.84	32.9	0.000001034					0.000000013	0.000000162		
GA-6	Area	835752.9	818877.9	1.8	9	6.84	32.9	0.000001034					0.000000013	0.000000162		
GA-7	Area	835758.5	818872.1	5	6.9	6.84	32.9	0.000001034					0.000000013	0.000000162		
GA-8	Area	835768.6	818856.7	5	29.8	6.84	32.9	0.000001034					0.000000013	0.000000162		
GA-9	Area	835780.0	818843.4	5.6	3.5	6.84	3.4	0.000001034					0.000000013	0.000000162		
WAB-1	Area	836205.3	818774.6	60	92.5	6.24	13.7	0.000001034					0.000000013	0.000000162		
WAB-2	Area	836024.9	818737.6	5.6	79.7	8.04	12.5	0.000001034					0.000000013	0.000000162		
WAB-3	Area	836080.5	818681.6	95.6	6	7.54	-18.7	0.000001034					0.000000013	0.000000162		
WAB-4	Area	836115.4	818697.1	7.5	53.8	8.44	13.4	0.000001034					0.000000013	0.000000162		
WAB-5	Area	836253.5	818769.8	3.2	13.7	8.94	8.9	0.000001034					0.000000013	0.000000162		
WAB-6	Area	836247.9	818793.7	0.6	35.2	11.34	9.3	0.000001034					0.000000013	0.000000162		
WAB-7	Area	836272.7	818819.8	52	0.5	11.34	14.1	0.000001034					0.000000013	0.000000162		
WAB-8	Area	836346.3	818815.7	89.4	13.9	20	14.4	0.000001034					0.000000013	0.000000162		
HOM-1	Area	836930.7	819087.2	64.7	113.3	20	43.9	0.000001034					0.000000013	0.000000162		
HOM-2	Area	836899.3	819039.6	46.5	89.5	20	43.9	0.000001034					0.000000013	0.000000162		
HOM-3	Area	836880.1	819017.2	12.3	95.1	20	43.9	0.000001034					0.000000013	0.000000162		
HOM-4	Area	836870.3	819004.4	19.6	100.1	18.24	43.9	0.000001034					0.000000013	0.000000162		
HOM-5	Area	836882.0	818954.5	32.7	135.5	20	43.9	0.000001034					0.000000013	0.000000162		
HOM-6	Area	836865.4	818907.2	56.8	104.7	20	43.9	0.000001034					0.000000013	0.000000162		
HOM-7	Area	836823.5	818872.1	52.2	97.3	20	43.9	0.000001034					0.000000013	0.000000162		
HOM-8	Area	836768.2	818858.6	46.3	40.2	20	43.9	0.000001034					0.000000013	0.000000162		
HOM-9	Area	836727.0	818837.2	42.7	43.3	18.24	43.9	0.000001034					0.000000013	0.000000162		
HOM-10	Area	836682.0	818834.6	25.8	27.1	9.54	43.9	0.000001034					0.000000013	0.000000162		
HOM-11	Area	837060.2	818934.4	102.5	20.2	15.74	48.3	0.000001034					0.000000013	0.000000162		
HOM-12	Area	837104.8	818900.6	82.8	49.2	15.74	48.3	0.000001034					0.000000013	0.000000162		
HOM-13	Area	837056.7	818878.4	14.4	49.2	15.74	48.3	0.000001034					0.000000013	0.000000162		
WP-1	Area	837503.8	818558.0	25.6	34.5	0.64	-33.9	0.000001034					0.000000013	0.000000162		
WP-2	Area	837484.6	818526.3	29	39.5	0.64	-33.9	0.000001034					0.000000013	0.000000162		
WP-3	Area	837452.1	818534.7	34.2	17.3	0.64	-33.9	0.000001034					0.000000013	0.000000162		
WP-4	Area	837506.9	818514.1	21.8	7.5	0.64	-33.9	0.000001034					0.000000013	0.000000162		
WP-5	Area	837508.1	818497.8	41.9	18.3	0.64	-33.9	0.000001034					0.000000013	0.000000162		

**Appendix 5.4 Emission Inventory of KTE**

Source ID	Source Type	Coordinates of		Dimension (m)		Height (m)	Angle / Width (deg / m)	Emission Rate (g/s or g/s/sq.m)							
		X1	Y1	X2	Y2			Heavy Construction		Stockpiling		Wind Erosion		Barging Point / Rock Crusher	
		(m)	(m)	(m)	(m)			Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours
WP-6	Area	837482.4	818499.5	30.5	7.5	0.64	-33.9	0.000001034				0.000000013	0.000000162		
WP-7	Area	837468.7	818497.5	9.9	11	0.64	-33.9	0.000001034				0.000000013	0.000000162		
WP-8	Area	837461.3	818484.3	7.5	19.2	0.64	-33.9	0.000001034				0.000000013	0.000000162		
WP-9	Area	837477.2	818478.3	15.4	33.4	0.64	-33.9	0.000001034				0.000000013	0.000000162		
WP-10	Area	837515.8	818540.2	3	11.1	0.64	-33.9	0.000001034				0.000000013	0.000000162		
WP-11	Area	837524.1	818533.4	2.4	7.3	0.64	-33.9	0.000001034				0.000000013	0.000000162		
WP-12	Area	837652.4	818446.0	8.4	32.7	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-13	Area	837638.1	818428.6	12.8	12.1	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-14	Area	837629.5	818432.6	6.1	9.1	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-15	Area	837622.7	818433.5	6.1	3	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-16	Area	837644.2	818419.8	7.1	4.1	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-17	Area	837662.7	818394.4	137.2	17.4	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-18	Area	837624.1	818404.7	18.7	8.4	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-19	Area	837611.2	818386.3	7.3	36.5	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-20	Area	837704.1	818394.5	8.1	15.6	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-21	Area	837696.7	818386.1	10.8	6.7	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-22	Area	837706.4	818378.1	13.9	4.2	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-23	Area	837784.5	818303.3	18	7	0.24	-33.9	0.000001034				0.000000013	0.000000162		
WP-24	Area	837835.7	818287.9	4.7	16.2	0.24	-65.1	0.000001034				0.000000013	0.000000162		
WP-25	Area	837427.2	818546.1	20	8.4	0.24	-33.9	0.000001034				0.000000013	0.000000162		



## Appendix 5.4 Emission Inventory of KTE

Dust Sources of EPIW for 1-hour and 24-hour Average TSP Modeling (Tier 1 and Tier 2)

Source ID	Source Type	Coordinates of		Dimension (m)		Height (m)	Angle / Width (deg / m)	Emission Rate (g/s or g/s/sq.m)							
		X1	Y1	X2	Y2			Heavy Construction		Stockpiling		Wind Erosion		Barging Point	
		(m)	(m)	(m)	(m)			Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours
EPIW-1	Area	836867.2	819411.5	68.7	9.1	0	13.8	0.000017228				0.000000224	0.000002695		
EPIW-2	Area	836824.7	819392.9	31.3	6.7	0	13.8	0.000017228				0.000000224	0.000002695		
EPIW-3	Area	836819.9	819368.6	14.7	38.4	0	13.8	0.000017228				0.000000224	0.000002695		
EPIW-4	Area	836750.5	819260.4	20.7	218.4	0	-5.2	0.000017228				0.000000224	0.000002695		
EPIW-5	Area	836773.1	819139.7	20.9	75.4	0	28.8	0.000017228				0.000000224	0.000002695		
EPIW-6	Area	836680.3	819135.7	115.3	11.3	0	-5.8	0.000017228				0.000000224	0.000002695		
EPIW-7	Area	836751.5	819108.5	32.6	24.2	0	0.0	0.000017228				0.000000224	0.000002695		
EPIW-8	Area	836791.2	819088.6	9.9	54.1	0	43.7	0.000017228				0.000000224	0.000002695		
EPIW-9	Area	836666.4	818893.1	81.5	79	0	43.9	0.000017228				0.000000224	0.000002695		
EPIW-10	Area	836704.7	818860.5	42.7	21.2	0	43.9	0.000017228				0.000000224	0.000002695		
EPIW-11	Area	836741.9	818886	46.3	35.8	0	43.9	0.000017228				0.000000224	0.000002695		
EPIW-12	Area	837017.6	818873.9	21.9	44.6	0	56.5	0.000017228				0.000000224	0.000002695		
EPIW-16	Area	836927.9	819109.7	108.9	7.6	0	55.8	0.000017228				0.000000224	0.000002695		
EPIW-17	Area	836869.3	819060.9	89.5	6.2	0	3.6	0.000017228				0.000000224	0.000002695		

Dust Sources of EPIW for Annual Average TSP Modeling

Source ID	Source Type	Coordinates of		Dimension (m)		Height (m)	Angle / Width (deg / m)	Emission Rate (g/s or g/s/sq.m)							
		X1	Y1	X2	Y2			Heavy Construction		Stockpiling		Wind Erosion		Barging Point	
		(m)	(m)	(m)	(m)			Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours	Daytime	Non-working Hours
EPIW-1	Area	836867.2	819411.5	68.7	9.1	0	13.8	0.000001034				0.000000013	0.000000162		
EPIW-2	Area	836824.7	819392.9	31.3	6.7	0	13.8	0.000001034				0.000000013	0.000000162		
EPIW-3	Area	836819.9	819368.6	14.7	38.4	0	13.8	0.000001034				0.000000013	0.000000162		
EPIW-4	Area	836750.5	819260.4	20.7	218.4	0	-5.2	0.000001034				0.000000013	0.000000162		
EPIW-5	Area	836773.1	819139.7	20.9	75.4	0	28.8	0.000001034				0.000000013	0.000000162		
EPIW-6	Area	836680.3	819135.7	115.3	11.3	0	-5.8	0.000001034				0.000000013	0.000000162		
EPIW-7	Area	836751.5	819108.5	32.6	24.2	0	0.0	0.000001034				0.000000013	0.000000162		
EPIW-8	Area	836791.2	819088.6	9.9	54.1	0	43.7	0.000001034				0.000000013	0.000000162		
EPIW-9	Area	836666.4	818893.1	81.5	79	0	43.9	0.000001034				0.000000013	0.000000162		
EPIW-10	Area	836704.7	818860.5	42.7	21.2	0	43.9	0.000001034				0.000000013	0.000000162		
EPIW-11	Area	836741.9	818886	46.3	35.8	0	43.9	0.000001034				0.000000013	0.000000162		
EPIW-12	Area	837017.6	818873.9	21.9	44.6	0	56.5	0.000001034				0.000000013	0.000000162		
EPIW-16	Area	836927.9	819109.7	108.9	7.6	0	55.8	0.000001034				0.000000013	0.000000162		
EPIW-17	Area	836869.3	819060.9	89.5	6.2	0	3.6	0.000001034				0.000000013	0.000000162		