APPENDIX 5A

Calculation of Fugitive Dust Emission Factors

Calculation of Emission factor for Wind Erosion

According to Section 11.9 of AP-42

E = 0.85Mg/hectare/yr (ref : AP-42 S11.9, Table 11.9.4)

Where

E = Emission Factor

Assume

Daytime:

Percentage active operating area (%)	10	for calculation of TSP annual average concentration
Mitigation efficiency (%)	87.50%	87.5% efficiency for watering 8 times daily
E (g/sqm/day)	0.002910959	calculated as in AP-42 (S11.9, Table 11.9.4)
E (g/sq.m/s)	**0.0000000337**	calculated, 24-hour emission
Percentage active operating area (%)	30	usual practice for typical construction site
Mitigation efficiency (%)	87.50%	87.5% efficiency for watering 8 times daily
E (g/sqm/day)	0.008732877	calculated as in AP-42 (S11.9, Table 11.9.4)
E (g/sq.m/s)	**0.0000001011**	calculated, 24-hour emission

Nighttime:

Percentage active operating area (%)	10	for calculation of TSP annual average concentration
Mitigation efficiency (%)	0	0% for Do-nothing
E (g/sqm/day)	0.023287671	calculated as in AP-42 (S11.9, Table 11.9.4)
E (g/sq.m/s)	**0.0000002695**	calculated, 24-hour emission
Percentage active operating area (%)	30	usual practice for typical construction site
Mitigation efficiency (%)	0	0% for Do-nothing
E (g/sqm/day)	0.069863014	calculated as in AP-42 (S11.9, Table 11.9.4)
E (g/sq.m/s)	**0.0000008086**	calculated, 24-hour emission

Calculation of Emission factor for Heavy Construction

According to Section 13.2.3 of AP-42

E = 1.2tons/acre/month of activity (ref : AP-42 S13.2.3.3)
or = 2.69Mg/hectare/month of activity

Where
E = Emission Factor

Assume

Daytime:		
Percentage active operating area (%)	10	for calculation of TSP annual average concentration
Mitigation efficiency (%)	87.50%	87.5% efficiency for watering 8 times daily
E (g/sq.m/day)	0.1293	Assume 26 working days per month and 12 working hours a day
E (g/sq.m/s)	**0.0000029937**	calculated, 12 working hours per day
Percentage active operating area (%)	30	usual practice for typical construction site
Mitigation efficiency (%)	87.50%	87.5% efficiency for watering 8 times daily
E (g/sq.m/day)	0.3880	Assume 26 working days per month and 12 working hours a day
E (g/sq.m/s)	**0.0000089810**	calculated, 12 working hours per day
Daytime (Unmitigated):		
Percentage active operating area (%)	10	for calculation of TSP annual average concentration
Mitigation efficiency (%)	0.0%	0% for Do-nothing
E (g/sq.m/day)	1.0346	Assume 26 working days per month and 12 working hours a day
E (g/sq.m/s)	**0.0000239494**	calculated, 12 working hours per day
Percentage active operating area (%)	30	usual practice for typical construction site
Mitigation efficiency (%)	0.0%	0% for Do-nothing
E (g/sq.m/day)	3.1038	Assume 26 working days per month and 12 working hours a day
E (g/sq.m/s)	**0.0000718483**	calculated, 12 working hours per day

Calculation of Emission factor for Material Handling

According to Section 13.2.4 of AP-42

$$E = k(0.0016)\ \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}(kg\ /\ megagram\quad)$$

where

E = Emission Factor in kg/megagram (Ref. AP42 S13.2.4)
k = Particle size multiplier, k = 0.74 as defined according to Table 2 of S13.2.4
U = Average wind speed at Tung Chung from 2002 to 2006 (i.e. ~4.689m/s)
M = material moisture content; 2% is assumed in the equation

E = 0.74 x (0.0016) x (4.689/2.2)^1.3/(2/2)^1.4
= 0.00317 kg/megagram

No. of trucks loading/unloading at each barging point = 10 per hour (assume 20 trucks per hour will be loaded and unloaded)
Average carrying capacity for each truck = 24 tonne
Quantity of excavated materials loading at barging point = 240 megagram per hour per barging point
Total number of barging point= 2

Daytime:

Mitigation efficiency (%)	90.00%	*90% reduction
E =	0.00032	kg/megagram
=	76.0800	g/hour
=	0.0211	g/s

Mitigation efficiency (%)	0.00%	0% for Do-nothing
E =	0.00317	kg/megagram
=	760.8000	g/hour
=	0.2113	g/s

*** Note:**

90% reduction by a. All road surface within the barging facility wil be paved
b. Dust enclosures will be provided for the loading ramp
c. Vehicles will be required to pass through designated wheel washing facilities before leaving the barging facility
d. Continuous water spary for the loading point