

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

BCP Site Formation

Works area (m²) = 152935

From: Day 1 of Month 1		To: Day 30 of Month 10	Duration (months): 10			
Stage 1 - Site Clearance						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, excavator mounted (hydraulic), 52kW		80%	1	13.0	13.0	10.4
Total:					10.4	
Percentage of Usage Area to Works Area:					0.0068	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	80%	4	13.0	52.0	41.6
Total:					41.6
Percentage of Usage Area to Works Area:					0.0272

Stage 1 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Bulldozer (239kW)	70%	1	30.0	30.0	21.0
Lorry with crane/grab	70%	1	24.0	24.0	16.8
Dump truck (50t)	70%	3	35.0	105.0	73.5
Total:					111.3
Percentage of Usage Area to Works Area:					0.0728

From: Day 1 of Month 7 To: Day 30 of Month 34 Duration (months): 28					
Stage 2 - Site Formation Works					
Stage 2 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)	80%	3	13.0	39.0	31.2
Total:					31.2
Percentage of Usage Area to Works Area:					0.0204

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, diaphragm wall, bentonite filtering plant	80%	1	36.0	36.0	28.8
Piling, diaphragm wall, hydraulic extractor	80%	1	36.0	36.0	28.8
Mobile crane	80%	1	36.0	36.0	28.8
Total:					86.4
Percentage of Usage Area to Works Area:					0.0565

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Bulldozer (239kW)	70%	1	30.0	30.0	21.0
Compactor, vibratory	70%	1	12.0	12.0	8.4
Dump truck (50t)	70%	4	35.0	140.0	98.0
Total:					127.4
Percentage of Usage Area to Works Area:					0.0833

From: Day 1 ofMonth 25		To: Day 30 of Month 39	Duration (months): 15		
Stage 3 - Building Formation Works					
Stage 3 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held breaker, 35kg	50%	2	1.0	2.0	1.0
Breaker, excavator mounted (hydraulic), 52kW	30%	1	13.0	13.0	3.9
				Total:	4.9
Percentage of Usage Area to Works Area:					0.0032

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, grab and chisel	100%	1	36.0	36.0	36.0
Piling, large diameter bored, reverse circulation drill	70%	1	36.0	36.0	25.2
Total:					61.2
Percentage of Usage Area to Works Area:					0.0400

Stage 3 - Group 3					
--------------------------	--	--	--	--	--

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan
BCP Site Formation

Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	80%	1	36.0	36.0	28.8
Concrete lorry mixer (5m3)	70%	4	24.0	96.0	67.2
Breaker, hand-held breaker, 35kg	50%	2	1.0	2.0	1.0
Total:					97.0
Percentage of Usage Area to Works Area:					0.0634

From: Day 1 of Month 31		To: Day 30 of Month 48	Duration (months): 18			
Stage 4 - Building Structures						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Breaker, hand-held breaker, 35kg	40%	2	1.0	2.0	0.8	
Concrete lorry mixer (5m3)	70%	3	24.0	72.0	50.4	
Mobile crane	80%	1	36.0	36.0	28.8	
Lorry with crane/grab	50%	2	24.0	48.0	24.0	
				Total:	104.0	
Percentage of Usage Area to Works Area:					0.0680	

From: Day 1 of Month 49		To: Day 30 of Month 60	Duration (months): 12			
Stage 5 - Building E&M System						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Concrete lorry mixer (5m3)	30%	2	24.0	48.0	14.4	
Mobile crane	50%	1	36.0	36.0	18.0	
Lorry with crane/grab	50%	2	24.0	48.0	24.0	
				Total:	56.4	
Percentage of Usage Area to Works Area:					0.0369	

From: Day 1 of Month 25		To: Day 30 of Month 39	Duration (months): 15			
Stage 6 - Cross Boundary Bridges - Substructures						
Stage 6 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Breaker, hand-held breaker, 35kg	50%	2	1.0	2.0	1.0	
Breaker, excavator mounted (hydraulic), 52kW	30%	1	13.0	13.0	3.9	
Excavator (45kW)	80%	2	13.0	26.0	20.8	
Dump truck (50t)	70%	3	35.0	105.0	73.5	
				Total:	99.2	
Percentage of Usage Area to Works Area:					0.0649	

Stage 6 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, grab and chisel	100%	1	36.0	36.0	36.0
Piling, large diameter bored, reverse circulation drill	70%	1	36.0	36.0	25.2
Total:					61.2
Percentage of Usage Area to Works Area:					0.0400

Stage 6 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	70%	4	24.0	96.0	67.2
Breaker, hand-held breaker, 35kg	50%	2	24.0	48.0	24.0
Mobile crane	70%	1	36.0	36.0	25.2
Total:					116.4
Percentage of Usage Area to Works Area:					0.0761

From: Day 1 of Month 31		To: Day 30 of Month 48	Duration (months): 18		
Stage 7 - Cross Boundary Bridges - Bridges Deck					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg	40%	2	1.0	2.0	0.8
Concrete lorry mixer (5m3)	70%	6	24.0	144.0	100.8
Mobile crane	40%	2	36.0	72.0	28.8
Lorry with crane/grab	50%	2	24.0	48.0	24.0
Total:				154.4	
Percentage of Usage Area to Works Area:				0.1010	

From: Day 1 of Month 47		To: Day 30 of Month 50	Duration (months): 4
Stage 8 - Cross Boundary Bridges - Road Works & Facilities			
Stage 8 - Group 1			

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan
BCP Site Formation

Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Dump truck (50t)	50%	2	35.0	70.0	35.0
Total:					35.0
Percentage of Usage Area to Works Area:					0.0229

Stage 8 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Roller, vibratory	30%	1	12.0	12.0	3.6
Asphalt paver	40%	1	12.0	12.0	4.8
Concrete lorry mixer	30%	1	24.0	24.0	7.2
Total:					15.6
Percentage of Usage Area to Works Area:					0.0102

From: Day 1 of Month 50 To: Day 30 of Month 53 Duration (months): 4					
Stage 9 - Cross Boundary Bridges - E&M System					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held, mass >= 20kg and <= 35kg	40%	2	0.5	1.0	0.4
Lorry with crane/grab	50%	1	24.0	24.0	12.0
Total:					12.4
Percentage of Usage Area to Works Area:					0.0081

From: Day 1 of Month 33 To: Day 30 of Month 41 Duration (months): 9					
Stage 10 - General Civil Works and Utilities					
Stage 10 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Compactor, vibratory	70%	1	12.0	12.0	8.4
Dump truck (50t)	70%	2	35.0	70.0	49.0
Excavator (45kW)	70%	1	13.0	13.0	9.1
Total:					66.5
Percentage of Usage Area to Works Area:					0.0435

Stage 10 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	75%	2	24.0	48.0	36.0
Lorry with crane/grab	50%	1	24.0	24.0	12.0
Total:					48.0
Percentage of Usage Area to Works Area:					0.0314

Stage 10 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Roller, vibratory	30%	1	12.0	12.0	3.6
Dump truck (50t)	50%	2	35.0	70.0	35.0
Asphalt paver	40%	1	12.0	12.0	4.8
Concrete lorry mixer	30%	1	24.0	24.0	7.2
Total:					50.6
Percentage of Usage Area to Works Area:					0.0331

From: Day 1 of Month 42 To: Day 30 of Month 47 Duration (months): 6					
Stage 11 - Road Works					
Stage 11 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Dump truck (50t)	50%	2	35.0	70.0	35.0
Total:					35.0
Percentage of Usage Area to Works Area:					0.0229

Stage 11 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Roller, vibratory	30%	1	12.0	12.0	3.6
Asphalt paver	40%	1	12.0	12.0	4.8
Concrete lorry mixer	30%	1	24.0	24.0	7.2
Total:					15.6
Percentage of Usage Area to Works Area:					0.0102

From: Day 1 of Month 42 To: Day 30 of Month 47 Duration (months): 6					
---	--	--	--	--	--

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

BCP Site Formation

Stage 12 - Lighting/E&M/TCSS					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held breaker, 35kg	40%	2	1.0	2.0	0.8
Concrete lorry mixer	30%	2	24.0	48.0	14.4
Mobile crane	50%	1	36.0	36.0	18.0
Lorry with crane/grab	50%	2	24.0	48.0	24.0
Total:					57.2
Percentage of Usage Area to Works Area:					0.0374

From: Day 1 of Month 31 To: Day 30 of Month 40 Duration (months): 10					
Stage 13 Sewage Treatment Plant					
Stage 13a Foundation Works					
Stage 13a - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held breaker, 35kg	50%	2	1.0	2.0	1.0
Breaker, excavator mounted (hydraulic), 52kW	30%	1	13.0	13.0	3.9
Total:					4.9
Percentage of Usage Area to Works Area:					0.0032

Stage 13a - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, grab and chisel	100%	1	36.0	36.0	36.0
Piling, large diameter bored, reverse circulation drill	70%	1	36.0	36.0	25.2
Total:					61.2
Percentage of Usage Area to Works Area:					0.0400

Stage 13a - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	80%	1	36.0	36.0	28.8
Concrete lorry mixer (5m ³)	70%	4	24.0	96.0	67.2
Total:					96.0
Percentage of Usage Area to Works Area:					0.0628

From: Day 1 of Month 41 To: Day 30 of Month 58 Duration (months): 18					
Stage 13b Superstructures					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held breaker, 35kg	40%	2	1.0	2.0	0.8
Concrete lorry mixer	70%	3	24.0	72.0	50.4
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	50%	2	36.0	72.0	36.0
Total:					101.6
Percentage of Usage Area to Works Area:					0.0664

From: Day 1 of Month 56 To: Day 30 of Month 60 Duration (months): 5					
Stage 13c Road Works /Pipe Works					
Stage 13c - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Compactor, vibratory	70%	1	12.0	12.0	8.4
Dump truck	70%	2	35.0	70.0	49.0
Total:					57.4
Percentage of Usage Area to Works Area:					0.0375

Stage 13c - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Roller, vibratory	30%	1	12.0	12.0	3.6
Dump truck	50%	2	35.0	70.0	35.0
Asphalt paver	40%	1	12.0	12.0	4.8
Concrete lorry mixer	30%	1	24.0	24.0	7.2
Total:					50.6
Percentage of Usage Area to Works Area:					0.0331

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

BCP Site Formation

Note:

1. For each stage of construction, different groups of construction activities are non-concurrent.
2. Plant and activity with no dust emission during operation is not included (i.e. area = 0)
3. All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
4. Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
5. The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
6. Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
7. For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

Chuk Yuen Village Access Road (at grade)

Works area (m²) = 2705

From: Day 1 of Month 9		To: Day 30 of Month 10	Duration (months): 2		
Stage 1 - Site Clearance					
Stage 1 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held breaker, 35kg	70%	1	1.0	1.0	0.7
Dump truck (50t)	80%	1	24.0	24.0	19.2
Excavator (45kW)	80%	1	13.0	13.0	10.4
Total:					30.3
Percentage of Usage Area to Works Area:					1.1

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	70%	1	24.0	24.0	16.8
Total:					31.2
Percentage of Usage Area to Works Area:					1.2

From: Day 1 of Month 22		To: Day 30 of Month 30	Duration (months): 9			
Stage 2 - Road Works						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Asphalt paver		70%	1	12.0		
Road roller		70%	1	12.0	12.0	8.4
					Total:	8.4
					Percentage of Usage Area to Works Area:	0.3

Note:

1. For each stage of construction, different groups of construction activities are non-concurrent.
2. Plant and activity with no dust emission during operation is not included (i.e. area = 0)
3. All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
4. Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
5. The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
6. Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
7. For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan
Flyover Crossing over Ng Chow Road (viaduct)
Works area (m²) = 2705

From: Day 15 of Month 29		To: Day 30 of Month 29	Duration (months): 0.5			
Stage 1 - Site Clearance & Haul Road						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held breaker, 35kg		30%	2	1.0	2.0	0.6
Total:					0.6	
Percentage of Usage Area to Works Area:					0.0222	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	80%	2	13.0	26.0	20.8
Bulldozer (239kW)	40%	1	30.0	30.0	12.0
Total:					32.8
Percentage of Usage Area to Works Area:					1.2126

Stage 1 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Dump truck (50t)	80%	4	36.0	144.0	115.2
Total:					115.2
Percentage of Usage Area to Works Area:					4.2588

From: Day 15 of Month 29		To: Day 15 of Month 35	Duration (months): 6			
Stage 2 - Piling						
Stage 2 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)		50%	2	13.0	26.0	13.0
Lorry (35 t)		50%	4	24.0	96.0	48.0
					Total:	61.0
					Percentage of Usage Area to Works Area:	2.2551

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, reverse circulation drill	50%	4	36.0	144.0	72.0
Piling, large diameter bored, oscillator	50%	4	36.0	144.0	72.0
Total:					144.0
Percentage of Usage Area to Works Area:					5.3235

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	50%	4	36.0	144.0	72.0
Concrete lorry mixer (5m3)	20%	4	24.0	96.0	19.2
Total:					91.2
Percentage of Usage Area to Works Area:					3.3715

From: Day 1 of Month 31		To: Day 15 of Month 31	Duration (months): 0.5				
From: Day 15 of Month 32		To: Day 30 of Month 32	Duration (months): 0.5				
From: Day 1 of Month 34		To: Day 15 of Month 34	Duration (months): 0.5				
From: Day 15 of Month 35		To: Day 15 of Month 36	Duration (months): 1				
Stage 3 - PileCaps							
Stage 3 - Group 1							
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Excavator (45kW)		50%	2	13.0	26.0	13.0	
Lorry (35 t)		50%	4	24.0	96.0	48.0	
					Total:	61.0	
					Percentage of Usage Area to Works Area:		2.2551

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	20%	4	24.0	96.0	19.2
Mobile crane	100%	4	36.0	144.0	144.0
Total:					163.2
Percentage of Usage Area to Works Area:					6.0333

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan
Flyover Crossing over Ng Chow Road (viaduct)

Flyover Crossing over Ng Ch'ow Road (viaduct)					
From: Day 15 of Month 31		To: Day 30 of Month 31	Duration (months): 0.5		
From: Day 1 of Month 33		To: Day 15 of Month 33	Duration (months): 0.5		
From: Day 15 of Month 34		To: Day 30 of Month 34	Duration (months): 0.5		
From: Day 15 of Month 36		To: Day 30 of Month 36	Duration (months): 0.5		
Stage 4 - Piers					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	20%	4	24.0	96.0	19.2
Mobile crane	50%	2	36.0	72.0	36.0
Total:				55.2	
Percentage of Usage Area to Works Area:				2.0407	

From: Day 1 of Month 32		To: Day 30 of Month 42	Duration (months): 11			
Stage 5 - Bridge Decks						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Mobile crane	50%	2	36.0	72.0	36.0	
Lorry (35 t)	60%	4	24.0	96.0	57.6	
Total:				93.6		
Percentage of Usage Area to Works Area:					3.4603	

From: Day 1 of Month 42		To: Day 15 of Month 43	Duration (months): 1.5		
Stage 6 - Parapet & Surfacing					
Stage 6 - Group 1 (Parapet)					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	30%	2	36.0	72.0	21.6
Lorry (35 t)	50%	2	24.0	48.0	24.0
Total:				45.6	
Percentage of Usage Area to Works Area:					1.6858

Stage 6 - Group 2 (Surfacing)					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	12.0	12.0	8.4
Road roller	70%	3	12.0	36.0	25.2
Total:					33.6
Percentage of Usage Area to Works Area:					1.2421

Note:

- For each stage of construction, different groups of construction activities are non-concurrent.
- Plant and activity with no dust emission during operation is not included (i.e. area = 0)
- All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
- Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
- The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
- Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
- For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan
Flyover Crossing Wo Keng Shan Road (viaduct)
Works area (m²) = 14868

From: Day 15 of Month 40		To: Day 30 of Month 40	Duration (months): 0.5			
Stage 1 - Site Clearance & Haul Road						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held breaker, 35kg		30%	2	1.0	2.0	0.6
Total:					0.6	
Percentage of Usage Area to Works Area:					0.0040	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	80%	2	13.0	26.0	20.8
Bulldozer (239kW)	40%	1	30.0	30.0	12.0
Total:					32.8
Percentage of Usage Area to Works Area:					0.2206

Stage 1 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Dump truck (50t)	80%	4	36.0	144.0	115.2
Total:					115.2
Percentage of Usage Area to Works Area:					0.7748

From: Day 1 of Month 41		To: Day 30 of Month 46	Duration (months): 6			
Stage 2 - Piling						
Stage 2 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)		50%	2	13.0	26.0	13.0
Lorry (35 t)		50%	4	24.0	96.0	48.0
					Total:	61.0
					Percentage of Usage Area to Works Area:	0.4103

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, reverse circulation drill	50%	4	36.0	144.0	72.0
Piling, large diameter bored, oscillator	50%	4	36.0	144.0	72.0
Total:					144.0
Percentage of Usage Area to Works Area:					0.9685

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	50%	4	36.0	144.0	72.0
Concrete lorry mixer (5m3)	20%	4	24.0	96.0	19.2
Total:					91.2
Percentage of Usage Area to Works Area:					0.6134

From: Day 1 of Month 43 To: Day 15 of Month 43 Duration (months): 0.5					
From: Day 1 of Month 45 To: Day 15 of Month 45 Duration (months): 0.5					
From: Day 1 of Month 47 To: Day 15 of Month 47 Duration (months): 1					
Stage 3 - PileCaps					
Stage 3 - Group 1					
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)
Excavator (45kW)		50%	2	13.0	26.0
Lorry (35 t)		50%	4	24.0	96.0
Total:					61.0
Percentage of Usage Area to Works Area:					0.4103

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	20%	4	24.0	96.0	19.2
Mobile crane	100%	4	36.0	144.0	144.0
Total:					163.2
Percentage of Usage Area to Works Area:					1.0977

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan
Flyover Crossing Wo Keng Shan Road (viaduct)

Hydroxyl Crossing Wu Kong Shan Road (Huaqiao)					
From: Day 15 of Month 43		To: Day 30 of Month 43	Duration (months): 0.5		
From: Day 15 of Month 45		To: Day 30 of Month 45	Duration (months): 0.5		
From: Day 1 of Month 48		To: Day 15 of Month 48	Duration (months): 0.5		
Stage 4 - Piers					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)
Concrete lorry mixer (5m3)	20%	4	24.0	96.0	19.2
Mobile crane	50%	2	36.0	72.0	36.0
				Total:	55.2
Percentage of Usage Area to Works Area:					0.3713

From: Day 1 of Month 44		To: Day 15 of Month 51	Duration (months): 7.5		
Stage 5 - Bridge Decks					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	50%	2	36.0	72.0	36.0
Lorry (35 t)	60%	4	24.0	96.0	57.6
				Total:	93.6
Percentage of Usage Area to Works Area:					0.6295

From: Day 15 of Month 51		To: Day 15 of Month 52	Duration (months): 1		
Stage 6 - Parapet & Surfacing					
Stage 6 - Group 1 (Parapet)					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	30%	2	36.0	72.0	21.6
Lorry (35 t)	50%	2	24.0	48.0	24.0
				Total:	45.6
Percentage of Usage Area to Works Area:					0.3067

Stage 6 - Group 2 (Surfacing)					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	12.0	12.0	8.4
Road roller	70%	3	12.0	36.0	25.2
Total:					33.6
Percentage of Usage Area to Works Area:					0.2260

Note:

- For each stage of construction, different groups of construction activities are non-concurrent.
- Plant and activity with no dust emission during operation is not included (i.e. area = 0)
- All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
- Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
- The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
- Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
- For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan
Flyover from BCP to WKS (viaduct)
Works area (m²) = 72958

From: Day 1 of Month 7		To: Day 15 of Month 7	Duration (months): 0.5			
Stage 1 - Site Clearance & Haul Road						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)		30%	2	13.0	26.0	7.8
Total:					7.8	
Percentage of Usage Area to Works Area:					0.0107	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	80%	2	13.0	26.0	20.8
Bulldozer (239kW)	40%	1	30.0	30.0	12.0
Total:					32.8
Percentage of Usage Area to Works Area:					0.0450

Stage 1 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Dump truck (50t)	80%	4	36.0	144.0	115.2
Total:					115.2
Percentage of Usage Area to Works Area:					0.1579

From: Day 15 of Month 7		To: Day 30 of Month 20	Duration (months): 13.5		
Stage 2 - Piling					
Stage 2 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)	40%	6	13.0	78.0	31.2
Lorry (35 t)	30%	13	24.0	312.0	93.6
Total:					124.8
Percentage of Usage Area to Works Area:					0.1711

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, reverse circulation drill	40%	6	36.0	216.0	86.4
Piling, large diameter bored, oscillator	40%	7	36.0	252.0	100.8
Total:					187.2
Percentage of Usage Area to Works Area:					0.2566

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	50%	13	36.0	468.0	234.0
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Total:					262.8
Percentage of Usage Area to Works Area:					0.3602

From: Day 1 of Month 9		To: Day 15 of Month 9	Duration (months): 0.5		
From: Day 15 of Month 10		To: Day 30 of Month 10	Duration (months): 0.5		
From: Day 1 of Month 12		To: Day 15 of Month 12	Duration (months): 0.5		
From: Day 15 of Month 13		To: Day 30 of Month 13	Duration (months): 0.5		
From: Day 1 of Month 15		To: Day 15 of Month 15	Duration (months): 0.5		
From: Day 15 of Month 16		To: Day 30 of Month 16	Duration (months): 0.5		
From: Day 1 of Month 18		To: Day 15 of Month 18	Duration (months): 0.5		
From: Day 15 of Month 19		To: Day 30 of Month 19	Duration (months): 0.5		
From: Day 1 of Month 21		To: Day 30 of Month 21	Duration (months): 1		

Stage 3 - PileCaps					
Stage 3 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	50%	4	13.0	52.0	26.0
Lorry (35 t)	50%	13	24.0	312.0	156.0
Total:					182.0
Percentage of Usage Area to Works Area:					0.2495

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	20%	13	24.0	312.0	62.4

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

Flyover from BCP to WKS (viaduct)

Mobile crane	100%	13	36.0	468.0	468.0
Total:					530.4
Percentage of Usage Area to Works Area:					0.7270

From: Day 15 of Month 9		To: Day 30 of Month 9	Duration (months): 0.5			
From: Day 1 of Month 11		To: Day 15 of Month 11	Duration (months): 0.5			
From: Day 15 of Month 12		To: Day 30 of Month 12	Duration (months): 0.5			
From: Day 1 of Month 14		To: Day 15 of Month 14	Duration (months): 0.5			
From: Day 15 of Month 15		To: Day 30 of Month 15	Duration (months): 0.5			
From: Day 1 of Month 17		To: Day 15 of Month 17	Duration (months): 0.5			
From: Day 15 of Month 18		To: Day 30 of Month 18	Duration (months): 0.5			
From: Day 1 of Month 20		To: Day 15 of Month 20	Duration (months): 0.5			
From: Day 15 of Month 21		To: Day 15 of Month 22	Duration (months): 1			
Stage 4 - Piers						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Concrete lorry mixer (5m3)		20%	13	24.0	312.0	62.4
Mobile crane		50%	6	36.0	216.0	108.0
					Total:	170.4
					Percentage of Usage Area to Works Area:	0.2336

From: Day 15 of Month 10		To: Day 15 of Month 46	Duration (months): 36		
Stage 5 - Bridge Decks					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	50%	4	36.0	144.0	72.0
Lorry (35 t)	60%	8	24.0	192.0	115.2
				Total:	187.2
Percentage of Usage Area to Works Area:					0.2566

From: Day 15 of Month 46		To: Day 30 of Month 48	Duration (months): 2.5		
Stage 6 - Parapet & Surfacing					
Stage 6 - Group 1 (Parapet)					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	30%	2	36.0	72.0	21.6
Lorry (35 t)	50%	2	24.0	48.0	24.0
Total:					45.6
Percentage of Usage Area to Works Area:					0.0625

Stage 6 - Group 2 (Surfacing)					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Asphalt paver	70%	1	12.0	12.0	8.4
Road roller	70%	3	12.0	36.0	25.2
Total:					33.6
Percentage of Usage Area to Works Area:					0.0461

Note:

- For each stage of construction, different groups of construction activities are non-concurrent.
- Plant and activity with no dust emission during operation is not included (i.e. area = 0)
- All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
- Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
- The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
- Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
- For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

Lin Ma Hang Road Impro Work (at grade)

Works area (m²) = 10030

From: Day 1 of Month 1		To: Day 30 of Month 2	Duration (months): 2			
Stage 1 - Site Clearance						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		70%	1	1.0	1.0	0.7
Dump truck (50t)		80%	1	24.0	24.0	19.2
Excavator (45kW)		80%	1	13.0	13.0	10.4
Total:					30.3	
Percentage of Usage Area to Works Area:					0.3021	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	70%	1	24.0	24.0	16.8
Total:					31.2
Percentage of Usage Area to Works Area:					0.3111

From: Day 1 of Month 3		To: Day 30 of Month 4	Duration (months): 2		
From: Day 1 of Month 9		To: Day 30 of Month 11	Duration (months): 3		
Stage 2 - Temporary Bridge - Piling					
Stage 2 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator/ loader, wheeled/ tracked	50%	1	13.0	13.0	6.5
Lorry	50%	2	24.0	48.0	24.0
Total:					30.5
Percentage of Usage Area to Works Area:					0.3041

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, reverse circulation drill	30%	2	36.0	72.0	21.6
Piling, large diameter bored, oscillator	70%	2	36.0	72.0	50.4
Total:					72.0
Percentage of Usage Area to Works Area:					0.7178

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Crane, mobile/ barge mounted (diesel)	50%	2	24.0	48.0	24.0
Concrete lorry mixer	20%	2	24.0	48.0	9.6
Total:					33.6
Percentage of Usage Area to Works Area:					0.3350

From: Day 1 ofMonth 5		To: Day 30 of Month 6	Duration (months): 2		
From: Day 1 ofMonth 12		To: Day 30 of Month 14	Duration (months): 3		
Stage 3 - Temporary Bridge - PileCaps					
Stage 3 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)	50%	1	13.0	13.0	6.5
Lorry (35 t)	50%	2	24.0	48.0	24.0
				Total:	30.5
				Percentage of Usage Area to Works Area:	0.304

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	20%	2	24.0	48.0	9.6
Mobile crane	100%	2	36.0	72.0	72.0
Total:					81.6
Percentage of Usage Area to Works Area:					0.8136

From: Day 1 of Month 7		To: Day 30 of Month 8	Duration (months): 2		
From: Day 1 of Month 15		To: Day 30 of Month 17	Duration (months): 3		
Stage 4 - Temporary Bridge - Piers					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Concrete lorry mixer	20%	2	24.0	48.0	9.6

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

Lin Ma Hang Road Impro Work (at grade)

Crane, mobile/ barge mounted (diesel)	50%	1	36.0	36.0	18.0
Total:					27.6
Percentage of Usage Area to Works Area:					0.2752

From: Day 1 of Month 9		To: Day 30 of Month 10	Duration (months): 2		
From: Day 1 of Month 18		To: Day 30 of Month 21	Duration (months): 4		
Stage 5 - Temporary Bridge - Bridge Decks					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Crane, mobile/ barge mounted (diesel)	50%	1	36.0	36.0	18.0
Lorry	70%	1	24.0	24.0	16.8
Total:				34.8	
Percentage of Usage Area to Works Area:					0.3470

From: Day 1 of Month 22		To: Day 30 of Month 30	Duration (months): 9		
Stage 6 - Road Works					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Asphalt paver	70%	1	12.0	12.0	8.4
Road roller	70%	1	12.0	12.0	8.4
				Total:	16.8
Percentage of Usage Area to Works Area:					0.1675

Note:

1. For each stage of construction, different groups of construction activities are non-concurrent.
2. Plant and activity with no dust emission during operation is not included (i.e. area = 0)
3. All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
4. Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
5. The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
6. Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
7. For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

LMH Road next to BCP (at grade)

Works area (m²) = 3538

From: Day 1 of Month 1		To: Day 30 of Month 2	Duration (months): 2		
Stage 1 - Site Clearance					
Stage 1 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ³)
Breaker, hand-held breaker, 35kg	70%	1	1.0	1.0	0.7
Dump truck (50t)	80%	1	24.0	24.0	19.2
Excavator (45kW)	80%	1	13.0	13.0	10.4
Total:					30.3
Percentage of Usage Area to Works Area:					0.8564

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	70%	1	24.0	24.0	16.8
Total:					31.2
Percentage of Usage Area to Works Area:					0.8819

From: Day 1 of Month 3		To: Day 30 of Month 30	Duration (months): 28			
Stage 2 - Site Formation and Road Works						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Bulldozer (239kW)	70%	1	30.0	30.0	21.0	
Asphalt paver	70%	1	12.0	12.0	8.4	
Road roller	70%	1	12.0	12.0	8.4	
Total:					37.8	
Percentage of Usage Area to Works Area:					1.0684	

Note:

- For each stage of construction, different groups of construction activities are non-concurrent.
- Plant and activity with no dust emission during operation is not included (i.e. area = 0)
- All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
- Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
- The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
- Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
- For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

Ng Chow Road (at grade)

Works area (m²) = 9808

From: Day 1 of Month 6		To: Day 30 of Month 8	Duration (months): 3			
Stage 1 - Site Clearance						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		70%	3	1.0	3.0	2.1
Dump truck (50t)		60%	5	35.0	175.0	105.0
Excavator (45kW)		80%	5	13.0	65.0	52.0
Total:					159.1	
Percentage of Usage Area to Works Area:					1.6221	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	70%	4	24.0	96.0	67.2
Total:					81.6
Percentage of Usage Area to Works Area:					0.8320

From: Day 1 of Month 9		To: Day 30 of Month 20	Duration (months): 12			
Stage 2 - Site Formation						
Stage 2 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Excavator (45kW)	80%	5	13.0	65.0	52.0	
Lorry with crane/grab	70%	4	24.0	96.0	67.2	
Total:					119.2	
Percentage of Usage Area to Works Area:					1.2153	

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Bulldozer (239kW)	70%	1	30.0	30.0	21.0
Dump truck (50t)	80%	5	35.0	175.0	140.0
Total:					161.0
Percentage of Usage Area to Works Area:					1.6415

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m ³)	40%	2	24.0	48.0	19.2
Mobile crane	100%	1	36.0	36.0	36.0
Compactor, vibratory	50%	3	12.0	36.0	18.0
Vibratory roller (9kW)	70%	3	12.0	36.0	25.2
Total:					98.4
Percentage of Usage Area to Works Area:					1.0033

From: Day 1 of Month 9		To: Day 30 of Month 20	Duration (months): 12			
Stage 3 - Slope Stabilisation						
Stage 3 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Breaker, hand-held, mass >= 20kg and <= 35kg	20%	2	0.5	1.0	0.2	
Breaker, excavator mounted (hydraulic), 52kW	80%	1	13.0	13.0	10.4	
Lorry with crane/grab	50%	2	24.0	48.0	24.0	
				Total:	34.6	
Percentage of Usage Area to Works Area:					0.3528	

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Drill rig, rotary type (diesel)	70%	2	13.8	27.6	19.3
Total:					19.3
Percentage of Usage Area to Works Area:					0.1970

Stage 3 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	70%	1	36.0	36.0	25.2
Grout mixer	40%	1	6.0	6.0	2.4
Total:					27.6
Percentage of Usage Area to Works Area:					0.2814

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan
Ng Chow Road (at grade)

From: Day 1 of Month 39		To: Day 30 of Month 47	Duration (months): 9			
Stage 4 - Road Works						
Stage 4 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Crane, mobile/ barge mounted (diesel)		30%	2	36.0	72.0	21.6
Lorry		50%	2	24.0	48.0	24.0
					Total:	45.6
					Percentage of Usage Area to Works Area:	0.4649

Stage 4 - Group 2						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Asphalt paver		70%	1	12.0	12.0	8.4
Road roller		70%	3	12.0	36.0	25.2
					Total:	33.6
					Percentage of Usage Area to Works Area:	0.3426

Note:

1. For each stage of construction, different groups of construction activities are non-concurrent.
2. Plant and activity with no dust emission during operation is not included (i.e. area = 0)
3. All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
4. Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
5. The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
6. Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
7. For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

North Portal of North Tunnel and Ventilation Building (at grade)

Works area (m²) = 14656

From: Day 1 of Month 8 To: Day 30 of Month 10 Duration (months): 3						
Stage 1 - Site Clearance						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		70%	3	1.0	3.0	2.1
Dump truck (50t)		60%	4	35.0	140.0	84.0
Excavator (45kW)		80%	4	13.0	52.0	41.6
Total:					127.7	
Percentage of Usage Area to Works Area:					0.8713	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	70%	4	24.0	96.0	67.2
Total:					81.6
Percentage of Usage Area to Works Area:					0.5568

From: Day 1 of Month 23		To: Day 30 of Month 31	Duration (months): 9		
Stage 2 - Portal Formation					
Stage 2 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)	80%	4	13.0	52.0	41.6
Lorry with crane/grab	70%	4	24.0	96.0	67.2
				Total:	108.8
Percentage of Usage Area to Works Area:					0.7424

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Bulldozer (239kW)	70%	1	30.0	30.0	21.0
Dump truck (50t)	60%	4	35.0	140.0	84.0
Total:					105.0
Percentage of Usage Area to Works Area:					0.7164

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	40%	1	24.0	24.0	9.6
Mobile crane	100%	1	36.0	36.0	36.0
Compactor, vibratory	60%	3	12.0	36.0	21.6
Vibratory roller (9kW)	60%	3	12.0	36.0	21.6
Total:					88.8
Percentage of Usage Area to Works Area:					0.6059

From: Day 1 of Month 25		To: Day 30 of Month 30	Duration (months): 6			
Stage 3 - Bored Pile Wall						
Stage 3 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Drill rig, rotary type (diesel)	40%	2	13.0	26.0	10.4	
Total:					10.4	
Percentage of Usage Area to Works Area:					0.0710	

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	100%	1	36.0	36.0	36.0
Piling, large diameter bored, grab and chisel	70%	2	36.0	72.0	50.4
Total:					86.4
Percentage of Usage Area to Works Area:					0.5895

Stage 3 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	50%	1	24.0	24.0	12.0
Total:					12.0
Percentage of Usage Area to Works Area:					0.0819

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan
North Portal of North Tunnel and Ventilation Building (at grade)

North Portal of North Tunnel and Ventilation Building (at grade)					
From: Day 1 of Month 29		To: Day 30 of Month 31	Duration (months): 3		
Stage 4 - Road Works					
Stage 4 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	30%	2	36.0	72.0	21.6
Lorry (35 t)	50%	2	24.0	48.0	24.0
				Total:	45.6
Percentage of Usage Area to Works Area:					0.3111

Stage 4 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	12.0	12.0	8.4
Road roller	70%	3	12.0	36.0	25.2
Total:					33.6
Percentage of Usage Area to Works Area:					0.2293

From: Day 1 of Month 32		To: Day 30 of Month 33	Duration (months): 2		
Stage 5 - Building Foundation Works					
Stage 5 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held, mass >= 20kg and <= 35kg	30%	2	0.5	1.0	0.3
Breaker, excavator mounted (hydraulic), 52kW	30%	1	13.0	13.0	3.9
Crane, mobile/ barge mounted (diesel)	70%	1	36.0	36.0	25.2
Total:				29.4	
Percentage of Usage Area to Works Area:				0.2006	

Stage 5 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, grab and chisel	90%	1	36.0	36.0	32.4
Piling, large diameter bored, reverse circulation drill	40%	1	36.0	36.0	14.4
Total:					46.8
Percentage of Usage Area to Works Area:					0.3193

Stage 5 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	80%	1	36.0	36.0	28.8
Concrete lorry mixer	50%	4	24.0	96.0	48.0
Total:					76.8
Percentage of Usage Area to Works Area:					0.5240

From: Day 1 of Month 34		To: Day 30 of Month 36	Duration (months): 3		
Stage 6 - Building Structures					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held, mass >= 20kg and <= 35kg	40%	2	0.5	1.0	0.4
Concrete lorry mixer	50%	3	24.0	72.0	36.0
Mobile crane	80%	1	36.0	36.0	28.8
Lorry with crane/grab	50%	2	24.0	48.0	24.0
				Total:	89.2
				Percentage of Usage Area to Works Area:	0.6086

Note:

- For each stage of construction, different groups of construction activities are non-concurrent.
- Plant and activity with no dust emission during operation is not included (i.e. area = 0)
- All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
- Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
- The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
- Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
- For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

Ping Yeung Interchange Road Section (at grade)

Works area (m²) = 3056

From: Day 1 of Month 6		To: Day 30 of Month 8	Duration (months): 3			
Stage 1 - Site Clearance						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		70%	3	1.0	3.0	2.1
Dump truck (50t)		60%	5	35.0	175.0	105.0
Excavator (45kW)		80%	5	13.0	65.0	52.0
Total:					159.1	
Percentage of Usage Area to Works Area:					5.2062	

Stage 1 - Group 2						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Mobile crane	40%	1	36.0	36.0	14.4	
Lorry with crane/grab	70%	4	24.0	96.0	67.2	
Total:					81.6	
Percentage of Usage Area to Works Area:					2.6702	

From: Day 1 of Month 9		To: Day 30 of Month 20	Duration (months): 12			
Stage 2 - Site Formation						
Stage 2 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Excavator (45kW)	80%	5	13.0	65.0	52.0	
Lorry with crane/grab	70%	4	24.0	96.0	67.2	
Total:					119.2	
Percentage of Usage Area to Works Area:					3.9005	

Stage 2 - Group 2						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Bulldozer (239kW)	70%	1	30.0	30.0	21.0	
Dump truck (50t)	80%	5	35.0	175.0	140.0	
Total:					161.0	
Percentage of Usage Area to Works Area:					5.2683	

Stage 2 - Group 3						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Concrete lorry mixer (5m3)	40%	2	24.0	48.0	19.2	
Mobile crane	100%	1	36.0	36.0	36.0	
Compactor, vibratory	50%	3	12.0	36.0	18.0	
Vibratory roller (9kW)	70%	3	12.0	36.0	25.2	
Total:					98.4	
Percentage of Usage Area to Works Area:					3.2199	

From: Day 1 of Month 39		To: Day 30 of Month 47	Duration (months): 9			
Stage 3 - Road Works						
Stage 3 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane		30%	2	36.0	72.0	21.6
Lorry (35 t)		50%	2	24.0	48.0	24.0
Total:					45.6	
Percentage of Usage Area to Works Area:					1.4921	

Stage 3 - Group 2						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Asphalt paver	70%	1	12.0	12.0	8.4	
Road roller	70%	3	12.0	36.0	25.2	
Total:					33.6	
Percentage of Usage Area to Works Area:					1.0995	

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan Ping Yeung Interchange Road Section (at grade)

Note:

1. For each stage of construction, different groups of construction activities are non-concurrent.
2. Plant and activity with no dust emission during operation is not included (i.e. area = 0)
3. All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
4. Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
5. The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
6. Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
7. For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan

Wo Keng Shan Road Section (at grade)

Works area (m²) = 3056

From: Day 1 of Month 6		To: Day 30 of Month 8	Duration (months): 3			
Stage 1 - Site Clearance						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		70%	3	1.0	3.0	2.1
Dump truck (50t)		60%	5	35.0	175.0	105.0
Excavator (45kW)		80%	5	13.0	65.0	52.0
Total:					159.1	
Percentage of Usage Area to Works Area:					5.2062	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	70%	4	24.0	96.0	67.2
Total:					81.6
Percentage of Usage Area to Works Area:					2.6702

From: Day 1 of Month 9		To: Day 30 of Month 20	Duration (months): 12			
Stage 2 - Site Formation						
Stage 2 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Excavator (45kW)	80%	5	13.0	65.0	52.0	
Lorry with crane/grab	70%	4	24.0	96.0	67.2	
				Total:	119.2	
				Percentage of Usage Area to Works Area:	3.9005	

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Bulldozer (239kW)	70%	1	30.0	30.0	21.0
Dump truck (50t)	80%	5	35.0	175.0	140.0
Total:					161.0
Percentage of Usage Area to Works Area:					5.2683

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m ³)	40%	2	24.0	48.0	19.2
Mobile crane	100%	1	36.0	36.0	36.0
Compactor, vibratory	50%	3	12.0	36.0	18.0
Vibratory roller (9kW)	70%	3	12.0	36.0	25.2
Total:					98.4
Percentage of Usage Area to Works Area:					3.2199

From: Day 1 of Month 12		To: Day 30 of Month 17	Duration (months): 6			
Stage 3 - Bored Pile Wall						
Stage 3 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Drill rig, rotary type (diesel)	40%	2	13.8	27.6	11.0	
Total:					11.0	
Percentage of Usage Area to Works Area:					0.3613	

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	100%	1	36.0	36.0	36.0
Piling, large diameter bored, grab and chisel	70%	2	36.0	72.0	50.4
Total:					86.4
Percentage of Usage Area to Works Area:					2.8272

Stage 3 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m ³)	50%	1	24.0	24.0	12.0
Total:					12.0
Percentage of Usage Area to Works Area:					0.3927

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Near the BCP, Lin Ma Hang to Frontier Closed Area and Ping Yeung to Wo Keng Shan
Wo Keng Shan Road Section (at grade)

Wo Keng Shan Road Section (at grade)					
From: Day 1 of Month 39		To: Day 30 of Month 47		Duration (months): 9	
Stage 4 - Road Works					
Stage 4 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Crane, mobile/ barge mounted (diesel)	30%	2	36.0	72.0	21.6
Lorry	50%	2	24.0	48.0	24.0
				Total:	45.6
Percentage of Usage Area to Works Area:					1.4921

Stage 4 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	12.0	12.0	8.4
Road roller	70%	3	12.0	36.0	25.2
Total:					33.6
Percentage of Usage Area to Works Area:					1.0995

Note:

- For each stage of construction, different groups of construction activities are non-concurrent.
- Plant and activity with no dust emission during operation is not included (i.e. area = 0)
- All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
- Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
- The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
- Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
- For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Sha Tau Kok
Administration Building (at grade)
Works area (m²) = 10500

From: Day 1 of Month 4		To: Day 30 of Month 6	Duration (months): 3			
Stage 1 - Site Clearance						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		60%	1	1.0	1.0	0.6
Dump truck (50t)		50%	1	24.0	24.0	12.0
Excavator (45kW)		50%	1	13.0	13.0	6.5
Lorry with crane/grab		50%	1	24.0	24.0	12.0
Total:					31.1	
Percentage of Usage Area to Works Area:					0.3	

From: Day 1 of Month 7		To: Day 30 of Month 10	Duration (months): 4			
Stage 2 - Building Foundation Works						
Stage 2 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)	
Breaker, hand-held breaker, 35kg	30%	2	1.0	2.0	0.6	
Breaker, excavator mounted (hydraulic), 52kW	30%	1	13.0	13.0	3.9	
Total:				4.5		
Percentage of Usage Area to Works Area:					0.0	

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, grab and chisel	90%	1	36.0	36.0	32.4
Piling, large diameter bored, reverse circulation drill	40%	1	36.0	36.0	14.4
Total:					46.8
Percentage of Usage Area to Works Area:					0.4

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	80%	1	36.0	36.0	28.8
Concrete lorry mixer (5m ³)	50%	4	24.0	96.0	48.0
Total:					76.8
Percentage of Usage Area to Works Area:					0.7

From: Day 1 of Month 9		To: Day 30 of Month 14	Duration (months): 6			
Stage 3 - Building Structures						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		40%	2	1.0	2.0	0.8
Concrete lorry mixer (5m3)		50%	3	24.0	72.0	36.0
Mobile crane		80%	1	36.0	36.0	28.8
Lorry with crane/grab		50%	2	24.0	48.0	24.0
Total:					89.6	
Percentage of Usage Area to Works Area:						0.9

Note:

- For each stage of construction, different groups of construction activities are non-concurrent.
- Plant and activity with no dust emission during operation is not included (i.e. area = 0)
- All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
- Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
- The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
- Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
- For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Sha Tau Kok

Flyover Crossing Sha Tau Kok Road Interchange (viaduct)

Works area (m²) = 11830

From: Day 1 of Month 7		To: Day 15 of Month 7	Duration (months): 0.5			
Stage 1 - Site Clearance & Haul Road						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		30%	2	1.0	2.0	0.6
Total:					0.6	
Percentage of Usage Area to Works Area:					0.0051	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	80%	2	13.0	26.0	20.8
Bulldozer (239kW)	40%	1	30.0	30.0	12.0
Total:					32.8
Percentage of Usage Area to Works Area:					0.2773

Stage 1 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Dump truck (50t)	80%	4	36.0	144.0	115.2
Total:					115.2
Percentage of Usage Area to Works Area:					0.9738

From: Day 15 of Month 7		To: Day 15 of Month 16	Duration (months): 9			
Stage 2 - Piling						
Stage 2 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)		50%	2	13.0	26.0	13.0
Lorry (35 t)		50%	5	24.0	120.0	60.0
					Total:	73.0
					Percentage of Usage Area to Works Area:	0.6171

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, reverse circulation drill	50%	5	36.0	180.0	90.0
Piling, large diameter bored, oscillator	50%	5	36.0	180.0	90.0
Total:					180.0
Percentage of Usage Area to Works Area:					1.5216

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	50%	5	36.0	180.0	90.0
Concrete lorry mixer (5m3)	20%	5	24.0	120.0	24.0
Total:					114.0
Percentage of Usage Area to Works Area:					0.9637

From: Day 1 of Month 9		To: Day 15 of Month 9	Duration (months): 0.5		
From: Day 15 of Month 10		To: Day 30 of Month 10	Duration (months): 0.5		
From: Day 1 of Month 12		To: Day 15 of Month 12	Duration (months): 0.5		
From: Day 15 of Month 13		To: Day 30 of Month 13	Duration (months): 0.5		
From: Day 1 of Month 15		To: Day 15 of Month 15	Duration (months): 0.5		
From: Day 15 of Month 16		To: Day 15 of Month 17	Duration (months): 1		

Stage 3 - PileCaps					
Stage 3 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	50%	2	13.0	26.0	13.0
Lorry (35 t)	50%	5	24.0	120.0	60.0
Total:					73.0
Percentage of Usage Area to Works Area:					0.6171

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	20%	5	24.0	120.0	24.0
Mobile crane	100%	5	36.0	180.0	180.0
Total:					204.0
Percentage of Usage Area to Works Area:					1.7244

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Sha Tau Kok

Flyover Crossing Sha Tau Kok Road Interchange (viaduct)

From: Day 15 of Month 9		To: Day 30 of Month 9	Duration (months): 0.5			
From: Day 1 of Month 11		To: Day 15 of Month 11	Duration (months): 0.5			
From: Day 15 of Month 12		To: Day 30 of Month 12	Duration (months): 0.5			
From: Day 1 of Month 14		To: Day 15 of Month 14	Duration (months): 0.5			
From: Day 15 of Month 15		To: Day 30 of Month 15	Duration (months): 0.5			
From: Day 1 of Month 17		To: Day 30 of Month 17	Duration (months): 1			
Stage 4 - Piers						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)		20%	5	24.0	120.0	24.0
Mobile crane		50%	2	36.0	72.0	36.0
					Total:	60.0
Percentage of Usage Area to Works Area:						0.5072

From: Day 15 of Month 12		To: Day 15 of Month 30	Duration (months): 28		
Stage 5 - Bridge Decks					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	50%	2	36.0	72.0	36.0
Lorry (35 t)	60%	4	24.0	96.0	57.6
Total:					93.6
Percentage of Usage Area to Works Area:					0.7912

From: Day 15 of Month 30		To: Day 15 of Month 31	Duration (months): 1			
Stage 6 - Parapet & Surfacing						
Stage 6 - Group 1 (Parapet)						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Mobile crane	30%	2	36.0	72.0	21.6	
Lorry (35 t)	50%	2	24.0	48.0	24.0	
Total:					45.6	
Percentage of Usage Area to Works Area:					0.3855	

Stage 6 - Group 2 (Surfacing)					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	12.0	12.0	8.4
Road roller	70%	3	12.0	36.0	25.2
Total:					33.6
Percentage of Usage Area to Works Area:					0.2840

Note:

- For each stage of construction, different groups of construction activities are non-concurrent.
- Plant and activity with no dust emission during operation is not included (i.e. area = 0)
- All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
- Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
- The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
- Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
- For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Sha Tau Kok

North Portal of South Tunnel and Ventilation Building (at grade)

Works area (m²) = 15000

From: Day 1 of Month 4		To: Day 30 of Month 6	Duration (months): 3			
Stage 1 - Site Clearance						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		70%	3	1.0	3.0	2.1
Dump truck (50t)		80%	4	35.0	140.0	112.0
Excavator (45kW)		80%	8	13.0	104.0	83.2
Total:					197.3	
Percentage of Usage Area to Works Area:						1.3153

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	70%	2	24.0	48.0	33.6
Total:					48.0
Percentage of Usage Area to Works Area:					0.3200

From: Day 1 of Month 7		To: Day 30 of Month 20	Duration (months): 14			
Stage 2 - Portal Formation						
Stage 2 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Excavator (45kW)	80%	8	13.0	104.0	83.2	
Lorry with crane/grab	70%	2	24.0	48.0	33.6	
Total:					116.8	
Percentage of Usage Area to Works Area:					0.7787	

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Bulldozer (239kW)	70%	1	30.0	30.0	21.0
Dump truck (50t)	80%	4	35.0	140.0	112.0
Total:					133.0
Percentage of Usage Area to Works Area:					0.8867

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer	40%	1	24.0	24.0	9.6
Mobile crane	100%	1	36.0	36.0	36.0
Compactor, vibratory	50%	1	12.0	12.0	6.0
Roller, vibratory	40%	1	12.0	12.0	4.8
Total:					56.4
Percentage of Usage Area to Works Area:					0.3760

From: Day 1 of Month 7		To: Day 30 of Month 16	Duration (months): 10			
Stage 3 - Slope Stabilisation						
Stage 3 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		20%	2	1.0	2.0	0.4
Breaker, excavator mounted (hydraulic), 52kW		80%	1	13.0	13.0	10.4
Lorry with crane/grab		50%	2	24.0	48.0	24.0
					Total:	34.8
					Percentage of Usage Area to Works Area:	0.2320

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Drill rig, rotary type (diesel)	70%	2	13.8	27.6	19.3
Total:					19.3
Percentage of Usage Area to Works Area:					0.1288

Stage 3 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Crane, mobile/ barge mounted (diesel)	70%	1	36.0	36.0	25.2
Grout mixer	40%	1	6.0	6.0	2.4
Total:					27.6
Percentage of Usage Area to Works Area:					0.1840

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Sha Tau Kok

North Portal of South Tunnel and Ventilation Building (at grade)

From: Day 1 of Month 9		To: Day 30 of Month 14	Duration (months): 6			
Stage 4 - Bored Pile Wall						
Stage 4 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Drill rig, rotary type (diesel)	40%	2	13.8	27.6	11.0	
Total:					11.0	
Percentage of Usage Area to Works Area:					0.0736	

Stage 4 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	100%	1	36.0	36.0	36.0
Piling, large diameter bored, grab and chisel	70%	2	36.0	72.0	50.4
Total:					86.4
Percentage of Usage Area to Works Area:					0.5760

Stage 4 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m ³)	50%	1	24.0	24.0	12.0
Total:					12.0
Percentage of Usage Area to Works Area:					0.0800

From: Day 1 of Month 16		To: Day 30 of Month 17	Duration (months): 2			
Stage 5 - Building Foundation Works						
Stage 5 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Breaker, hand-held breaker, 35kg	30%	2	1.0	2.0	0.6	
Breaker, excavator mounted (hydraulic), 52kW	30%	1	13.0	13.0	3.9	
Total:					4.5	
Percentage of Usage Area to Works Area:					0.0300	

Stage 5 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, grab and chisel	90%	1	36.0	36.0	32.4
Piling, large diameter bored, reverse circulation drill	40%	1	36.0	36.0	14.4
Total:					46.8
Percentage of Usage Area to Works Area:					0.3120

Stage 5 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	80%	1	36.0	36.0	28.8
Concrete lorry mixer (5m ³)	50%	4	24.0	96.0	48.0
Total:					76.8
Percentage of Usage Area to Works Area:					0.5120

From: Day 1 of Month 18		To: Day 30 of Month 20	Duration (months): 3			
Stage 6 - Building Structures						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Breaker, hand-held, mass >= 20kg and <= 35kg	40%	2	0.5	1.0	0.4	
Concrete lorry mixer	50%	3	24.0	72.0	36.0	
Crane, mobile/ barge mounted (diesel)	80%	1	36.0	36.0	28.8	
Lorry with crane/grab	50%	2	24.0	48.0	24.0	
Total:				89.2		
Percentage of Usage Area to Works Area:				0.5947		

Sha Tau Kok

North Portal of South Tunnel and Ventilation Building (at grade)

Note:

1. For each stage of construction, different groups of construction activities are non-concurrent.
2. Plant and activity with no dust emission during operation is not included (i.e. area = 0)
3. All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
4. Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
5. The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
6. Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
7. For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Sha Tau Kok
Sha Tau Kok Road Section (at grade)
Works area (m²) = 46612

From: Day 1 of Month 4		To: Day 30 of Month 6	Duration (months): 3			
Stage 1 - Site Clearance						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		70%	4	1.0	4.0	2.8
Dump truck (50t)		80%	2	35.0	70.0	56.0
Excavator (45kW)		80%	3	13.0	39.0	31.2
Total:					90.0	
Percentage of Usage Area to Works Area:					0.1931	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	70%	3	24.0	72.0	50.4
Total:					64.8
Percentage of Usage Area to Works Area:					0.1390

From: Day 1 of Month 7		To: Day 30 of Month 18	Duration (months): 12			
Stage 2 - Site Formation						
Stage 2 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Excavator (45kW)	80%	3	13.0	39.0	31.2	
Lorry with crane/grab	70%	3	24.0	72.0	50.4	
Total:					81.6	
Percentage of Usage Area to Works Area:					0.1751	

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Bulldozer (239kW)	60%	2	30.0	60.0	36.0
Dump truck (50t)	80%	3	35.0	105.0	84.0
Total:					120.0
Percentage of Usage Area to Works Area:					0.2574

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m ³)	40%	1	24.0	24.0	9.6
Mobile crane	100%	2	36.0	72.0	72.0
Compactor, vibratory	60%	2	12.0	24.0	14.4
Vibratory roller (9kW)	60%	3	12.0	36.0	21.6
Total:					117.6
Percentage of Usage Area to Works Area:					0.2523

From: Day 1 of Month 10		To: Day 30 of Month 15	Duration (months): 6			
Stage 3 - Bored Pile Wall						
Stage 3 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Drill rig, rotary type (diesel)	40%	2	0.5	1.0	0.4	
				Total:	0.4	
Percentage of Usage Area to Works Area:					0.0009	

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	100%	1	36.0	36.0	36.0
Piling, large diameter bored, grab and chisel	70%	2	36.0	72.0	50.4
Total:					86.4
Percentage of Usage Area to Works Area:					0.1854

Stage 3 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m ³)	50%	1	36.0	36.0	18.0
Total:					18.0
Percentage of Usage Area to Works Area:					0.0386

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Sha Tau Kok

Sha Tau Kok Road Section (at grade)

Sha Tau Kok Road Section (at grade)

From: Day 1 of Month 17		To: Day 30 of Month 20		Duration (months): 4		
Stage 4 - Road Works						
Stage 4 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane		30%	2	36.0	72.0	21.6
Lorry (35 t)		50%	2	24.0	48.0	24.0
					Total:	45.6
Percentage of Usage Area to Works Area:					0.0978	

Stage 4 - Group 2						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Asphalt paver		70%	1	12.0	12.0	8.4
Road roller		70%	2	12.0	24.0	16.8
					Total:	25.2
Percentage of Usage Area to Works Area:					0.0541	

Note:

1. For each stage of construction, different groups of construction activities are non-concurrent.
2. Plant and activity with no dust emission during operation is not included (i.e. area = 0)
3. All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
4. Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
5. The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
6. Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
7. For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Sha Tau Kok

South Portal of North Tunnel and Ventilation Building (at grade)

Works area (m²) = 15952

From: Day 1 of Month 4		To: Day 30 of Month 6	Duration (months): 3			
Stage 1 -Site Clearance						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		70%	3	1.0	3.0	2.1
Dump truck (50t)		60%	4	35.0	140.0	84.0
Excavator (45kW)		80%	8	13.0	104.0	83.2
Total:					169.3	
Percentage of Usage Area to Works Area:					1.0613	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	70%	4	24.0	96.0	67.2
Total:					81.6
Percentage of Usage Area to Works Area:					0.5115

From: Day 1 of Month 7		To: Day 30 of Month 15	Duration (months): 9			
Stage 2 - Portal Formation						
Stage 2 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Excavator (45kW)	80%	3	13.0	39.0	31.2	
Lorry with crane/grab	70%	3	24.0	72.0	50.4	
Total:					81.6	
Percentage of Usage Area to Works Area:					0.5115	

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Bulldozer (239kW)	70%	1	30.0	30.0	21.0
Dump truck (50t)	80%	4	35.0	140.0	112.0
Total:					133.0
Percentage of Usage Area to Works Area:					0.8338

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer	40%	1	24.0	24.0	9.6
Mobile crane	100%	2	36.0	72.0	72.0
Compactor, vibratory	50%	1	12.0	12.0	6.0
Total:					87.6
Percentage of Usage Area to Works Area:					0.5491

From: Day 1 of Month 7		To: Day 30 of Month 15	Duration (months): 9			
Stage 3 - Slope Stabilisation						
Stage 3 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Breaker, hand-held breaker, 35kg	20%	2	1.0	2.0	0.4	
Breaker, excavator mounted (hydraulic), 52kW	80%	1	13.0	13.0	10.4	
Lorry with crane/grab	50%	2	24.0	48.0	24.0	
Total:				34.8		
Percentage of Usage Area to Works Area:				0.2182		

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Drill rig, rotary type (diesel)	70%	3	13.8	41.4	29.0
Total:					29.0
Percentage of Usage Area to Works Area:					0.1817

Stage 3 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	70%	1	36.0	36.0	25.2
Grout mixer	60%	1	6.0	6.0	3.6
Total:					28.8
Percentage of Usage Area to Works Area:					0.1805

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Sha Tau Kok

South Portal of North Tunnel and Ventilation Building (at grade)

From: Day 1 of Month 9		To: Day 30 of Month 14	Duration (months): 6			
Stage 4 - Bored Pile Wall						
Stage 4 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Drill rig, rotary type (diesel)	40%	2	13.8	27.6	11.0	
Total:					11.0	
Percentage of Usage Area to Works Area:					0.0692	

Stage 4 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	100%	1	36.0	36.0	36.0
Piling, large diameter bored, grab and chisel	70%	2	36.0	72.0	50.4
Total:					86.4
Percentage of Usage Area to Works Area:					0.5416

Stage 4 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	50%	1	24.0	24.0	12.0
Total:					12.0
Percentage of Usage Area to Works Area:					0.0752

From: Day 1 of Month 13		To: Day 30 of Month 15	Duration (months): 3			
Stage 5 - Road Works						
Stage 5 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane		30%	2	36.0	72.0	21.6
Lorry (35 t)		50%	2	24.0	48.0	24.0
Total:					45.6	
Percentage of Usage Area to Works Area:					0.2859	

Stage 5 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	12.0	12.0	8.4
Road roller	70%	3	12.0	36.0	25.2
Total:					33.6
Percentage of Usage Area to Works Area:					0.2106

From: Day 1 of Month 32		To: Day 30 of Month 33	Duration (months): 2			
Stage 6 - Building Foundation Works						
Stage 6 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Breaker, hand-held breaker, 35kg	30%	2	1.0	2.0	0.6	
Breaker, excavator mounted (hydraulic), 52kW	30%	1	13.0	13.0	3.9	
Total:					4.5	
Percentage of Usage Area to Works Area:					0.0282	

Stage 6 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, grab and chisel	90%	1	36.0	36.0	32.4
Piling, large diameter bored, reverse circulation drill	40%	1	36.0	36.0	14.4
Total:					46.8
Percentage of Usage Area to Works Area:					0.2934

Stage 6 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	80%	1	36.0	36.0	28.8
Concrete lorry mixer (5m3)	50%	4	24.0	96.0	48.0
Total:					76.8
Percentage of Usage Area to Works Area:					0.4814

From: Day 1 of Month 34		To: Day 30 of Month 36	Duration (months): 3			
Stage 7 - Building Structures						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
	Breaker. hand-held breaker. 35kg	40%	2	1.0	2.0	0.8

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Sha Tau Kok

South Portal of North Tunnel and Ventilation Building (at grade)

Concrete lorry mixer (5m3)	50%	3	24.0	72.0	36.0
Mobile crane	80%	1	36.0	36.0	28.8
Lorry with crane/grab	50%	2	24.0	48.0	24.0
Total:					89.6
Percentage of Usage Area to Works Area:					0.5617

Note:

1. For each stage of construction, different groups of construction activities are non-concurrent.
2. Plant and activity with no dust emission during operation is not included (i.e. area = 0)
3. All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
4. Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
5. The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
6. Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
7. For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Po Kak Tsai

Mid Ventilation Building (at grade)

Works area (m²) = 4725

From: Day 1 of Month 8		To: Day 30 of Month 10	Duration (months): 3		
Stage 1 - Site Clearance					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)
Breaker, hand-held breaker, 35kg	60%	1	1.0	1.0	0.6
Dump truck (50t)	50%	1	24.0	24.0	12.0
Excavator (45kW)	50%	1	13.0	13.0	6.5
Lorry with crane/grab	50%	1	24.0	24.0	12.0
Total:				31.1	
Percentage of Usage Area to Works Area:					0.6582

From: Day 1 of Month 35		To: Day 30 of Month 42	Duration (months): 8			
Stage 2 - Shaft Construction						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)	
Breaker, hand-held breaker, 35kg	60%	3	1.0	3.0	1.8	
Dump truck (50t)	50%	10	24.0	240.0	120.0	
Excavator (45kW)	50%	2	13.0	26.0	13.0	
Crane, tower (electric)	50%	1	36.0	36.0	18.0	
Piling, diaphragm wall, bentonite filtering plant	100%	2	36.0	72.0	72.0	
Piling, diaphragm wall, hydraulic extractor	100%	1	36.0	36.0	36.0	
Drill rig, rotary type (diesel)	100%	2	13.8	27.6	27.6	
				Total:	288.4	
Percentage of Usage Area to Works Area:					6.1037	

From: Day 1 of Month 43		To: Day 30 of Month 45	Duration (months): 3			
Stage 3 - Building Foundation Works						
Stage 3 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		30%	2	1.0	2.0	0.6
Breaker, excavator mounted (hydraulic), 52kW		30%	1	13.0	13.0	3.9
Total:					4.5	
Percentage of Usage Area to Works Area:						0.0952

Stage 3 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, grab and chisel	90%	1	36.0	36.0	32.4
Piling, large diameter bored, reverse circulation drill	40%	1	36.0	36.0	14.4
Total:					46.8
Percentage of Usage Area to Works Area:					0.9905

Stage 3 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	80%	1	36.0	36.0	28.8
Concrete lorry mixer (5m ³)	50%	4	24.0	96.0	48.0
Total:					76.8
Percentage of Usage Area to Works Area:					1.6254

From: Day 1 of Month 46		To: Day 30 of Month 48	Duration (months): 3		
Stage 4 - Building Structures					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)
Breaker, hand-held breaker, 35kg	40%	2	1.0	2.0	0.8
Concrete lorry mixer (5m3)	50%	3	24.0	72.0	36.0
Mobile crane	80%	1	36.0	36.0	28.8
Lorry with crane/grab	50%	2	24.0	48.0	24.0
				Total:	89.6
Percentage of Usage Area to Works Area:					1.8963

Po Kak Tsai

Mid Ventilation Building (at grade)

Note:

1. For each stage of construction, different groups of construction activities are non-concurrent.
2. Plant and activity with no dust emission during operation is not included (i.e. area = 0)
3. All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
4. Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
5. The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
6. Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
7. For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling
Fanling Highway Connection Flyovers - TA Bridge (viaduct)
Works area (m²) = 9945

From: Day 1 of Month 1		To: Day 15 of Month 1	Duration (months): 0.5				
Stage 1 - Site Clearance & Haul Road							
Stage 1 - Group 1							
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Breaker, hand-held breaker, 35kg		30%	2	1.0	2.0	0.6	
					Total:	0.6	
					Percentage of Usage Area to Works Area:		0.0060

Stage 1 - Group 2							
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Excavator (45kW)		40%	2	13.0	26.0	10.4	
Bulldozer (239kW)		40%	2	30.0	60.0	24.0	
					Total:	34.4	
					Percentage of Usage Area to Works Area:		0.3459

Stage 1 - Group 3							
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Dump truck (50t)		80%	4	35.0	140.0	112.0	
					Total:	112.0	
					Percentage of Usage Area to Works Area:		1.1262

From: Day 15 of Month 1		To: Day 30 of Month 2	Duration (months): 1.5				
Stage 2 - Piling							
Stage 2 - Group 1							
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Excavator (45kW)		40%	2	13.0	26.0	10.4	
Lorry (35 t)		30%	4	24.0	96.0	28.8	
					Total:	39.2	
					Percentage of Usage Area to Works Area:		0.3942

Stage 2 - Group 2							
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Piling, large diameter bored, reverse circulation drill		30%	4	36.0	144.0	43.2	
					Total:	43.2	
					Percentage of Usage Area to Works Area:		0.4344

Stage 2 - Group 3							
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Mobile crane		50%	4	36.0	144.0	72.0	
Concrete lorry mixer (5m3)		20%	6	24.0	144.0	28.8	
					Total:	100.8	
					Percentage of Usage Area to Works Area:		1.0136

From: Day 1 of Month 3		To: Day 30 of Month 3	Duration (months): 1				
Stage 3 - PileCaps							
Stage 3 - Group 1							
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)	
Excavator (45kW)		50%	2	13.0	26.0	13.0	
Lorry (35 t)		50%	2	24.0	48.0	24.0	
					Total:	37.0	
					Percentage of Usage Area to Works Area:		0.3720

Stage 3 -Group 2						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)		20%	4	24.0	96.0	19.2
Mobile crane		100%	4	36.0	144.0	144.0

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

Fanling Highway Connection Flyovers - TA Bridge (viaduct)

Total:	163.2
Percentage of Usage Area to Works Area:	1.6410

From: Day 1 of Month 4		To: Day 30 of Month 4	Duration (months): 1		
Stage 4 - Piers					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	50%	2	36.0	72.0	36.0
Lorry (35 t)	20%	2	24.0	48.0	9.6
Total:					45.6
Percentage of Usage Area to Works Area:					0.4585

From: Day 1 of Month 5		To: Day 15 of Month 6	Duration (months): 1.5		
Stage 5 - Bridge Decks					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	50%	2	36.0	72.0	36.0
Lorry (35 t)	60%	4	24.0	96.0	57.6
				Total:	93.6
Percentage of Usage Area to Works Area:					0.9412

From: Day 15 of Month 6		To: Day 30 of Month 6	Duration (months): 0.5		
Stage 6 - Parapet & Surfacing					
Stage 6 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	30%	1	36.0	36.0	10.8
Lorry (35 t)	50%	2	24.0	48.0	24.0
Total:					34.8
Percentage of Usage Area to Works Area:					0.3499

Stage 6 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	6.0	6.0	4.2
Road roller	70%	3	6.0	18.0	12.6
Total:					16.8
Percentage of Usage Area to Works Area:					0.1689

Note:

1. For each stage of construction, different groups of construction activities are non-concurrent.
2. Plant and activity with no dust emission during operation is not included (i.e. area = 0)
3. All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
4. Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
5. The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
6. Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
7. For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

Fanling Highway Connection Flyovers - Link Road 1-5 (viaduct) and Road Section (at grade)

Works area (m²) = 98040

Fanling Highway Connection Flyovers - Link Road 1_viaduct

From: Day 1 of Month 16		To: Day 15 of Month 16	Duration (months): 0.5			
Stage 1 - Site Clearance & Haul Road						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)
Breaker, hand-held breaker, 35kg		30%	2	1.0	2.0	0.6
Total:						0.6
Percentage of Usage Area to Works Area:						0.0006

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	40%	2	13.0	26.0	10.4
Bulldozer (239kW)	40%	1	30.0	30.0	12.0
Total:					22.4
Percentage of Usage Area to Works Area:					0.0228

Stage 1 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Dump truck (50t)	80%	4	35.0	140.0	112.0
Total:					112.0
Percentage of Usage Area to Works Area:					0.1142

From: Day 1 of Month 16		To: Day 30 of Month 20	Duration (months): 5			
Stage 2 - Piling						
Stage 2 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)		40%	3	13.0	39.0	15.6
Lorry (35 t)		30%	6	24.0	144.0	43.2
					Total:	58.8
Percentage of Usage Area to Works Area:						0.0600

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, reverse circulation drill	40%	3	36.0	108.0	43.2
Piling, large diameter bored, oscillator	40%	3	36.0	108.0	43.2
Total:					86.4
Percentage of Usage Area to Works Area:					0.0881

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	50%	6	36.0	216.0	108.0
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Total:					136.8
Percentage of Usage Area to Works Area:					0.1395

From: Day 15 of Month 17		To: Day 30 of Month 17	Duration (months): 0.5			
From: Day 1 of Month 19		To: Day 15 of Month 19	Duration (months): 0.5			
From: Day 1 of Month 21		To: Day 30 of Month 21	Duration (months): 1			
Stage 3 - PileCaps						
Stage 3 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)
Excavator (45kW)		50%	2	13.0	26.0	13.0
Lorry (35 t)		50%	6	24.0	144.0	72.0
Total:					85.0	
Percentage of Usage Area to Works Area:						0.0867

Stage 3 -Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Mobile crane	100%	6	36.0	216.0	216.0
Total:					244.8
Percentage of Usage Area to Works Area:					0.2497

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling
Fanling Highway Connection Flyovers - Link Road 1-5 (viaduct) and Road Section (at grade)

From: Day 1 of Month 18		To: Day 30 of Month 18	Duration (months): 1			
From: Day 15 of Month 19		To: Day 30 of Month 20	Duration (months): 1.5			
From: Day 1 of Month 22		To: Day 15 of Month 23	Duration (months): 1.5			
Stage 4 - Piers						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Concrete lorry mixer (5m3)		20%	6	24.0	144.0	28.8
Mobile crane		50%	3	36.0	108.0	54.0
Total:					82.8	
Percentage of Usage Area to Works Area:					0.0845	

From: Day 1 of Month 19		To: Day 30 of Month 30	Duration (months): 12			
Stage 5 - Bridge Decks						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Mobile crane	50%	2	36.0	72.0	36.0	
Lorry (35 t)	40%	4	24.0	96.0	38.4	
Total:					74.4	
Percentage of Usage Area to Works Area:					0.0759	

From: Day 15 of Month 29		To: Day 30 of Month 30	Duration (months): 1.5			
Stage 6 - Parapet & Surfacing						
Stage 6 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Mobile crane	30%	2	36.0	72.0	21.6	
Lorry (35 t)	50%	2	24.0	48.0	24.0	
Total:					45.6	
Percentage of Usage Area to Works Area:					0.0465	

Stage 6 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	6.0	6.0	4.2
Road roller	70%	3	6.0	18.0	12.6
Total:					16.8
Percentage of Usage Area to Works Area:					0.0171

Fanling Highway Connection Flyovers - Link Road 2_viaduct						
From: Day 1 of Month 28		To: Day 15 of Month 28	Duration (months): 0.5			
Stage 1 - Site Clearance & Haul Road						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		30%	2	1.0	2.0	0.6
					Total:	0.6
Percentage of Usage Area to Works Area:						0.0006

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	40%	2	13.0	26.0	10.4
Bulldozer (239kW)	40%	1	30.0	30.0	12.0
Total:					22.4
Percentage of Usage Area to Works Area:					0.0228

Stage 1 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Dump truck (50t)	80%	4	35.0	140.0	112.0
Total:					112.0
Percentage of Usage Area to Works Area:					0.1142

From: Day 1 of Month 28		To: Day 15 of Month 32	Duration (months): 4.5			
Stage 2 - Piling						
Stage 2 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)		40%	3	13.0	39.0	15.6
Lorry (35 t)		30%	6	24.0	144.0	43.2

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

Fanling Highway Connection Flyovers - Link Road 1-5 (viaduct) and Road Section (at grade)

Total:	58.8
Percentage of Usage Area to Works Area:	0.0600

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, reverse circulation drill	40%	3	36.0	108.0	43.2
Piling, large diameter bored, oscillator	40%	3	36.0	108.0	43.2
Total:					86.4
Percentage of Usage Area to Works Area:					0.0881

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	50%	6	36.0	216.0	108.0
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Total:					136.8
Percentage of Usage Area to Works Area:					0.1395

From: Day 15 of Month 29		To: Day 30 of Month 29	Duration (months): 0.5			
From: Day 1 of Month 31		To: Day 15 of Month 31	Duration (months): 0.5			
From: Day 15 of Month 32		To: Day 15 of Month 33	Duration (months): 1			
Stage 3 - PileCaps						
Stage 3 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)		50%	2	13.0	26.0	13.0
Lorry (35 t)		50%	6	24.0	144.0	72.0
					Total:	85.0
					Percentage of Usage Area to Works Area:	0.0867

Stage 3 -Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Mobile crane	100%	6	36.0	216.0	216.0
Total:					244.8
Percentage of Usage Area to Works Area:					0.2497

From: Day 1 of Month 30		To: Day 30 of Month 30	Duration (months): 1			
From: Day 15 of Month 31		To: Day 15 of Month 32	Duration (months): 1			
From: Day 1 of Month 33		To: Day 15 of Month 34	Duration (months): 1.5			
Stage 4 - Piers						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Concrete lorry mixer (5m3)		20%	6	24.0	144.0	28.8
Mobile crane		50%	3	36.0	108.0	54.0
					Total:	82.8
					Percentage of Usage Area to Works Area:	0.0845

From: Day 15 of Month 30		To: Day 30 of Month 43	Duration (months): 13.5		
Stage 5 - Bridge Decks					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	50%	2	36.0	72.0	36.0
Lorry (35 t)	40%	4	24.0	96.0	38.4
				Total:	74.4
Percentage of Usage Area to Works Area:					0.0759

From: Day 15 of Month 42		To: Day 30 of Month 43	Duration (months): 1.5		
Stage 6 - Parapet & Surfacing					
Stage 6 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	30%	2	36.0	72.0	21.6
Lorry (35 t)	50%	2	24.0	48.0	24.0
				Total:	45.6
Percentage of Usage Area to Works Area:					0.0465

Stage 6 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	6.0	6.0	4.2

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

Fanling Highway Connection Flyovers - Link Road 1-5 (viaduct) and Road Section (at grade)

Road roller	70%	3	6.0	18.0	12.6
Total:					16.8
Percentage of Usage Area to Works Area:					0.0171

Fanling Highway Connection Flyovers - Link Road 3 viaduct

From: Day 1 of Month 1						To: Day 15 of Month 1		Duration (months): 0.5					
Stage 1 - Site Clearance & Haul Road													
Stage 1 - Group 1													
Plant/Activity					% of usage	No. of Plant/ Activity		Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)			
Breaker, hand-held breaker, 35kg					30%	2		1.0	2.0	0.6			
										Total:	0.6		
										Percentage of Usage Area to Works Area:		0.0006	

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)	40%	2	13.0	26.0	10.4
Bulldozer (239kW)	40%	1	30.0	30.0	12.0
Total:					22.4
Percentage of Usage Area to Works Area:					0.0228

Stage 1 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Dump truck (50t)	80%	4	35.0	140.0	112.0
Total:					112.0
Percentage of Usage Area to Works Area:					0.1142

From: Day 1 of Month 1		To: Day 15 of Month 4	Duration (months): 3.5			
Stage 2 - Piling						
Stage 2 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Excavator (45kW)	40%	3	13.0	39.0	15.6	
Lorry (35 t)	30%	6	24.0	144.0	43.2	
Total:					58.8	
Percentage of Usage Area to Works Area:					0.0600	

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Piling, large diameter bored, reverse circulation drill	40%	3	36.0	108.0	43.2
Piling, large diameter bored, oscillator	40%	3	36.0	108.0	43.2
Total:					86.4
Percentage of Usage Area to Works Area:					0.0881

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	50%	6	36.0	216.0	108.0
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Total:					136.8
Percentage of Usage Area to Works Area:					0.1395

From: Day 1 of Month 2 To: Day 15 of Month 2 Duration (months): 0.5						
From: Day 1 of Month 3 To: Day 15 of Month 3 Duration (months): 0.5						
From: Day 15 of Month 4 To: Day 30 of Month 4 Duration (months): 0.5						
Stage 3 - PileCaps						
Stage 3 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)		50%	2	13.0	26.0	13.0
Lorry (35 t)		50%	6	24.0	144.0	72.0
Total:					85.0	
Percentage of Usage Area to Works Area:					0.0867	

Stage 3 -Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Mobile crane	100%	6	36.0	216.0	216.0

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

Fanling Highway Connection Flyovers - Link Road 1-5 (viaduct) and Road Section (at grade)

Total:	244.8
Percentage of Usage Area to Works Area:	0.2497

From: Day 15 of Month 2		To: Day 30 of Month 2	Duration (months): 0.5			
From: Day 15 of Month 3		To: Day 30 of Month 3	Duration (months): 0.5			
From: Day 1 of Month 5		To: Day 15 of Month 5	Duration (months): 0.5			
Stage 4 - Piers						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Concrete lorry mixer (5m3)		20%	6	24.0	144.0	28.8
Mobile crane		50%	3	36.0	108.0	54.0
					Total:	82.8
					Percentage of Usage Area to Works Area:	0.0845

From: Day 1 of Month 3		To: Day 15 of Month 10	Duration (months): 7.5			
Stage 5 - Bridge Decks						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane		50%	2	36.0	72.0	36.0
Lorry (35 t)		40%	4	24.0	96.0	38.4
Total:					74.4	
Percentage of Usage Area to Works Area:					0.0759	

From: Day 1 of Month 10		To: Day 30 of Month 10	Duration (months): 1			
Stage 6 - Parapet & Surfacing						
Stage 6 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Mobile crane	30%	2	36.0	72.0	21.6	
Lorry (35 t)	50%	2	24.0	48.0	24.0	
Total:					45.6	
Percentage of Usage Area to Works Area:					0.0465	

Stage 6 - Group 2						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Asphalt paver		70%	1	6.0	6.0	4.2
Road roller		70%	3	6.0	18.0	12.6
					Total:	16.8
Percentage of Usage Area to Works Area:						0.0171

Fanling Highway Connection Flyovers - Link Road 4_viaduct

From: Day 1 of Month 8 To: Day 15 of Month 8 Duration (months): 0.5					
Stage 1 - Site Clearance & Haul Road					
Stage 1 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg	30%	2	1.0	2.0	0.6
Total:					0.6
Percentage of Usage Area to Works Area:					0.0006

Stage 1 - Group 2						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)		40%	2	13.0	26.0	10.4
Bulldozer (239kW)		40%	1	30.0	30.0	12.0
Total:					22.4	
Percentage of Usage Area to Works Area:					0.0228	

Stage 1 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Dump truck (50t)	80%	4	35.0	140.0	112.0
				Total:	112.0
Percentage of Usage Area to Works Area:					0.1142

From: Day 1 of Month 8			To: Day 15 of Month 11			Duration (months): 3.5		
Stage 2 - Piling								
Stage 2 - Group 1								

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

Fanling Highway Connection Flyovers - Link Road 1-5 (viaduct) and Road Section (at grade)

Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	40%	3	13.0	39.0	15.6
Lorry (35 t)	30%	6	24.0	144.0	43.2
Total:					58.8
Percentage of Usage Area to Works Area:					0.0600

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, reverse circulation drill	40%	3	36.0	108.0	43.2
Piling, large diameter bored, oscillator	40%	3	36.0	108.0	43.2
Total:					86.4
Percentage of Usage Area to Works Area:					0.0881

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	50%	6	36.0	216.0	108.0
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Total:					136.8
Percentage of Usage Area to Works Area:					0.1395

From: Day 15 of Month 9		To: Day 30 of Month 9	Duration (months): 0.5		
From: Day 15 of Month 11		To: Day 15 of Month 12	Duration (months): 1		
Stage 3 - PileCaps					
Stage 3 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)	50%	2	13.0	26.0	13.0
Lorry (35 t)	50%	6	24.0	144.0	72.0
Total:					85.0
Percentage of Usage Area to Works Area:					0.0867

Stage 3 -Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Mobile crane	100%	6	36.0	216.0	216.0
Total:					244.8
Percentage of Usage Area to Works Area:					0.2497

From: Day 1 of Month 10		To: Day 15 of Month 10	Duration (months): 0.5		
From: Day 15 of Month 12		To: Day 30 of Month 13	Duration (months): 1.5		
Stage 4 - Piers					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Mobile crane	50%	3	36.0	108.0	54.0
Total:					82.8
Percentage of Usage Area to Works Area:					0.0845

From: Day 15 of Month 10		To: Day 30 of Month 18	Duration (months): 8.5		
Stage 5 - Bridge Decks					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)
Mobile crane	50%	2	36.0	72.0	36.0
Lorry (35 t)	40%	4	24.0	96.0	38.4
				Total:	74.4
Percentage of Usage Area to Works Area:					0.0759

From: Day 1 of Month 18 To: Day 30 of Month 18 Duration (months): 1					
Stage 6 - Parapet & Surfacing					
Stage 6 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Mobile crane	30%	2	36.0	72.0	21.6
Lorry (35 t)	50%	2	24.0	48.0	24.0
Total:					45.6
Percentage of Usage Area to Works Area:					0.0465

Stage 6 - Group 2					
--------------------------	--	--	--	--	--

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling
Fanling Highway Connection Flyovers - Link Road 1-5 (viaduct) and Road Section (at grade)

Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	6.0	6.0	4.2
Road roller	70%	3	6.0	18.0	12.6
Total:					16.8
Percentage of Usage Area to Works Area:					0.0171

Fanling Highway Connection Flyovers - Link Road 5 viaduct

From: Day 1 of Month 42		To: Day 15 of Month 42	Duration (months): 0.5			
Stage 1 - Site Clearance & Haul Road						
Stage 1 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Breaker, hand-held breaker, 35kg		30%	2	1.0	2.0	0.6
Total:						0.6
Percentage of Usage Area to Works Area:						0.0006

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	40%	2	13.0	26.0	10.4
Bulldozer (239kW)	40%	1	30.0	30.0	12.0
Total:					22.4
Percentage of Usage Area to Works Area:					0.0228

Stage 1 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Dump truck (50t)	80%	4	35.0	140.0	112.0
Total:					112.0
Percentage of Usage Area to Works Area:					0.1142

From: Day 1 of Month 42 To: Day 15 of Month 43 Duration (months): 1.5

Stage 2 - Piling					
Stage 2 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	40%	3	13.0	39.0	15.6
Lorry (35 t)	30%	6	24.0	144.0	43.2
Total:					58.8
Percentage of Usage Area to Works Area:					0.0600

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Piling, large diameter bored, reverse circulation drill	40%	3	36.0	108.0	43.2
Piling, large diameter bored, oscillator	40%	3	36.0	108.0	43.2
Total:					86.4
Percentage of Usage Area to Works Area:					0.0881

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	50%	6	36.0	216.0	108.0
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Total:					136.8
Percentage of Usage Area to Works Area:					0.1395

From: Day 15 of Month 43 To: Day 30 of Month 43 Duration (months): 0.5

Stage 3 - PileCaps					
Stage 3 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Excavator (45kW)	50%	2	13.0	26.0	13.0
Lorry (35 t)	50%	6	24.0	144.0	72.0
Total:					85.0
Percentage of Usage Area to Works Area:					0.0867

Stage 3 -Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

Fanling Highway Connection Flyovers - Link Road 1-5 (viaduct) and Road Section (at grade)

Mobile crane	100%	6	36.0	216.0	216.0
Total:					244.8
Percentage of Usage Area to Works Area:					0.2497

From: Day 1 of Month 44		To: Day 15 of Month 44	Duration (months): 0.5		
Stage 4 - Piers					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)
Concrete lorry mixer (5m3)	20%	6	24.0	144.0	28.8
Mobile crane	50%	3	36.0	108.0	54.0
Total:					82.8
Percentage of Usage Area to Works Area:					0.0845

From: Day 15 of Month 44		To: Day 30 of Month 46	Duration (months): 2.5		
Stage 5 - Bridge Decks					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	50%	2	36.0	72.0	36.0
Lorry (35 t)	40%	4	24.0	96.0	38.4
Total:				74.4	
Percentage of Usage Area to Works Area:					0.0759

From: Day 1 of Month 46		To: Day 30 of Month 46	Duration (months): 1			
Stage 6 - Parapet & Surfacing						
Stage 6 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m³)	
Mobile crane	30%	2	36.0	72.0	21.6	
Lorry (35 t)	50%	2	24.0	48.0	24.0	
Total:					45.6	
Percentage of Usage Area to Works Area:					0.0465	

Stage 6 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	6.0	6.0	4.2
Road roller	70%	3	6.0	18.0	12.6
Total:					16.8
Percentage of Usage Area to Works Area:					0.0171

Fanling Road Section_at grade (final)

From: Day 1 of Month 4 To: Day 30 of Month 6 Duration (months): 3					
Stage 1 - Site Clearance					
Stage 1 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held breaker, 35kg	70%	3	1.0	3.0	2.1
Dump truck (50t)	80%	4	35.0	140.0	112.0
Excavator (45kW)	80%	8	13.0	104.0	83.2
Total:					195.2
Percentage of Usage Area to Works Area:					0.1991

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	70%	2	24.0	48.0	33.6
Total:					48.0
Percentage of Usage Area to Works Area:					0.0490

From: Day 1 of Month 7		To: Day 30 of Month 12	Duration (months): 6		
Stage 2 - Site Formation					
Stage 2 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)	50%	5	13.0	65.0	32.5
Lorry with crane/grab	50%	4	24.0	96.0	48.0
Total:					80.5
Percentage of Usage Area to Works Area:					0.0821

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

Fanling Highway Connection Flyovers - Link Road 1-5 (viaduct) and Road Section (at grade)

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Bulldozer (239kW)	70%	1	36.0	36.0	25.2
Dump truck (50t)	80%	5	35.0	175.0	140.0
Total:					165.2
Percentage of Usage Area to Works Area:					0.1685

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	40%	2	24.0	48.0	19.2
Mobile crane	100%	1	36.0	36.0	36.0
Compactor, vibratory	50%	3	12.0	36.0	18.0
Vibratory roller (9kW)	70%	3	12.0	36.0	25.2
Total:					98.4
Percentage of Usage Area to Works Area:					0.1004

From: Day 1 of Month 7 To: Day 30 of Month 12 Duration (months): 6					
Stage 3 - Slope Stabilisation					
Stage 3 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held breaker, 35kg	20%	2	1.0	2.0	0.4
Breaker, excavator mounted (hydraulic), 52kW	80%	1	13.0	13.0	10.4
Lorry with crane/grab	40%	2	24.0	48.0	19.2
Total:					30.0
Percentage of Usage Area to Works Area:					0.0306

Stage 3 -Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Drill rig, rotary type (diesel)	70%	2	13.8	27.6	19.3
Total:					19.3
Percentage of Usage Area to Works Area:					0.0197

Stage 3 -Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	70%	1	36.0	36.0	25.2
Grout mixer	40%	1	6.0	6.0	2.4
Total:					27.6
Percentage of Usage Area to Works Area:					0.0282

From: Day 1 of Month 7 To: Day 30 of Month 12 Duration (months): 6					
Stage 4 - Bored Pile Wall					
Stage 4 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Drill rig, rotary type (diesel)	40%	2	13.8	27.6	11.0
Total:					11.0
Percentage of Usage Area to Works Area:					0.0113

Stage 4 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	100%	1	36.0	36.0	36.0
Piling, large diameter bored, grab and chisel	70%	2	36.0	72.0	50.4
Total:					86.4
Percentage of Usage Area to Works Area:					0.0881

Stage 4 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m3)	50%	1	24.0	24.0	12.0
Total:					12.0
Percentage of Usage Area to Works Area:					0.0122

From: Day 1 of Month 13 To: Day 30 of Month 16 Duration (months): 4					
Stage 5 - Road Works					
Stage 5 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

Fanling Highway Connection Flyovers - Link Road 1-5 (viaduct) and Road Section (at grade)

Mobile crane	30%	2	36.0	72.0	21.6
Lorry (35 t)	50%	2	24.0	48.0	24.0
Total:					45.6
Percentage of Usage Area to Works Area:					0.0465

Stage 5 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Asphalt paver	70%	1	6.0	6.0	4.2
Road roller	70%	3	6.0	18.0	12.6
Total:					16.8
Percentage of Usage Area to Works Area:					0.0171

Note:

- For each stage of construction, different groups of construction activities are non-concurrent.
- Plant and activity with no dust emission during operation is not included (i.e. area = 0)
- All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
- Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
- The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
- Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
- For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

South Portal of South Tunnel and Ventilation Building (at grade)

Works area (m²) = 17545

From: Day 1 of Month 4		To: Day 30 of Month 6	Duration (months): 9		
Stage 1 - Site Clearance & Haul Road					
Stage 1 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held breaker, 35kg	70%	3	1.0	3.0	2.1
Dump truck (50t)	80%	4	35.0	140.0	112.0
Excavator (45kW)	80%	4	13.0	52.0	41.6
Total:					155.7
Percentage of Usage Area to Works Area:					0.8874

Stage 1 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	40%	1	36.0	36.0	14.4
Lorry with crane/grab	70%	2	24.0	48.0	33.6
Total:					48.0
Percentage of Usage Area to Works Area:					0.2736

From: Day 1 of Month 7 To: Day 30 of Month 15 Duration (months): 9					
Stage 2 - Portal Formation					
Stage 2 - Group 1					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)
Excavator (45kW)	80%	5	13.0	65.0	52.0
Lorry with crane/grab	70%	2	24.0	48.0	33.6
Total:					85.6
Percentage of Usage Area to Works Area:					0.4879

Stage 2 - Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Bulldozer (239kW)	70%	1	35.0	35.0	24.5
Dump truck (50t)	80%	5	35.0	175.0	140.0
Total:					164.5
Percentage of Usage Area to Works Area:					0.9376

Stage 2 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Concrete lorry mixer (5m ³)	40%	1	24.0	24.0	9.6
Mobile crane	100%	1	36.0	36.0	36.0
Compactor, vibratory	50%	1	12.0	12.0	6.0
Vibratory roller (9kW)	20%	1	12.0	12.0	2.4
Total:					54.0
Percentage of Usage Area to Works Area:					0.3078

From: Day 1 of Month 7		To: Day 30 of Month 12	Duration (months): 6			
Stage 3 - Slope Stabilisation						
Stage 3 - Group 1						
Plant/Activity		% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held breaker, 35kg		20%	2	1.0	2.0	0.4
Breaker, excavator mounted (hydraulic), 52kW		80%	1	13.0	13.0	10.4
Lorry with crane/grab		50%	2	24.0	48.0	24.0
					Total:	34.8
					Percentage of Usage Area to Works Area:	0.1983

Stage 3 -Group 2					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Drill rig, rotary type (diesel)	70%	2	24.0	48.0	33.6
Total:					33.6
Percentage of Usage Area to Works Area:					0.1915

Stage 3 -Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	70%	1	36.0	36.0	25.2
Grout mixer	40%	1	6.0	6.0	2.4
Total:					27.6
Percentage of Usage Area to Works Area:					0.1573

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

South Portal of South Tunnel and Ventilation Building (at grade)

From: Day 1 of Month 9		To: Day 30 of Month 14		Duration (months): 6		
Stage 4 - Bored Pile Wall						
Stage 4 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Drill rig, rotary type (diesel)	40%	2	13.8	27.6	11.0	
Total:					11.0	
Percentage of Usage Area to Works Area:					0.0629	
Stage 4 -Group 2						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Mobile crane	100%	1	24.0	24.0	24.0	
Piling, large diameter bored, grab and chisel	70%	2	36.0	72.0	50.4	
Total:					74.4	
Percentage of Usage Area to Works Area:					0.4241	
Stage 4 -Group 3						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Concrete lorry mixer (5m3)	50%	1	24.0	24.0	12.0	
Total:					12.0	
Percentage of Usage Area to Works Area:					0.0684	
From: Day 1 of Month 13		To: Day 30 of Month 15		Duration (months): 3		
Stage 5 - Road Works						
Stage 5 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Mobile crane	30%	2	36.0	72.0	21.6	
Lorry (35 t)	50%	2	24.0	48.0	24.0	
Total:					45.6	
Percentage of Usage Area to Works Area:					0.2599	
Stage 5 -Group 2						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Asphalt paver	70%	1	12.0	12.0	8.4	
Road roller	70%	3	12.0	36.0	25.2	
Total:					33.6	
Percentage of Usage Area to Works Area:					0.1915	
From: Day 1 of Month 23		To: Day 30 of Month 24		Duration (months): 2		
Stage 6 - Parapet & Surfacing						
Stage 6 - Group 1						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Breaker, hand-held, mass >= 20kg and <= 35kg	30%	2	0.5	1.0	0.3	
Breaker, excavator mounted (hydraulic), 52kW	30%	1	13.0	13.0	3.9	
Total:					4.2	
Percentage of Usage Area to Works Area:					0.0239	
Stage 6 - Group 2						
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m²)	Total Plan Area (m²)	Area in terms of Time of Usage (m²)	
Piling, large diameter bored, grab and chisel	90%	1	36.0	36.0	32.4	
Piling, large diameter bored, reverse circulation drill	40%	1	36.0	36.0	14.4	
Total:					46.8	
Percentage of Usage Area to Works Area:					0.2667	

Appendix 3.1d - Estimation of Percentage Active Area for Different Stages of Construction Activities

Fanling

South Portal of South Tunnel and Ventilation Building (at grade)

Stage 6 - Group 3					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Mobile crane	80%	1	36.0	36.0	28.8
Concrete lorry mixer (5m3)	50%	4	24.0	96.0	48.0
Total:					76.8
Percentage of Usage Area to Works Area:					0.4377

From: Day 1 of Month 25 To: Day 30 of Month 27 Duration (months): 3					
Stage 7 - Building Structures					
Plant/Activity	% of usage	No. of Plant/ Activity	Plan Area (m ²)	Total Plan Area (m ²)	Area in terms of Time of Usage (m ²)
Breaker, hand-held, mass >= 20kg and <= 35kg	40%	2	0.5	1.0	0.4
Concrete lorry mixer	50%	3	24.0	72.0	36.0
Mobile crane	80%	1	36.0	36.0	28.8
Lorry with crane/grab	50%	2	24.0	48.0	24.0
Total:					89.2
Percentage of Usage Area to Works Area:					0.5084

Note:

1. For each stage of construction, different groups of construction activities are non-concurrent.
2. Plant and activity with no dust emission during operation is not included (i.e. area = 0)
3. All plant that would generate dust emissions during their operation (e.g. excavator) have been included in estimating the active work areas whereas the plant without dust emission in the course of their operation (e.g. pumps, generators, air compressors) have been excluded from the calculation.
4. Since the plants do not normally operate continuously throughout the 12-hour working period, an adjustment by "percentage of usage" was adopted for each plant/activity to reflect its estimated hours of operation on a typical working day.
5. The actual dust emission area for each plant/activity was estimated and given as "Plan Area", by taking into account the maximum area of dust emissions which could be created by the plant/activity at any time instant.
6. Justifications provided above are for the purpose of assessment predictions only. Actual figures would be defined by the Detailed Design Engineer.
7. For each stage of the construction activities, the site area with the highest total percentage active area was taken to estimate the total percentage active area of all stages as detailed in Appendix 3.1e