

Appendix 4.2

Justification for the Percentage
of Active Works Areas and Dust
Suppression Efficiency

Central Kowloon Route - Design & Construction

Summary of Active Construction Area Estimate

Works Area		Estimated Max. Active Area (m ²) ^[1]		Estimated Max. Percentage Active Area (%)		Assumed Percentage Active Area for Construction Dust Assessment (%) ^[2]	
		1-hour & 24-hour	Annual	1-hour & 24-hour	Annual	1-hour & 24-hour	Annual
Western Portion	Tunnel associated works	2,084	1,612	7.1%	5.5%	15.0%	6.0%
	CKR Landscape Deck and Slip Roads	1,600	939	3.3%	1.9%		
	Ventilation Building	326	208	7.4%	4.7%		
Central Portion	Ventilation Building	508	374	6.5%	4.8%		
Eastern Portion	Tunnel associated Works in Ma Tau Kok Area	473	382	1.1%	0.9%		
	CKR Landscape Deck, Main Road and Slip Road	857	694	1.0%	0.8%		
	Ventilation and Administration Buildings	648	481	5.4%	4.0%		
	Other Connection Roads	479	266	1.5%	0.8%		

Note:

[1] Active works areas that would generate dust emissions during construction phase are estimated by the Engineer. Details are provided in this appendix.

[2] As a conservative assessment, it is assumed that the 1-hour/24-hour and annual percentage active areas are 15% and 6% respectively.

Central Kowloon Route - Design & Construction

Active Construction Area Estimate - West Portion - Tunnel associated works

Works Area = 29219 m²

(total area of works area ID W-02 to W-07, and W-26 to W-32 in air quality assessment)

Construction Activities	From	To	Duration (Month)	Active Area (m ²)	% Active Area to Works Area
1001 - Site Establishment, Utility Diversion and Plant Mobilization	05-Jan-15	30-Jul-15	7	135	0.5%
1002 - Construct Temporary Jade Market	05-Jan-15	02-Jun-15	5	114	0.4%
1004 - Construct Methodone Clinic	05-Jan-15	30-Oct-15	10	103	0.4%
1005 - Decant Ya Ma Tei Jade Hawker Bazaar	03-Jun-15	30-Jun-15	1	72	0.2%
1007 - Demolish Multi-storey Carpark Building (partially)	01-Oct-15	29-Feb-16	5	72	0.2%
1008 - Construct Proposed GRF Flyover (one lane) on Northern Side and the Temporary Deck (From Temple Street to Reclamation Street) - Foundation and pier	01-Mar-16	30-Mar-16	1	153	0.5%
1008 - Construct Proposed GRF Flyover (one lane) on Northern Side and the Temporary Deck (From Temple Street to Reclamation Street) - Bridge Deck	01-Apr-16	01-May-16	1	71	0.2%
1008 - Construct Proposed GRF Flyover (one lane) on Northern Side and the Temporary Deck (From Temple Street to Reclamation Street) - Surfacing, MJ, noise barriers	01-May-16	31-May-16	1	48	0.2%
1009 - Construct Proposed GRF Flyover (one lane) on Northern Side and the Temporary Deck (From Reclamation Street to Ferry Street) - Foundation and pier	01-Apr-16	30-Apr-16	1	153	0.5%
1009 - Construct Proposed GRF Flyover (one lane) on Northern Side and the Temporary Deck (From Reclamation Street to Ferry Street) - Bridge Deck	01-May-16	30-Jun-16	2	71	0.2%
1009 - Construct Proposed GRF Flyover (one lane) on Northern Side and the Temporary Deck (From Reclamation Street to Ferry Street) - Surfacing, MJ, noise barriers	01-Jul-16	31-Jul-16	1	48	0.2%
1010 - Demolish the Existing Flyover	01-Aug-16	31-Aug-16	1	101	0.3%
1011 - Construct the Proposed GRF Flyover (the Remain Part from Temple Street to Reclamation Street) - Foundation and pier	01-Nov-16	30-Nov-16	1	153	0.5%
1011 - Construct the Proposed GRF Flyover (the Remain Part from Temple Street to Reclamation Street) - Bridge Deck	01-Dec-16	31-Jan-17	2	71	0.2%
1011 - Construct the Proposed GRF Flyover (the Remain Part from Temple Street to Reclamation Street) - Surfacing, MJ, noise barriers	01-Feb-17	27-Feb-17	1	48	0.2%
1012 - Construct the Proposed GRF Flyover (the Remain Part from Reclamation Street to Ferry Street) - Foundation and pier	01-Feb-17	27-Feb-17	1	153	0.5%
1012 - Construct the Proposed GRF Flyover (the Remain Part from Reclamation Street to Ferry Street) - Bridge Deck	01-Mar-17	01-Apr-17	1	71	0.2%
1012 - Construct the Proposed GRF Flyover (the Remain Part from Reclamation Street to Ferry Street) - Surfacing, MJ, noise barriers	02-Apr-17	30-Apr-17	1	48	0.2%
1013 - Demolish Multi-storey Carpark Building (remaining part)	01-Sep-16	30-Mar-17	7	101	0.3%
1015 - Underpinning Works for YMT Police Station - Diaphragm Wall and Transfer Beams	01-Mar-16	30-Jun-16	4	166	0.6%
1015 - Underpinning Works for YMT Police Station - Underpinning Excavation	01-Jul-16	31-Jul-16	1	83	0.3%
1016 - Demolish Special Clinic Extension Building	01-Sep-16	27-Feb-17	6	127	0.4%
1017 - Construct Western Access Shaft - Excavation of Diaphragm Walls	05-Jan-15	31-Jan-15	1	140	0.5%
1017 - Construct Western Access Shaft - Concreting of Diaphragm Wall	01-Feb-15	27-Feb-15	1	138	0.5%

Construction Activities	From	To	Duration (Month)	Active Area (m ²)	% Active Area to Works Area
1017 - Construct Western Access Shaft - Soil Excavation of Access Shaft (covered by traffic deck with opening)	01-Mar-15	31-May-15	3	158	0.5%
1017 - Construct Western Access Shaft - Rock Excavation of Access Shaft (covered by traffic deck with opening)	01-Jun-15	31-Jul-15	2	134	0.5%
1017 - Construct Western Access Shaft - Cast Bottom Slab (covered by traffic deck with opening)	01-Aug-15	30-Sep-15	2	128	0.4%
1019 - Construct Middle Dwall and Traffic Deck (cross road sections) - Diaphragm Walls	01-Jan-16	27-Feb-16	2	199	0.7%
1019 - Construct Middle Dwall and Traffic Deck (cross road sections) - Temporary Traffic Deck	01-Mar-16	31-Mar-16	1	131	0.4%
1020 - Diversion of Ferry Street Junction	01-Apr-16	30-Jun-16	3	186	0.6%
1021 - Construct Southern Dwall & Dwall Crossing Ferry Street - Piling for King Post	01-Apr-16	30-Apr-16	1	185	0.6%
1021 Construct Southern Dwall & Dwall Crossing Ferry Street - Grouting for King Post	01-May-16	31-May-16	1	108	0.4%
1021 - Construct Southern Dwall & Dwall Crossing Ferry Street - Excavation for Diaphragm Walls	01-Jun-16	31-Aug-16	3	234	0.8%
1021 - Construct Southern Dwall & Dwall Crossing Ferry Street - Concreting for Diaphragm Walls	01-Sep-16	30-Sep-16	1	62	0.2%
1021 - Construct Southern Dwall & Dwall Crossing Ferry Street - Temporary Traffic Deck	01-Oct-16	31-Oct-16	1	196	0.7%
1022 - Construct Southern Dwall and Traffic Deck (cross road sections) - Diaphragm Walls	01-Nov-16	31-Dec-16	2	199	0.7%
1022 - Construct Southern Dwall and Traffic Deck (cross road sections) - Temporary Traffic Deck	01-Jan-17	31-Jan-17	1	131	0.4%
1023 - Construct Northern Dwall and Traffic Deck - Piling for King Post	01-Feb-17	27-Feb-17	1	167	0.6%
1023 - Construct Northern Dwall and Traffic Deck - Grouting for King Post	01-Mar-17	31-Mar-17	1	101	0.3%
1023 - Construct Northern Dwall and Traffic Deck - Excavation for Diaphragm Walls	01-Mar-17	31-Mar-17	1	222	0.8%
1023 - Construct Northern Dwall and Traffic Deck - Concreting for Diaphragm Walls	01-Apr-17	30-Apr-17	1	70	0.2%
1023 - Construct Northern Dwall and Traffic Deck - Temporary Traffic Deck	01-May-17	31-May-17	1	210	0.7%
1024 - Construct Northern Dwall and Traffic Deck (cross road sections) - Excavation for Diaphragm Walls	01-Jun-17	30-Jun-17	1	156	0.5%
1024 - Construct Northern Dwall and Traffic Deck (cross road sections) - Concreting for Diaphragm Walls	01-Jul-17	31-Jul-17	1	42	0.1%
1024 - Construct Northern Dwall and Traffic Deck (cross road sections) - Temporary Traffic Deck	01-Aug-17	31-Aug-17	1	131	0.4%
1025 - Reinstate the affected roads and footpaths	01-Sep-17	31-Oct-17	2	208	0.7%
1026 - Excavation of Tunnel Tubes (under cover of traffic deck)	01-Feb-17	30-Sep-18	20	284	1.0%
1027 - Removal of Excavated Material through West End Portal	01-Feb-17	30-Sep-18	20	168	0.6%
1028 - Piling Works for Cut and Cover Tunnel (under cover of traffic deck)	01-May-17	31-Dec-18	20	256	0.9%
1029 - Underpinning of Existing Bridges (under cover of traffic deck)	01-Jul-17	31-Dec-17	6	264	0.9%
1030 - Construction of the Cut and Cover Tunnel (under cover of traffic deck)	01-Apr-17	31-Jul-19	28	452	1.5%
1030 - Construction of the Cut and Cover Tunnel (under cover of traffic deck)	01-Apr-17	31-Jul-19	28	452	1.5%
1031 - Backfilling on Top of Cut and Cover Tunnel (under cover of traffic deck)	01-Aug-19	30-Nov-19	4	129	0.4%
1032 - Construct Ferry Street Subway	01-Aug-18	30-Nov-18	4	86	0.3%
1033 - Demolish the Existing Ferry Street Subway	01-Dec-18	28-Feb-19	3	65	0.2%
1034 - Construct Noise Barrier on Ferry Flyover and along Ting Ping Street - Piling, Pile Cap and Upstand Beam	01-Mar-19	31-May-19	3	211	0.7%
1034 - Construct Noise Barrier on Ferry Flyover and along Ting Ping Street - Superstructure	01-Jun-19	30-Nov-19	6	92	0.3%
1035 - Road works for Section between Ferry Street and Nathan Road	01-Dec-19	31-May-20	6	244	0.8%
1036 - Diversion of Existing Box Culverts in adjacent to Hoi Wang Road	05-Mar-15	31-Aug-15	6	220	0.8%
1037 - Temporary Shifting of Hoi Wang Road toward West	01-Sep-15	30-Sep-15	1	140	0.5%

Note:

1. Active Area means the works area that would generate dust emissions during construction phase (estimated by the Engineer).
2. Estimations provided above are for the purpose of assessment only. Actual figures would be defined during detailed design stage.

Central Kowloon Route - Design & Construction

Active Construction Area Estimate - West Portion - CKR Landscape Deck and Slip Roads

Works Area = 48247 m²

(total area of works area ID W-01, W-08 to W-23, W-25 and W-33 to W-36 in air quality assessment)

Construction Activities	From	To	Duration (Month)	Active Area (m ²)	% Active Area to Works Area
1018 - Construct Middle Dwall and Traffic Deck - Piling for King Post	01-Aug-15	30-Sep-15	2	109	0.2%
1018 - Construct Middle Dwall and Traffic Deck - Diaphragm Walls	01-Aug-15	30-Nov-15	4	110	0.2%
1018 - Construct Middle Dwall and Traffic Deck - Temporary Traffic Deck	01-Dec-15	31-Dec-15	1	65	0.1%
1018 - Construct Middle Dwall and Traffic Deck - Piling for King Post	01-Jul-15	31-Dec-15	6	109	0.2%
1018 - Construct Middle Dwall and Traffic Deck - Diaphragm Walls	01-Jul-15	31-Dec-15	6	110	0.2%
1018 - Construct Middle Dwall and Traffic Deck - Temporary Traffic Deck	01-Jul-15	31-Dec-15	6	65	0.1%
1038 - Construct Depressed Road Structure - Site Formation, Levelling & Excavation Works	01-Feb-15	30-Apr-15	3	162	0.3%
1038 - Construct Depressed Road Structure - Construction & Paving Works	01-May-15	27-Feb-16	10	241	0.5%
1039 - Construct Landscape Deck	01-Jan-16	31-Dec-16	12	278	0.6%
1040 - Filling embankment for the Link Road A, D, E, F and Hoi Wang Road	01-Jan-17	31-May-17	5	348	0.7%
1041 - Construct Retaining Wall RWW1, 2, 3 & 4	01-Jan-17	31-May-17	5	535	1.1%
1042 - Construct Noise Barrier and Diversion of Hoi Wang Road	01-Jun-17	31-Oct-17	5	145	0.3%
1043 Construct Ventilation Duct	01-Jan-16	31-Aug-16	8	211	0.4%
1045 - Realign Lin Cheung Road	01-Sep-15	30-Jun-16	10	164	0.3%
1046 - Construct Bridge B2 and C2	01-Mar-16	30-Sep-16	7	237	0.5%
1047 - Construct Bridge D and E	01-Jul-16	31-Jan-17	7	480	1.0%
1048 - Construct Bridge F and G	01-Dec-16	31-Jul-17	8	237	0.5%
1049 - Demolish Temporary Bridge D2 and T	01-Oct-17	31-Dec-18	15	91	0.2%
1050 - Construct Bridge B and C	01-Jan-18	31-Jul-18	7	237	0.5%
1053 - Road Works for Connection Roads on West Side of Ferry Street	01-Aug-18	30-Nov-18	4	409	0.8%
1054 - Landscaping Works	01-Dec-18	30-Sep-19	10	146	0.3%

Note:

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2. Estimations provided above are for the purpose of assessment only. Actual figures would be defined during detailed design stage.

Central Kowloon Route - Design & Construction
Active Construction Area Estimate - West Portion - Ventilation Building

Works Area = 4378 m²
 (total area of works area ID W-24 in air quality assessment)

Construction Activities	From	To	Duration (Month)	Active Area (m²)	% Active Area to Works Area
1044 - Construct Western Ventilation Building - Foundation works for Vent Building	01-Jun-15	31-Dec-15	7	326	7.4%
1044 Construct Western Ventilation Building - Construction of Superstructure for Ventilation Buildings	01-Jan-16	31-May-17	17	208	4.7%

Note:

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Central Kowloon Route - Design & Construction

Active Construction Area Estimate - Central Portion - Ventilation Building

Works Area = 7804 m²

(total area of works area ID M-01 to M-04 in air quality assessment)

Construction Activities	From	To	Duration (Month)	Active Area (m²)	% Active Area to Works Area
2201 - Bored Piling Works	05-Jan-15	29-Mar-15	3	298	3.8%
2201 - Diaphragm Walls	05-Apr-15	29-Aug-15	5	314	4.0%
2208 - Excavation of Access Shaft	01-Sep-15	28-Apr-16	8	508	6.5%
2208 - Foundation Works for Ventillation Building	01-Aug-18	30-Nov-18	4	281	3.6%
2208 - Construction of Ventillation Buildings	01-Dec-18	01-Jul-19	7	131	1.7%

Note:

1. Active Area means the works area that would generate dust emissions during construction phase (estimated by the Engineer).
2. Estimations provided above are for the purpose of assessment only. Actual figures would be defined during detailed design stage.

Central Kowloon Route - Design & Construction

Active Construction Area Estimate - East Portion - Tunnel associated Works in Ma Tau Kok Area

Works Area = 42390 m²

(total area of works area ID E-34 to E-40 in air quality assessment)

Construction Activities	From	To	Duration (Month)	Active Area (m ²)	% Active Area to Works Area
3101 - Diaphragm Walls	05-Jan-15	29-May-15	5	166	0.4%
3102 - Excavation and Structures	01-Jun-15	30-Sep-15	4	203	0.5%
3103 - Diaphragm Walls	02-Oct-15	29-Apr-16	7	166	0.4%
3104 - Excavation and Structures	02-May-16	31-Oct-16	6	203	0.5%
3201 - Dredging	05-Jan-15	30-Aug-15	8	0	0.0%
3202 - Temporary Reclamation	01-Apr-15	30-Oct-15	7	203	0.5%
3203 - Cast Diaphragm Wall Inside Temporary Seawall	02-Nov-15	30-Dec-15	2	173	0.4%
3203 - Staged Excavation Adding Struts with Depth	02-Jan-16	30-Jun-16	6	256	0.6%
3204 - Tunnel Box	01-Jul-16	30-Nov-16	5	198	0.5%
3205 - Backfill and Restoration	01-Dec-16	30-Mar-17	4	174	0.4%
3206 - Demolish Ma Tau Kok Public Pier	05-Jan-15	30-Mar-15	3	88	0.2%
3206 - Staged Handover of Temporary PTI	05-Apr-15	31-Jul-15	4	68	0.2%
3207 - Dredging	01-Dec-16	31-Mar-17	4	0	0.0%
3208 - Temporary Reclamation	03-Apr-17	31-Oct-17	7	203	0.5%
3209 - Cast Diaphragm Wall Inside Temporary Seawall	01-Nov-17	31-Dec-17	2	173	0.4%
3209 - Staged Excavation Adding Struts with Depth	01-Jan-18	29-Jun-18	6	256	0.6%
3210 - Tunnel Box	02-Jul-18	31-Dec-18	6	198	0.5%
3211 - Backfill & Restoration	01-Jan-19	30-Apr-19	4	174	0.4%
3212 - Final Seabed Restoration and Interfacing	01-May-19	30-Aug-19	4	0	0.0%

Note:

1. Active Area means the works area that would generate dust emissions during construction phase (estimated by the Engineer).
2. Estimations provided above are for the purpose of assessment only. Actual figures would be defined during detailed design stage.

Central Kowloon Route - Design & Construction

Active Construction Area Estimate - East Portion - CKR Landscape Deck, Main Road and Slip Road

Works Area = 81864 m²

(total area of works area ID E-01 to E-12, E-23 and E-24 in air quality assessment)

Construction Activities	From	To	Duration (Month)	Active Area (m²)	% Active Area to Works Area
3301 - Diaphragm Walls	05-Jan-15	31-Dec-15	12	166	0.2%
3302 - Site Formation, Levelling & Excavation Works	05-Jan-15	30-Jul-15	7	212	0.3%
3302 - Construction & Paving Works	01-Aug-15	04-Jul-16	11	239	0.3%
3303 - Site Formation, Levelling & Excavation Works	01-Jan-16	30-Jun-16	6	212	0.3%
3303 - Construction & Paving Works	01-Jul-16	28-Feb-17	8	239	0.3%
3401 - Site Formation, Levelling & Excavation Works	05-Jan-15	27-Feb-15	2	212	0.3%
3401 - Construction & Paving Works	01-Mar-15	30-Apr-15	2	239	0.3%
3401 - Fitting Works	01-May-15	29-May-15	1	130	0.2%
3402 - Site Formation, Levelling & Excavation Works	05-Jan-15	27-Feb-15	2	212	0.3%
3402 - Construction & Paving Works	01-Mar-15	02-May-15	2	239	0.3%
3402 - Fitting Works	03-May-15	02-Jun-15	1	130	0.2%
3403 - Site Formation, Levelling & Excavation Works	01-Jun-15	31-Aug-15	3	212	0.3%
3403 - Construction & Paving Works	01-Sep-15	31-Jan-16	5	239	0.3%
3403 - Fitting Works	01-Feb-16	26-Feb-16	1	130	0.2%
3404 - Site Formation, Levelling & Excavation Works	29-Feb-16	30-Apr-16	2	212	0.3%
3404 - Construction & Paving Works	02-May-16	31-Oct-16	6	239	0.3%
3404 - Fitting Works	01-Nov-16	29-Nov-16	1	130	0.2%

Note:

1. Active Area means the works area that would generate dust emissions during construction phase (estimated by the Engineer).
2. Estimations provided above are for the purpose of assessment only. Actual figures would be defined during detailed design stage.

Central Kowloon Route - Design & Construction

Active Construction Area Estimate - East Portion - Ventilation and Administration Buildings

Works Area = 11985 m²

(total area of works area ID E-13 to E-19 and E-33 in air quality assessment)

Construction Activities	From	To	Duration (Month)	Active Area (m²)	% Active Area to Works Area
3405 - Site Formation, Levelling & Excavation Works	30-Nov-16	30-Jan-17	2	424	3.5%
3405 - Construction & Paving Works	01-Feb-17	30-Jul-17	6	479	4.0%
3405 - Fitting Works	01-Aug-17	30-Aug-17	1	259	2.2%
3406 - Foundation Works for Administration and Ventilation Building in Kai Tak	01-Jun-15	30-Mar-16	10	262	2.2%
3406 - Construction of Administration and Ventilation Buildings	01-Apr-16	30-Nov-17	20	169	1.4%
3406 - Construct Ventilation Duct	01-Dec-17	28-Feb-18	3	356	3.0%

Note:

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2. Estimations provided above are for the purpose of assessment only. Actual figures would be defined during detailed design stage.

Central Kowloon Route - Design & Construction

Active Construction Area Estimate - East Portion - Other Connection Roads

Works Area = 31284 m²

(total area of works area ID E-19, E-22 and E-25 to E-32 in air quality assessment)

Construction Activities	From	To	Duration (Month)	Active Area (m²)	% Active Area to Works Area
3407 - Site Formation, Levelling & Excavation Works	10-Jun-15	30-Aug-15	3	212	0.7%
3407 - Construction & Paving Works	01-Sep-15	30-Jan-16	5	239	0.8%
3407 - Fitting Works	31-Jan-16	27-Feb-16	1	130	0.4%
3408 - Site Formation, Levelling & Excavation Works	10-Jun-15	30-Aug-15	3	212	0.7%
3408 - Construction & Paving Works	01-Sep-15	30-Jan-16	5	239	0.8%
3408 - Fitting Works	31-Jan-16	27-Feb-16	1	130	0.4%

Note:

1. Active Area means the works area that would generate dust emissions during construction phase (estimated by the Engineer).
2. Estimations provided above are for the purpose of assessment only. Actual figures would be defined during detailed design stage.

Preliminary Construction Programme for East Portion - Ventilation and Administration Buildings

Activities	2015												2016												2017												2018												2019											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Ventilation and Administration Buildings																																																												
3405 - Site Formation, Levelling & Excavation Works																									3.5%												3.5%																							
3405 - Construction & Paving Works																																					4.0% 4.0% 4.0% 4.0% 4.0% 4.0%																							
3405 - Fitting Works																																					2.2%																							
3406 - Foundation Works for Administration and Ventilation Building in Kai Tak	2.2% 2.2% 2.2% 2.2% 2.2% 2.2%												2.2% 2.2% 2.2%																																															
3406 - Construction of Administration and Ventilation Buildings													1.4% 1.4% 1.4% 1.4% 1.4% 1.4%												1.4% 1.4% 1.4% 1.4% 1.4% 1.4%												1.4% 1.4% 1.4% 1.4% 1.4% 1.4%																							
3406 - Construct Ventilation Duct																																					3.0%												3.0% 3.0%											
Combined 1-hour & 24-hour Percentage Active Area	0.0% 0.0% 0.0% 0.0% 0.0% 2.2% 2.2% 2.2% 2.2% 2.2% 2.2%												2.2% 2.2% 2.2% 1.4% 1.4% 1.4% 1.4% 1.4% 1.4% 1.4% 1.4%												5.0% 5.4% 5.4% 5.4% 5.4% 5.4% 5.4% 5.4% 3.6% 1.4% 1.4% 1.4%												3.0% 3.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%												0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%											
Combined Annual Percentage Active Area																																																	0.5%											
Max. 1-hour & 24-hour Percentage Active Area	5.4%																																																											
Max. Annual Percentage Active Area	4.0%																																																											

Preliminary Construction Programme for East Portion - Other Connection Roads

Activities	2015												2016												2017												2018												2019											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Other Connection Roads																																																												
3407 - Site Formation, Levelling & Excavation Works	0.7% 0.7% 0.7%																																																											
3407 - Construction & Paving Works																																																												
3407 - Fitting Works													0.4%																																															
3408 - Site Formation, Levelling & Excavation Works	0.7% 0.7% 0.7%																																																											
3408 - Construction & Paving Works													0.8% 0.8% 0.8% 0.8%																																															
3408 - Fitting Works													0.4%																																															
Combined 1-hour & 24-hour Percentage Active Area	0.0% 0.0% 0.0% 0.0% 0.0% 1.4% 1.4% 1.4% 1.5% 1.5% 1.5%												0.8% 0.8% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%												0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%												0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%												0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%											
Combined Annual Percentage Active Area													0.8%																																				0.0%											
Max. 1-hour & 24-hour Percentage Active Area	1.5%																																																											
Max. Annual Percentage Active Area	0.8%																																																											

Active Area (m²) in West Portion - Overall

Works Area	2015												2016												2017												2018												2019												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
Tunnel associated Works in Ma Tau Kok Area	254	254	254	436	436	473	473	405	405	368	339	339	422	422	422	422	459	459	401	401	401	401	198	174	174	174	174	203	203	203	203	203	203	203	173	173	256	256	256	256	256	256	198	198	198	198	198	198	174	174	174	174	0	0	0	0	0	0	0	0	
CKR Landscape Deck, Main Road and Slip Road	802	802	857	857	637	590	590	617	645	645	645	645	691	581	664	664	691	691	479	479	479	479	369	239	239	239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ventilation and Administration Buildings	0	0	0	0	0	262	262	262	262	262	262	262	262	262	262	169	169	169	169	169	169	169	169	594	594	648	648	648	648	648	428	169	169	169	356	356	356	356	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Other Connection Roads	0	0	0	0	0	424	424	424	479	479	479	479	239	259	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Monthly 1-hour & 24-hour Active Area in Eastern Portion	1056	1056	1111	1293	1073	1749	1749	1709	1791	1754	1724	1724	1615	1524	1348	1255	1319	1319	1049	1049	1049	1049	736	1007	1007	1061	822	851	851	851	851	631	372	372	342	529	613	613	256	256	256	256	198	198	198	198	198	198	174	174	174	174	0	0	0	0	0	0	0	0	
Annual Active Area in Eastern Portion	1482												1193												712												287												58												
Max. 1-hour & 24-hour Active Area in Eastern Portion =	1791 m ²																																																												
Max. Annual Active Area in Eastern Portion =	1482 m ²																																																												

Calculation of Watering Efficiency (for construction site)

With reference to Cowherd et al., "Control of Open Fugitive Dust Sources, EPA-450/3-88-008, U.S. Environmental Protection Agency, Research Triangle Park, NC, percentage of dust mitigation efficiency is calculated from Equation (3-2) :

$$C = 100 - \frac{0.8 p d t}{i}$$

where

- p = Potential average hourly daytime evaporation rate, mm/hour = 0.25916 [1]
d = Average hourly daytime traffic rate per hour = 54 per hour [2]
I = Application intensity = 1.3 L/m² [3]

Note:

- [1] p = 0.0049 x 52.8898 inch, where 52.8898inch is equivalent to the total evaporation of 1343.4mm obtained from Hong Kong Observatory (http://www.weather.gov.hk/cis/normal/1971_2000/normals_e.htm)
[2] Estimated by Engineer
[3] The assumptions provided are for the purpose of assessment predictions only. Actual figures would be defined in the detailed design stage.

By applying the Equation (3-2) with the above assumptions,

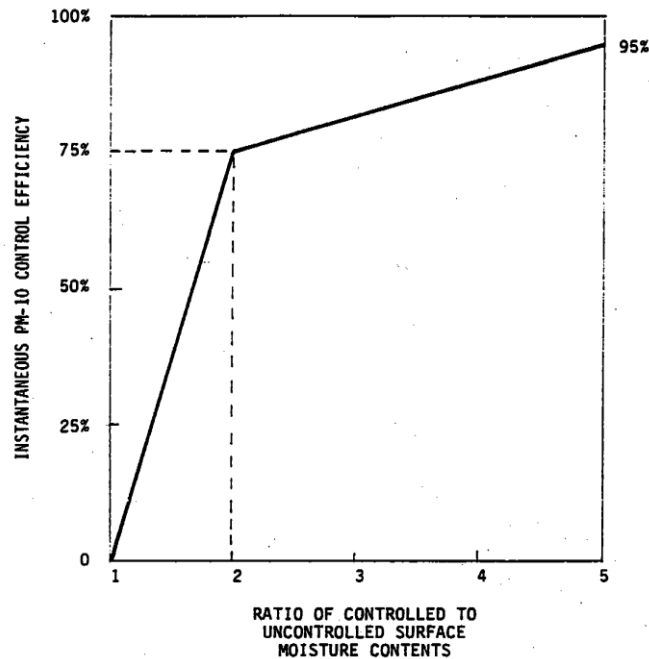
Dust suppression efficiency = $100 - 0.8 \times (0.25916 \times 54 \times t) / 1.3$ [t = time between application, hr]

Therefore,

For watering once per hour (i.e. t =1 hour), the estimated dust suppression efficiency is 91.7%.

Calculation of Watering Efficiency (for Stockpile)

With reference to Cowherd et al., "Control of Open Fugitive Dust Sources, EPA-450/3-88-008, U.S. Environmental Protection Agency, Research Triangle Park, NC, percentage of dust mitigation efficiency is calculated from Equation (3-3) and Figure 3-3 :



$$C = 75 \times (M - 1) \quad [\text{for } 1 \leq M \leq 2]$$

$$C = 62 + 6.7M \quad [\text{for } 2 \leq M \leq 5]$$

where $c =$ Instantaneous control efficiency (%)
 $M =$ Ratio of controlled to uncontrolled surface moisture contents

According to the Equation (3-3), by increasing the surface moisture content by a ratio of 1.67 would achieve 50% dust suppression efficiency :

$$\text{Dust suppression efficiency} = 75 \times (1.67 - 1) = 50\%$$

Watering Intensity

Given

Area of Stockpile	=	5225 m ²
Dry Fill Density	=	1700 kg/m ³
Uncontrolled Surface Moisture Content	=	2 %
Controlled Surface Moisture Content	=	3.3 %

Assume

Depth of Water Penetrated into Stockpile	=	0.02 m	see Note [1]
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Therefore,

Weight of Uncontrolled Wet Stockpile Surface	=	5225 x 1700 x 0.02 / (1 - 0.02)	=	181276 kg
Weight of Controlled Wet Stockpile Surface	=	5225 x 1700 x 0.02 / (1 - 0.033)	=	183776 kg
Watering Intensity	=	(183776 - 181276) / 5225	=	0.5 L/m ² /hour

Note [1] Referenced from the Dennis R. Fitz & Kurt Bumiller (2000) "Evaluation of Watering to Control Dust in High Winds", Journal of the Air & Waste Management Association