













Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (H06-07)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	H 06-07 (2015 EIA 18-12-2011.xls)																Rate (g/km-PM)	Emission Rate (g/s)		
							PC	taxi	LGV3	LGV4	LGV6	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBSD	FBDD	MC		Total	NOx	PM
A <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	73	140	50%	0%	21%	0%	4%	4%	7%	4%	4%	0%	0%	0%	0%	0%	0%	100%	0.1081115	1.3557014	0.0029260	0.0038487
B <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	272	140	50%	0%	21%	0%	4%	4%	7%	4%	4%	0%	0%	0%	0%	0%	0%	100%	0.1081115	1.3557014	0.0014381	0.0143403
C <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	110	140	50%	0%	21%	0%	4%	4%	7%	4%	4%	0%	0%	0%	0%	0%	0%	100%	0.1081115	1.3557014	0.0004628	0.0057994
D <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	176	140	50%	0%	21%	0%	4%	4%	7%	4%	4%	0%	0%	0%	0%	0%	0%	100%	0.1081115	1.3557014	0.0007400	0.0092790
E <sup>1</sup>	72	Lin Chung Rd (underpass)	Southbound	3	155	240	54%	0%	23%	0%	2%	2%	6%	4%	2%	2%	0%	2%	2%	0%	0%	100%	0.0970157	1.2597611	0.0010295	0.0130154
F <sup>1</sup>	72	Lin Chung Rd (depressed)	Southbound	3	172	240	54%	0%	23%	0%	2%	2%	6%	4%	2%	2%	0%	2%	2%	0%	0%	100%	0.0970157	1.2597501	0.0011124	0.0144451
G <sup>1</sup>	118	Lin Chung Rd (depressed)	Southbound	3	121	285	53%	2%	25%	0%	2%	2%	5%	4%	2%	0%	0%	2%	2%	0%	0%	100%	0.0939883	1.1684203	0.0008944	0.0111925
H <sup>1</sup>	119	Austin Rd W (depressed)	Eastbound	3	173	230	54%	0%	23%	0%	2%	2%	4%	2%	0%	0%	0%	0%	2%	2%	2%	100%	0.1484278	1.7677545	0.0016405	0.0165366
I <sup>1</sup>	117	Austin Rd W (depressed)	Eastbound	3	194	55	27%	0%	64%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1082295	1.6125588	0.0004980	0.0047794
J <sup>1</sup>	116	Austin Rd W (depressed)	Westbound	3	194	70	29%	0%	57%	0%	0%	0%	7%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1014435	1.5786187	0.0006078	0.0059549
K <sup>1</sup>	114	Lin Chung Rd (depressed)	Southbound	3	95	55	64%	0%	27%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0942519	1.0162210	0.0013693	0.0014749
L <sup>1</sup>	112	Lin Chung Rd (depressed)	Northbound	3	95	215	51%	0%	23%	0%	2%	2%	7%	2%	2%	0%	2%	2%	0%	0%	0%	100%	0.1040855	1.3425960	0.0005701	0.0076174
M <sup>1</sup>	84	Lin Chung Rd	Southbound	3	55	255	53%	0%	25%	0%	2%	2%	6%	4%	2%	2%	0%	2%	2%	0%	0%	100%	0.0995059	1.2538920	0.0003947	0.0049898
N <sup>1</sup>	77	Lin Chung Rd	Northbound	3	55	300	52%	2%	25%	0%	2%	2%	7%	3%	2%	2%	0%	2%	2%	0%	0%	100%	0.1014731	1.2752009	0.0004738	0.0059509
O <sup>1</sup>	111	Austin Rd W (depressed)	Eastbound	3	52	190	16%	0%	56%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1574671	1.8567980	0.0004322	0.0051705
P <sup>1</sup>	110	Austin Rd W (depressed)	Westbound	3	52	95	32%	0%	63%	0%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1329266	1.3861474	0.0002603	0.0019361
W <sup>1</sup>	98	West Kowloon Highway (WKH)	Northbound	2	1970	1060	81%	0%	17%	0%	2%	2%	6%	3%	2%	2%	0%	5%	2%	3%	0%	100%	0.0606065	1.5378068	0.0515511	0.8920134
A	Internal Rd A	Bothbound	4	404	20	90%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0002299	0.7300918	0.0001352	0.0016387
B	Internal Rd B	Bothbound	4	361	35	45%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0882621	0.8284840	0.0002389	0.0029208
C	Internal Rd C	Bothbound	4	521	20	25%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1165277	1.4187285	0.0003373	0.0041084
X <sup>1</sup>	1144	Repositioning of Gascoigne Rd Flyover	Westbound	3	180	665	33%	1%	11%	1%	7%	5%	13%	11%	2%	2%	1%	0%	1%	0%	0%	100%	0.1198887	2.5771269	0.0039853	0.0856895

Note: (B) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
 Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2 20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)		Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)	
		PM	NOx	PM	NOx	PM	NOx			(Area)
A	Area	6.1383E-05	0.0007697	-	-	1.24868E-07	1.56705E-06	491.2	1	0.2 x Tunnel Section A
B	Area	0.00121256	0.0152053	-	-	3.544652E-06	4.44729E-05	341.9	1	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)
CE	Area	0.00032831	0.0042062	-	-	5.16773E-07	8.62074E-06	635.9	1	0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
D1-D7	Volume	0.00125119	0.0156897	0.000119161	0.001494259	-	-	-	1	0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D
F	Area	0.00038289	0.0049718	-	-	1.37978E-06	1.79164E-05	277.5	1	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F
H	Area	0.00474423	0.0578084	0.000790705	0.009834734	-	-	-	1	1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x Tunnel Section K + 0.8 x 0.38 x Tunnel Section O + 0.8 x 1/3 x (1 Tunnel Section Internal Road A + Tunnel Section Internal Road B) x ( traffic flow of Tunnel Section I / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section Internal Road C ) )
I1-I5	Volume	0.00027899	0.0030951	0.000135057	0.001666212	-	-	-	1	0.2 x Tunnel Section J + 0.2 x (1 - 0.14) x Tunnel Section K + 0.2 x Tunnel Section O + 0.2 x 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) x ( traffic flow of Tunnel Section L / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section A + traffic flow of Tunnel Section P ) )
M1-M4	Volume	0.00043412	0.0054604	7.2354E-05	0.000910062	-	-	-	1	0.5 x (Tunnel Section M + Tunnel Section N)
N1-N4	Volume	0.00043412	0.0054604	7.2354E-05	0.000910062	-	-	-	1	0.5 x (Tunnel Section M + Tunnel Section N)
NS-N8	Volume	0.00072245	0.0071932	0.000120468	0.001198872	-	-	-	1	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) x ( traffic flow of Tunnel Section P / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section Internal Road C ) )
P1-P4	Volume	0.03515512	0.820134	0.002929593	0.074334446	-	-	-	1	1 x Tunnel W
W1-W8	Volume	0.0039863	0.0856895	0.001464796	0.037167223	-	-	-	1	1 x Tunnel X
Y1-Y3	Volume	0.00023714	0.0028819	0.000295759	0.005712639	-	-	-	1	1/3 x Basement roads A,B,C
Z1-Z3	Volume	0.00023714	0.0028819	0.000133877	0.002885316	-	-	-	1	1/3 x Basement roads A,B,C
V1	Paint	-	-	-	-	-	-	-	-	tom 1-4

Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (#H07-08)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	H# 07-08 (2015 EIA, 19-12-2011.xls)																		Rate (g/km-h)	NOx	Emission Rate (g/s)	
							PC	taxi	LGV3	LGV4	LGV6	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBS0	FBD0	MC	Total	PM			NOx	
A'	73	Lin Cheung Rd (underpass)	Northbound	3	73	190	53%	0%	24%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0983881	1.3092533	0.002791	0.0050443		
B'	73	Lin Cheung Rd (underpass)	Northbound	3	272	190	53%	0%	24%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0983881	1.3092533	0.001424	0.0187951		
C'	73	Lin Cheung Rd (underpass)	Northbound	3	110	190	53%	0%	24%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0983881	1.3092533	0.005712	0.0076009		
D'	73	Lin Cheung Rd (underpass)	Northbound	3	176	190	53%	0%	24%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0983881	1.3092533	0.0009799	0.0121615		
E'	72	Lin Cheung Rd (underpass)	Southbound	3	155	815	52%	1%	24%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	100%	0.0680281	1.2558395	0.002957	0.0332534		
F'	72	Lin Cheung Rd (depressed)	Southbound	3	172	815	52%	1%	24%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	100%	0.0680281	1.2558395	0.002804	0.0369007		
G'	118	Lin Cheung Rd (depressed)	Southbound	3	121	750	51%	1%	24%	1%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	100%	0.0689166	1.2331750	0.0024935	0.0310883		
H'	119	Austin Rd W (depressed)	Eastbound	3	173	950	24%	0%	57%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	100%	0.1529852	1.7633308	0.0068442	0.0803859		
I'	117	Austin Rd W (depressed)	Eastbound	3	194	280	25%	0%	55%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	100%	0.1486270	1.7441715	0.0022426	0.0263170		
J'	116	Austin Rd W (depressed)	Westbound	3	194	280	25%	0%	54%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	100%	0.1483998	1.7608600	0.0022392	0.0265694		
K'	114	Lin Cheung Rd (depressed)	Southbound	3	95	165	45%	0%	24%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1063910	1.4684505	0.0046332	0.0063939		
L'	112	Lin Cheung Rd (depressed)	Northbound	3	95	150	53%	0%	25%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0694757	1.1901763	0.000147	0.0105663		
M'	84	Lin Cheung Rd	Southbound	3	55	645	51%	1%	24%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	100%	0.1018044	1.2829960	0.0010214	0.0129700		
N'	77	Lin Cheung Rd	Northbound	3	56	465	52%	1%	24%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	100%	0.1010965	1.2592016	0.0007313	0.0091080		
O'	111	Austin Rd W (depressed)	Eastbound	3	52	785	25%	0%	57%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1486955	1.6942114	0.0018673	0.0190977		
P'	110	Austin Rd W (depressed)	Westbound	3	52	430	26%	1%	55%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1489568	1.7654596	0.0006262	0.0106622		
W'	98	West Kowloon Highway (WKH)	Northbound	2	1970	1575	81%	0%	17%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0613586	1.5130225	0.0528843	1.3040382		
A	Internal Rd A	Bothbound	4	404	30	90%	0%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1380794	1.2327271	0.0004649	0.0041502		
B	Internal Rd B	Bothbound	4	381	60	85%	0%	25%	0%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1733856	1.7471376	0.0014144	0.0105116		
C	Internal Rd C	Bothbound	4	521	25	20%	0%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.2563377	2.5515727	0.0009274	0.0082317		
X'	I144	Reposition of Gascoigne Rd Flyover	Westbound	3	180	1925	33%	0%	11%	1%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1212756	2.6406536	0.0008045	0.0174843		

Note: (B) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2 20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)		Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)
		Emission Rate - Portal/ Opening (g/s) - Volume source	Emission Rate - Portal/ Opening (g/s) - Area source	PM	NOx	PM	NOx		
80.935	0.873	7.5814E-05	0.0010089	0.00149761	0.0199287	1.54344E-07	2.05385E-06	491.2	0.2 x Tunnel Section A
A	Area	0.00149761	0.0199287	0.00149761	0.0199287	4.38202E-06	5.82881E-05	341.9	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)
B	Area	0.000676599	0.0087513	0.000676599	0.0087513	1.06362E-06	1.3775E-05	835.3	0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065/50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
C-E	Area	0.001545332	0.0205637	0.00147174	0.001958444				0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065/50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D
D-B14	Volume	7.35896E-05	0.000979222						
F	Area	0.00099139	0.0127007	0.002740019	0.032801412	3.57258E-06	4.57884E-05	277.5	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F
H-14	Volume	0.01644011	0.1968085	0.001370009	0.016400706				1 x Tunnel Section H + 1 x Tunnel Section G + 1 x Tunnel Section Internal Road H + 0.14 x Tunnel Section K + 0.8 x 0.38 x Tunnel Section O + 0.8 x (1/3 x (1 x Tunnel Section Internal Road A + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section I / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section J + 0.8 x 0.24 x Tunnel Section J + 0.8 x 0.62 x Tunnel Section O + 0.8 x (1/3 x (1 x Tunnel Section Internal Road A + Tunnel Section Internal Road B + 1 x Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + traffic flow of Tunnel Section P))
I-14	Volume	0.00226313	0.0278938	0.000304417	0.003719167	6.66859E-07	7.86570E-06	1542.7	0.2 x Tunnel Section J + 0.2 x (1 - 0.14) x Tunnel Section K + 0.2 x Tunnel Section O + 0.2 x 1/3 x (1 x Tunnel Section Internal Road A + Tunnel Section Internal Road B + 1 x Tunnel Section Internal Road C) x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + traffic flow of Tunnel Section P))
L1-L5	Volume	0.00087635	0.0110391	0.000152209	0.001859583				0.5 x (Tunnel Section M + Tunnel Section N)
L6-L10	Volume	0.00087635	0.0110391	0.000146058	0.001839856				
M1-M4	Volume	0.00087635	0.0110391	0.000146058	0.001839856				
M5-M8	Volume	0.00087635	0.0110391	0.000146058	0.001839856				
N1-N4	Volume	0.00087635	0.0110391	0.000146058	0.001839856				
N5-N8	Volume	0.00087635	0.0110391	0.000146058	0.001839856				
P1-P4	Volume	0.00287632	0.0330904	0.000479386	0.005515963				1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (1 x Tunnel Section Internal Road A + Tunnel Section Internal Road B + 1 x Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + traffic flow of Tunnel Section N))
P5-P8	Volume	0.00287632	0.0330904	0.000479386	0.005515963				
W1-W8	Volume	0.05288432	1.3040382	0.004407027	0.05696887				
W9-W16	Volume	0.00220513	0.054338483						1 x Tunnel W
T01-T10	Volume	0.000256904	0.011862887						
T11-T20	Volume	0.000256904	0.011862887						1 x Tunnel X
BaseA	Volume	0.00081124	0.0079546	0.000811237	0.007954619				1/3 x Basement roads A,B,C
BaseC	Volume	0.00081124	0.0079546	0.000811237	0.007954619				1/3 x Basement roads A,B,C
801-830	Volume								
901-903	Volume								1 x Tunnel Y
904-906	Volume								1 x Tunnel Z
V1	Point								from 1-4



Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (H06-09)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	Hr 08-09 (2015 EIA, 19-12-2011.xls)																		Rate (g/km-PM)	NOx	Emission Rate (g/s)	
							PC	taxi	LG3	LG4	LG5	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBS0	FBD0	MC	Total	PM			NOx	
A <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	73	385	51%	1%	23%	0%	3%	0%	6%	3%	3%	1%	0%	2%	1%	0%	100%	0.1201489	1.4407644	0.0029380	0.0112480			
B <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	272	385	51%	1%	23%	0%	3%	0%	6%	3%	3%	1%	0%	2%	1%	0%	100%	0.1201489	1.4407644	0.0034950	0.0419102			
D <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	110	385	51%	1%	23%	0%	3%	0%	6%	3%	3%	1%	0%	2%	1%	0%	100%	0.1201489	1.4407644	0.0014134	0.0169490			
D <sup>2</sup>	73	Lin Chung Rd (underpass)	Northbound	3	176	385	51%	1%	22%	0%	3%	0%	6%	3%	3%	1%	0%	2%	1%	0%	100%	0.1201489	1.4407644	0.0022615	0.0271184			
E <sup>1</sup>	72	Lin Chung Rd (underpass)	Southbound	3	155	1215	51%	1%	24%	0%	2%	0%	6%	3%	2%	1%	0%	2%	0%	0%	100%	0.1167078	1.4028321	0.0010533	0.0233752			
E <sup>2</sup>	72	Lin Chung Rd (depressed)	Southbound	3	172	1215	51%	1%	24%	0%	2%	0%	6%	3%	2%	1%	0%	2%	0%	0%	100%	0.1167078	1.4028321	0.0067749	0.0814228			
G <sup>1</sup>	118	Lin Chung Rd (depressed)	Southbound	3	121	1505	51%	1%	24%	0%	2%	0%	6%	3%	3%	2%	1%	0%	2%	0%	100%	0.1148200	1.3773529	0.0059081	0.0696730			
H <sup>1</sup>	119	Austin Rd W (depressed)	Eastbound	3	173	1435	23%	2%	58%	0%	1%	1%	4%	2%	1%	1%	0%	1%	1%	2%	100%	0.1719884	1.8790136	0.0116588	0.1252743			
I <sup>1</sup>	117	Austin Rd W (depressed)	Eastbound	3	194	400	24%	1%	58%	0%	1%	1%	4%	3%	1%	0%	0%	1%	1%	3%	100%	0.1687500	1.8971820	0.0036384	0.0408848			
J <sup>1</sup>	116	Austin Rd W (depressed)	Westbound	3	194	400	24%	1%	56%	0%	1%	1%	4%	1%	1%	0%	0%	1%	1%	3%	100%	0.1706791	1.9328541	0.0036791	0.0416659			
K <sup>1</sup>	114	Lin Chung Rd (depressed)	Southbound	3	95	295	53%	2%	25%	0%	2%	0%	7%	3%	2%	0%	0%	2%	2%	0%	100%	0.1146854	1.3532181	0.0008928	0.0105325			
L <sup>1</sup>	112	Lin Chung Rd (depressed)	Northbound	3	95	685	50%	1%	24%	0%	2%	0%	7%	3%	3%	2%	1%	0%	1%	0%	100%	0.1172188	1.3964640	0.0021188	0.0252433			
M <sup>1</sup>	84	Lin Chung Rd	Southbound	3	55	1305	51%	1%	24%	0%	2%	0%	6%	3%	3%	2%	1%	0%	2%	0%	100%	0.1167217	1.3848559	0.0023694	0.0281128			
N <sup>1</sup>	77	Lin Chung Rd	Northbound	3	55	960	51%	1%	24%	0%	2%	0%	6%	3%	3%	3%	1%	0%	3%	2%	100%	0.1184768	1.4240555	0.0017693	0.0212600			
O <sup>1</sup>	111	Austin Rd W (depressed)	Eastbound	3	52	1205	22%	2%	58%	0%	1%	1%	4%	2%	1%	0%	0%	1%	1%	2%	100%	0.1699919	1.8980148	0.0028563	0.0327450			
P <sup>1</sup>	110	Austin Rd W (depressed)	Westbound	3	52	645	23%	2%	57%	0%	2%	0%	5%	2%	1%	1%	0%	1%	1%	2%	100%	0.1716980	1.8939008	0.0016021	0.0176355			
W	88	West Kowloon Highway (WKH)	Northbound	2	1970	4145	81%	0%	17%	0%	2%	0%	6%	3%	3%	2%	0%	5%	2%	3%	100%	0.0631257	1.5196290	0.0431840	3.4468774			
A	Internal Rd A	Bothbound	4	404	50	40%	0%	30%	0%	0%	0%	0%	10%	0%	0%	20%	0%	0%	0%	0%	100%	0.1729363	1.4952900	0.0009704	0.0083902			
B	Internal Rd B	Bothbound	4	361	85	85%	0%	24%	0%	0%	0%	6%	6%	0%	0%	24%	0%	0%	0%	0%	100%	0.2081043	2.0551660	0.0017788	0.0175174			
C	Internal Rd C	Bothbound	4	521	35	29%	0%	14%	0%	0%	0%	0%	0%	0%	0%	57%	0%	0%	0%	0%	100%	0.2364546	2.3544829	0.0011979	0.0119200			
X	I144	Reposition of Gascoigne Rd Flyover	Westbound	3	180	1680	33%	1%	11%	1%	7%	0%	13%	10%	2%	1%	1%	0%	1%	9%	100%	0.1407950	2.8390978	0.0118288	0.2384842			

Note: (1) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
 Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2 20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)		Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)
		PM	NOx	PM	NOx	PM	NOx		
80.935	0.873	0.0001876	0.0022496	-	-	3.8192E-07	4.57979E-08	491.2	0.2 x Tunnel Section A
A	Area	0.0037058	0.044381	-	-	1.68389E-05	0.000129974	341.9	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)
B	Area	0.00161166	0.0193589	-	-	2.53884E-06	3.04721E-05	635.3	0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
CE	Area	0.00382398	0.049554	0.000364179	0.004367045	-	-	-	0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D
D1-D7	Volume	-	-	0.000182089	0.002183522	-	-	-	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F
D8-D14	Area	0.00233182	0.0280246	-	-	8.40296E-06	0.00010099	277.5	1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x Tunnel Section I + 0.14 x Tunnel Section J + 0.14 x Tunnel Section K + 0.8 x 0.36 x Tunnel Section L + 0.8 x (1/3 x (1 x Tunnel Section Internal Road A + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section I / (traffic flow of Tunnel Section L + traffic flow of Tunnel Section J + traffic flow of Tunnel Section K + traffic flow of Tunnel Section P)))
I1-I4	Volume	0.03190009	0.3660102	0.005116881	0.061101695	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
I5-I8	Volume	-	-	0.002658341	0.030509848	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
JK01	Area	0.00174383	0.0191357	-	-	1.19038E-06	1.2404E-05	1542.7	0.5 x (Tunnel Section M + Tunnel Section N)
L1-L5	Volume	-	-	0.000627841	0.007267139	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
LE1-L10	Volume	-	-	0.000113921	0.003633569	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
M1-M4	Volume	0.00206935	0.0246894	0.000344892	0.004114902	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
MS-M8	Volume	-	-	0.000172446	0.002057451	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
N1-N4	Volume	0.00206935	0.0246894	0.000344892	0.004114902	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
NS-N8	Volume	-	-	0.000172446	0.002057451	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
P1-P4	Volume	0.00484512	0.0526246	0.00080752	0.008770765	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section P)))
PS-P8	Volume	-	-	0.00040376	0.004365383	-	-	-	1 x Tunnel W
W1-W8	Volume	0.14318403	3.4468774	0.011932002	0.287239783	-	-	-	1 x Tunnel X
WB-W16	Volume	-	-	0.005960001	0.143619891	-	-	-	1/3 x Basement roads A,B,C
Y1-Y10	Volume	0.01182678	0.2384842	0.000784952	0.010589548	-	-	-	1/3 x Basement roads A,B,C
Z1-Z10	Volume	-	-	0.000594226	0.007949474	-	-	-	1 x Tunnel X
BaseA	Volume	0.00131403	0.0126112	0.001314025	0.012611228	-	-	-	1 x Tunnel Y
BaseC	Volume	0.00131403	0.0126112	0.001314025	0.012611228	-	-	-	1 x Tunnel Z
901-930	Out of 500m	-	-	-	-	-	-	-	-
901-903	Out of 500m	-	-	-	-	-	-	-	-
904-906	Volume	-	-	-	-	-	-	-	-
V1	Paint	-	-	-	-	-	-	-	from 1-4

Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (H09-10)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	Hr 09-10 (2015 EIA, 19-12-2011.xls)																	Rate (g/km-PM)	NOx	Emission Rate (g/s)	
							PC	taxi	LG3	LG4	LG5	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBS0	FBD0	MC	Total			PM	NOx
A <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	73	380	50%	1%	24%	0%	3%	0%	7%	3%	3%	0%	1%	0%	1%	0%	100%	0.1249897	1.4787862	0.009631	0.1112647		
B <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	272	380	50%	1%	24%	0%	3%	0%	7%	3%	3%	0%	1%	0%	1%	0%	100%	0.1249897	1.4787862	0.005886	0.0424570		
C <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	110	380	50%	1%	24%	0%	3%	0%	7%	3%	3%	0%	1%	0%	1%	0%	100%	0.1249897	1.4787862	0.0014513	0.0171701		
D <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	176	380	50%	1%	24%	0%	3%	0%	7%	3%	3%	0%	1%	0%	1%	0%	100%	0.1249897	1.4787862	0.0022226	0.0274722		
E <sup>1</sup>	72	Lin Chung Rd (underpass)	Southbound	3	155	986	51%	1%	24%	0%	2%	0%	8%	3%	3%	0%	1%	0%	1%	0%	100%	0.1211567	1.4332808	0.0051448	0.0609693		
F <sup>1</sup>	72	Lin Chung Rd (depressed)	Southbound	3	172	986	51%	1%	24%	0%	2%	0%	8%	3%	3%	0%	1%	0%	2%	0%	100%	0.1211567	1.4332808	0.0057091	0.0675383		
G <sup>1</sup>	118	Lin Chung Rd (depressed)	Southbound	3	121	1230	50%	1%	24%	0%	2%	0%	8%	3%	3%	0%	2%	0%	2%	0%	100%	0.1199153	1.4192033	0.0046575	0.0586722		
H <sup>1</sup>	119	Austin Rd W (depressed)	Eastbound	3	173	1456	22%	0%	59%	0%	1%	1%	4%	2%	1%	0%	0%	1%	1%	2%	100%	0.1781894	1.9126440	0.0124670	0.1338584		
I <sup>1</sup>	117	Austin Rd W (depressed)	Eastbound	3	194	406	23%	1%	58%	0%	1%	1%	4%	3%	1%	0%	0%	1%	1%	2%	100%	0.1750981	1.9417562	0.0038325	0.0425002		
J <sup>1</sup>	116	Austin Rd W (depressed)	Westbound	3	194	401	22%	1%	57%	0%	1%	1%	4%	1%	1%	0%	4%	0%	1%	2%	100%	0.1794183	2.0062829	0.0038767	0.0434145		
K <sup>1</sup>	114	Lin Chung Rd (depressed)	Southbound	3	95	284	51%	2%	25%	0%	3%	2%	8%	3%	2%	0%	0%	2%	2%	0%	100%	0.1178027	1.4026281	0.0008842	0.0105278		
L <sup>1</sup>	112	Lin Chung Rd (depressed)	Northbound	3	95	705	51%	1%	24%	0%	2%	0%	8%	3%	2%	0%	1%	0%	1%	0%	100%	0.1198141	1.3978110	0.0022256	0.0260080		
M <sup>1</sup>	84	Lin Chung Rd	Southbound	3	55	1088	51%	1%	24%	0%	2%	0%	8%	3%	2%	0%	1%	0%	2%	0%	100%	0.1211000	1.4093701	0.0020499	0.0238505		
N <sup>1</sup>	77	Lin Chung Rd	Northbound	3	56	975	50%	1%	24%	0%	2%	0%	8%	3%	3%	0%	1%	0%	2%	0%	100%	0.1217139	1.4371488	0.0018462	0.0217991		
O <sup>1</sup>	111	Austin Rd W (depressed)	Eastbound	3	52	123	22%	0%	59%	0%	1%	1%	4%	2%	1%	0%	0%	1%	2%	0%	100%	0.1762050	1.8941014	0.0013589	0.0312388		
P <sup>1</sup>	110	Austin Rd W (depressed)	Westbound	3	52	650	22%	0%	58%	0%	2%	0%	5%	2%	1%	1%	1%	1%	2%	2%	100%	0.1762659	1.9439498	0.0018842	0.0182903		
W	88	West Kowloon Highway (WKH)	Northbound	2	1970	3591	50%	0%	17%	0%	2%	0%	7%	3%	3%	0%	2%	0%	3%	0%	100%	0.0644040	1.5391148	0.1266607	3.0245239		
A	Internal Rd A	Bothbound	4	404	778	36%	0%	26%	1%	3%	1%	3%	8%	1%	1%	19%	0%	0%	0%	100%	0.1959593	1.9045300	0.0018859	0.0188388			
B	Internal Rd B	Bothbound	4	361	134	34%	0%	24%	1%	3%	1%	3%	8%	1%	1%	23%	0%	0%	0%	100%	0.1971908	1.9763877	0.0028450	0.0285100			
C	Internal Rd C	Bothbound	4	521	81	22%	0%	16%	0%	3%	1%	2%	4%	1%	1%	50%	0%	0%	0%	100%	0.2498420	2.5507296	0.0021918	0.0223700			
X	114	Reposition of Gascoigne Rd Flyover	Westbound	3	180	1685	33%	1%	11%	1%	7%	0%	13%	10%	2%	1%	1%	1%	8%	5%	1%	100%	0.1463557	2.8843031	0.0123305	0.2430025	

Note: (i) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
 Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2 20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)		Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)
		PM	NOx	PM	NOx	PM	NOx		
80.935	0.873	0.00019262	0.00227789	-	-	3.92148E-07	4.63954E-06	491.2	0.2 x Tunnel Section A
		0.00380505	0.0450179	-	-	1.11291E-05	0.00013167	341.9	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)
		0.00143002	0.0169176	-	-	2.25048E-06	2.86293E-05	635.3	0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
D1-D7	Volume	0.00373931	0.00442402	-	-	-	-	-	0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D
D8-D14	Volume	0.000186966	0.00221201	-	-	-	-	-	0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D
F	Area	0.00196499	0.0232457	-	-	7.08103E-06	8.37884E-05	277.5	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F
H-4	Volume	0.000599317	0.057320527	-	-	-	-	-	1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x Tunnel Section I + 0.14 x Tunnel Section J + 0.14 x Tunnel Section K + 0.8 x 0.38 x Tunnel Section L + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
I-8	Volume	0.002549659	0.028662063	-	-	-	-	-	1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x Tunnel Section I + 0.14 x Tunnel Section J + 0.14 x Tunnel Section K + 0.8 x 0.38 x Tunnel Section L + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
J-K1	Area	0.00199	0.0216231	-	-	1.28995E-06	1.640164E-05	1542.7	0.2 x Tunnel Section J + 0.2 x (1 - 0.14) x Tunnel Section K + 0.2 x Tunnel Section O + 0.2 x 1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
L1-L5	Volume	0.000696402	0.00054838	-	-	-	-	-	1 x Tunnel Section L + 0.8 x 0.24 x Tunnel Section J + 0.8 x 0.62 x Tunnel Section O + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
LE-L10	Volume	0.00048201	0.004027419	-	-	-	-	-	Tunnel Section Internal Road C x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section L + traffic flow of Tunnel Section P)) + traffic flow of Tunnel Section P
M1-M4	Volume	0.000324072	0.003804334	-	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
M5-M8	Volume	0.000194803	0.0228278	-	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
N1-N4	Volume	0.00194803	0.0228278	-	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
NE-N8	Volume	0.000162336	0.001902317	-	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
P1-P4	Volume	0.000891824	0.005918999	-	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
PS-P8	Volume	0.000440967	0.0046595	-	-	-	-	-	Tunnel Section Internal Road C x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section L + traffic flow of Tunnel Section L + traffic flow of Tunnel Section P)) + traffic flow of Tunnel Section P
W1-W8	Volume	0.12656074	3.0245239	-	-	0.010548729	0.25204366	-	1 x Tunnel W
W9-W16	Volume	0.0052916	0.055914	-	-	0.005273384	0.12902183	-	1 x Tunnel W
T01-T10	Volume	0.01233047	0.2430025	-	-	0.000822031	0.016280169	-	1 x Tunnel X
T11-T20	Volume	0.000411016	0.008100084	-	-	0.000411016	0.008100084	-	1 x Tunnel X
BaseA	Volume	0.00217401	0.0219086	0.002174009	0.021908614	-	-	-	1/3 x Basement roads A,B,C
BaseC	Volume	0.00217401	0.0219086	0.002174009	0.021908614	-	-	-	1/3 x Basement roads A,B,C
901-930	Volume	-	-	-	-	-	-	-	1 x Tunnel Y
901-903	Volume	-	-	-	-	-	-	-	1 x Tunnel Z
904-906	Volume	-	-	-	-	-	-	-	1 x Tunnel Z
V1	Paint	-	-	-	-	-	-	-	from 1-4

Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (H10-11)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	H10-11 (2015 EIA, 19-12-2011.x16)																			Rate (g/km-PM)	Rate (g/km-NOx)	Emission Rate (g/s)	
							PC	taxi	LGV3	LGV4	LGV5	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBS0	FBDD	MC	Total	PM	NOx				
A <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	73	335	49%	1%	22%	0%	3%	3%	8%	3%	3%	3%	1%	0%	3%	1%	0%	0%	100%	0.1262512	1.5175550	0.0098758	0.0103988		
B <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	272	335	49%	1%	22%	0%	3%	3%	8%	3%	3%	3%	1%	0%	3%	1%	0%	0%	100%	0.1262512	1.5175550	0.0091958	0.0084110		
C <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	110	335	49%	1%	22%	0%	3%	3%	8%	3%	3%	3%	1%	0%	3%	1%	0%	0%	100%	0.1262512	1.5175550	0.0012923	0.0155339		
D <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	176	335	49%	1%	22%	0%	3%	3%	8%	3%	3%	3%	1%	0%	3%	1%	0%	0%	100%	0.1262512	1.5175550	0.0026077	0.0246542		
E <sup>1</sup>	72	Lin Chung Rd (underpass)	Southbound	3	155	735	52%	1%	24%	0%	2%	2%	8%	3%	3%	2%	1%	0%	3%	1%	0%	1%	100%	0.1224488	1.4292969	0.0038753	0.0420303		
F <sup>1</sup>	72	Lin Chung Rd (depressed)	Southbound	3	172	735	52%	1%	24%	0%	2%	2%	8%	3%	3%	2%	1%	0%	3%	1%	0%	1%	100%	0.1224488	1.4292969	0.0043003	0.0501911		
G <sup>1</sup>	118	Lin Chung Rd (depressed)	Southbound	3	121	905	51%	1%	24%	1%	2%	2%	8%	3%	3%	2%	1%	0%	2%	2%	0%	1%	100%	0.1204179	1.4169757	0.0036629	0.0431019		
H <sup>1</sup>	119	Austin Rd W (depressed)	Eastbound	3	173	1425	24%	2%	58%	0%	1%	1%	4%	2%	1%	1%	0%	0%	1%	1%	2%	2%	100%	0.1763572	1.8768603	0.0120788	0.1285185		
I <sup>1</sup>	117	Austin Rd W (depressed)	Eastbound	3	194	405	25%	1%	57%	0%	1%	1%	4%	2%	1%	0%	0%	0%	1%	1%	2%	2%	100%	0.1724208	1.5217716	0.0037631	0.0419427		
J <sup>1</sup>	116	Austin Rd W (depressed)	Westbound	3	194	405	25%	1%	56%	0%	1%	1%	4%	1%	1%	0%	2%	0%	1%	1%	2%	2%	100%	0.1743272	1.5588750	0.0038047	0.0427524		
K <sup>1</sup>	114	Lin Chung Rd (depressed)	Southbound	3	95	205	49%	2%	24%	0%	2%	2%	5%	3%	2%	2%	0%	0%	2%	2%	0%	0%	100%	0.1189113	1.4480713	0.0009420	0.0075391		
L <sup>1</sup>	112	Lin Chung Rd (depressed)	Northbound	3	95	505	51%	1%	24%	0%	2%	2%	5%	3%	2%	2%	1%	0%	2%	2%	0%	1%	100%	0.1181199	1.3881040	0.0017302	0.0203299		
M <sup>1</sup>	84	Lin Chung Rd	Southbound	3	55	780	51%	1%	25%	0%	2%	2%	5%	3%	3%	2%	1%	0%	3%	1%	0%	1%	100%	0.1235803	1.4164510	0.0014994	0.0171664		
N <sup>1</sup>	77	Lin Chung Rd	Northbound	3	55	790	51%	1%	24%	0%	2%	2%	5%	3%	3%	2%	1%	0%	3%	1%	0%	1%	100%	0.1237291	1.4379412	0.0015206	0.0176707		
O <sup>1</sup>	111	Austin Rd W (depressed)	Eastbound	3	52	1190	24%	2%	58%	0%	1%	1%	4%	2%	1%	0%	0%	1%	1%	2%	2%	2%	100%	0.1750280	1.9554963	0.0030085	0.0327534		
P <sup>1</sup>	110	Austin Rd W (depressed)	Westbound	3	52	840	23%	2%	57%	0%	2%	2%	5%	2%	1%	1%	1%	0%	1%	1%	2%	2%	100%	0.1775420	1.9422847	0.0019413	0.0179553		
W	88	West Kowloon Highway (WKH)	Northbound	2	1970	3140	50%	0%	17%	0%	2%	2%	6%	3%	3%	2%	2%	0%	5%	2%	3%	0%	100%	0.0632495	1.5224591	0.1086801	2.8160077		
A	Internal Rd A	Bothbound	4	404	35	36%	0%	27%	0%	3%	0%	0%	3%	0%	0%	0%	18%	0%	0%	0%	0%	0%	100%	0.1746258	1.6526518	0.0010778	0.0102005		
B	Internal Rd B	Bothbound	4	361	35	37%	0%	25%	0%	3%	0%	0%	3%	0%	0%	0%	21%	0%	0%	0%	0%	0%	100%	0.2003624	1.9533961	0.0019347	0.0188136		
C	Internal Rd C	Bothbound	4	521	35	29%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	57%	0%	0%	0%	0%	0%	100%	0.2271532	2.3500970	0.0012012	0.0119039		
X	1144	Reposition of Gascoigne Rd Flyover	Westbound	3	180	1670	33%	1%	11%	1%	7%	4%	13%	10%	2%	1%	1%	0%	1%	0%	0%	1%	100%	0.1487671	2.9494200	0.0124221	0.2465786		

Note: (B) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2 20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)		Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)	
		Emission Rate - Portal/Opening (g/s)		Emission Rate - Portal/Opening (g/s) - Volume source		Emission Rate - Portal/Opening (g/m2-s) - Area source				
		PM	NOx	PM	NOx	PM	NOx			(Area)
A	Area	0.00017153	0.0020618	-	-	3.49199E-07	4.19741E-06	491.2	1	0.2 x Tunnel Section A
B	Area	0.00338831	0.0407278	-	-	9.91032E-06	0.000119122	341.9	1	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)
CE	Area	0.0011322	0.0133389	-	-	1.78219E-06	2.09662E-05	835.3	1	0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
D1-D7	Volume	0.00349626	0.0420225	0.00032977	0.00202425	-	-	-	-	0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D
F	Area	0.00148012	0.0172751	-	-	5.33376E-06	6.22525E-05	277.5	1	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F
H-4	Volume	0.02671231	0.2964076	0.00445202	0.049401271	-	-	-	-	1 x Tunnel Section H + 1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x Tunnel Section K + 0.8 x 0.38 x Tunnel Section O + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section I / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section J + 0.2 x (1 - 0.14) x Tunnel Section K + 0.2 x 1/3 x Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section
JCO1	Area	0.00175421	0.019164	-	-	1.1371E-06	1.24234E-05	1542.7	-	0.5 x (Tunnel Section M + Tunnel Section N)
L1-L5	Volume	0.00434245	0.050389	0.000578993	0.006718535	-	-	-	-	1 x Tunnel Section L + 0.8 x 0.24 x Tunnel Section J + 0.8 x 0.62 x Tunnel Section O + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section I / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section
LE-L10	Volume	0.00150997	0.0174285	0.000289497	0.003359267	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
M1-M4	Volume	0.00484661	0.0519003	0.000251661	0.002904758	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel
N1-N4	Volume	0.00150997	0.0174285	0.000251661	0.002904758	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
NS-N8	Volume	0.00484661	0.0519003	0.000251661	0.002904758	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel
P1-P4	Volume	0.00484661	0.0519003	0.000251661	0.002904758	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel
PS-P8	Volume	0.00484661	0.0519003	0.000251661	0.002904758	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel
W1-W8	Volume	0.01242206	0.2462766	0.004529339	0.10900032	-	-	-	-	1 x Tunnel W
WB-W16	Volume	0.01242206	0.2462766	0.004529339	0.10900032	-	-	-	-	1 x Tunnel X
T01-T10	Volume	0.00140458	0.0135727	0.000289497	0.003359267	-	-	-	-	1/3 x Basement roads A,B,C
T11-T20	Volume	0.00140458	0.0135727	0.000289497	0.003359267	-	-	-	-	1/3 x Basement roads A,B,C
BaseA	Volume	0.00140458	0.0135727	0.000289497	0.003359267	-	-	-	-	1/3 x Basement roads A,B,C
BaseC	Volume	0.00140458	0.0135727	0.000289497	0.003359267	-	-	-	-	1/3 x Basement roads A,B,C
901-930	Volume	-	-	-	-	-	-	-	-	1 x Tunnel Y
904-906	Volume	-	-	-	-	-	-	-	-	1 x Tunnel Z
V1	Paint	-	-	-	-	-	-	-	-	from 1-4

Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (#H11-12)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	#H 11-12 (2015 EIA, 19-12-2011.x16)																				Rate (g/km-PM)	NOx	Emission Rate (g/s)	
							PC	taxi	LGV3	LGV4	LGV5	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBS0	FBSD	MC	Total	PM	NOx					
A'	73	Lin Cheung Rd (underpass)	Northbound	3	272	265	51%	2%	22%	0%	4%	2%	8%	4%	2%	2%	0%	2%	2%	0%	0%	100%	0.1149823	1.3988324	0.0098179	0.0075222				
B'	73	Lin Cheung Rd (underpass)	Northbound	3	272	265	51%	2%	22%	0%	4%	2%	8%	4%	2%	2%	0%	2%	2%	0%	0%	100%	0.1149823	1.3988324	0.0023022	0.0262728				
C'	73	Lin Cheung Rd (underpass)	Northbound	3	110	265	51%	2%	22%	0%	4%	2%	8%	4%	2%	2%	0%	2%	2%	0%	0%	100%	0.1149823	1.3988324	0.0099310	0.0113349				
D'	73	Lin Cheung Rd (underpass)	Northbound	3	176	265	51%	2%	22%	0%	4%	2%	8%	4%	2%	2%	0%	2%	2%	0%	0%	100%	0.1149823	1.3988324	0.0014897	0.0181356				
E'	72	Lin Cheung Rd (underpass)	Southbound	3	155	735	53%	1%	24%	0%	2%	2%	8%	3%	2%	1%	0%	2%	1%	0%	1%	100%	0.1151251	1.3383639	0.0094428	0.0469893				
F'	72	Lin Cheung Rd (depressed)	Southbound	3	172	735	53%	1%	24%	0%	2%	2%	8%	3%	2%	1%	0%	2%	1%	0%	1%	100%	0.1151251	1.3383639	0.0040428	0.0469893				
G'	118	Lin Cheung Rd (depressed)	Southbound	3	121	885	51%	1%	24%	1%	2%	2%	8%	3%	2%	1%	0%	2%	2%	0%	1%	100%	0.1137843	1.3521388	0.0033846	0.0402025				
H'	119	Austin Rd W (depressed)	Eastbound	3	173	1365	25%	1%	56%	0%	1%	1%	4%	2%	1%	1%	0%	0%	1%	1%	2%	100%	0.1688537	1.9255075	0.0112384	0.1201691				
I'	117	Austin Rd W (depressed)	Eastbound	3	194	400	26%	1%	55%	0%	1%	1%	4%	2%	1%	0%	0%	0%	1%	1%	2%	100%	0.1649995	1.8596684	0.0035568	0.0400982				
J'	116	Austin Rd W (depressed)	Westbound	3	194	420	27%	1%	54%	0%	1%	1%	4%	1%	1%	0%	2%	0%	1%	1%	2%	100%	0.1644221	1.8491397	0.0037214	0.0418522				
K'	114	Lin Cheung Rd (depressed)	Southbound	3	95	200	48%	3%	25%	0%	3%	3%	5%	3%	3%	0%	0%	3%	3%	0%	0%	100%	0.1182355	1.4507647	0.0006240	0.0076569				
L'	112	Lin Cheung Rd (depressed)	Northbound	3	95	430	51%	1%	22%	0%	2%	2%	8%	3%	2%	1%	0%	2%	1%	0%	1%	100%	0.1160714	1.3612400	0.0013220	0.0154464				
M'	84	Lin Cheung Rd	Southbound	3	55	750	52%	1%	25%	0%	2%	2%	8%	3%	2%	1%	0%	2%	1%	0%	1%	100%	0.1160938	1.3369225	0.0013544	0.0155975				
N'	77	Lin Cheung Rd	Northbound	3	55	605	51%	1%	24%	0%	2%	2%	8%	3%	2%	1%	0%	2%	2%	0%	1%	100%	0.1163359	1.3867050	0.0010949	0.0130504				
O'	111	Austin Rd W (depressed)	Eastbound	3	52	1145	25%	2%	56%	0%	1%	1%	4%	2%	1%	0%	0%	1%	1%	2%	2%	100%	0.1693797	1.9231642	0.0028013	0.0301531				
P'	110	Austin Rd W (depressed)	Westbound	3	52	655	26%	2%	54%	0%	2%	2%	5%	2%	1%	1%	1%	0%	1%	1%	2%	100%	0.1670599	1.9604204	0.0015382	0.0179642				
W	88	West Kowloon Highway (WKH)	Northbound	2	1970	3195	81%	0%	16%	0%	2%	2%	8%	4%	3%	2%	2%	0%	5%	2%	3%	100%	0.0617470	1.4910877	0.0079569	2.6068005				
A	Internal Rd A	Bothbound	4	404	50	40%	0%	30%	0%	0%	0%	0%	10%	0%	0%	20%	0%	0%	0%	0%	0%	100%	0.1735904	1.4895423	0.0009740	0.0085980				
B	Internal Rd B	Bothbound	4	361	95	37%	0%	28%	0%	0%	0%	0%	8%	0%	0%	21%	0%	0%	0%	0%	0%	100%	0.2030687	1.9541474	0.0019343	0.0186160				
C	Internal Rd C	Bothbound	4	521	35	29%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	57%	0%	0%	0%	0%	100%	0.2270515	2.3488783	0.0012007	0.0118987				
X'	I144	Repositioning of Gascoigne Rd Flyover	Westbound	3	180	1655	34%	1%	11%	1%	1%	0%	13%	11%	2%	1%	1%	0%	1%	0%	1%	100%	0.1418055	2.8319584	0.0117179	0.2343446				

Note: (1) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2 20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)		Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)	
		PM	NOx	PM	NOx	PM	NOx			(Area)
		Emission Rate - Portal/Opening (g/s)		Emission Rate - Portal/Opening (g/s) - Volume source		Emission Rate - Portal/Opening (g/s) - Area source				
A	Area	0.00012957	0.0015044	--	--	2.51576E-07	3.08277E-06	491.2	1	0.2 x Tunnel Section A
B	Area	0.00244106	0.0297183	--	--	7.1397E-06	8.6921E-05	341.9	1	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x ( 30.935 / 50 ) x ( 0.8 x Tunnel Section A + 1 x Tunnel Section B )
CE	Area	0.00058594	0.0116031	--	--	1.95193E-06	1.8264E-05	835.3	1	0.2 x Tunnel Section C + 0.2 x ( 1/3 x ( 19.065 / 50 ) x ( 0.8 x Tunnel Section A + 1 x Tunnel Section B ) ) + 0.2 x Tunnel Section E
D1-D7	Volume	0.00251984	0.0303632	0.000229889	0.002820491	--	--	--	1	0.8 x Tunnel Section C + 0.8 x ( 1/3 x ( 19.065 / 50 ) x ( 0.8 x Tunnel Section A + 1 x Tunnel Section B ) ) + 1 x Tunnel Section D
F	Area	0.00139148	0.0161764	--	--	5.01435E-06	5.82932E-05	277.5	1	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F
I1-4	Volume	0.02458368	0.2780512	0.004163947	0.04634187	--	--	--	1	1 x Tunnel Section I + 1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x tunnel section K + 0.8 x 0.38 x tunnel Section O + 0.8 x ( 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) ) x ( traffic flow of Tunnel Section I / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section J + 0.8 x 0.24 x tunnel section J + 0.8 x 0.62 x tunnel Section O + 0.8 x ( 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) ) x ( traffic flow of Tunnel Section I / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O )
JC01	Area	0.00168583	0.0183094	0.000499934	0.00580893	--	--	--	1	0.2 x Tunnel Section J + 0.2 x ( 1 - 0.14 ) x Tunnel Section K + 0.2 x Tunnel Section O + 0.2 x 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) x ( traffic flow of Tunnel Section L / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O )
L1-L5	Volume	0.00374951	0.043567	--	--	--	--	--	1	0.5 x ( Tunnel Section M + Tunnel Section N)
LE-L10	Volume	0.00122464	0.014324	0.00024967	0.002904485	--	--	--	1	0.5 x ( Tunnel Section M + Tunnel Section N)
M1-M4	Volume	0.00470516	0.0503831	0.00024109	0.002387332	--	--	--	1	1 x Tunnel Section P + 0.8 x 0.76 x tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x ( 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) ) x ( traffic flow of Tunnel Section P / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O )
M5-M8	Volume	0.00122464	0.014324	0.000102053	0.001193666	--	--	--	1	0.5 x ( Tunnel Section M + Tunnel Section N)
N1-N4	Volume	0.00122464	0.014324	0.000204106	0.002387332	--	--	--	1	0.5 x ( Tunnel Section M + Tunnel Section N)
NE-N8	Volume	0.00470516	0.0503831	0.000102053	0.001193666	--	--	--	1	0.5 x ( Tunnel Section M + Tunnel Section N)
P1-P4	Volume	0.00470516	0.0503831	0.000324109	0.003287332	--	--	--	1	1 x Tunnel Section P + 0.8 x 0.76 x tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x ( 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) ) x ( traffic flow of Tunnel Section P / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O )
PS-P8	Volume	0.00122464	0.014324	0.000320596	0.004198595	--	--	--	1	1 x Tunnel Section P + 0.8 x 0.76 x tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x ( 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) ) x ( traffic flow of Tunnel Section P / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O )
W1-W8	Volume	0.01795692	2.0698005	0.00898641	0.217448371	--	--	--	1	1 x Tunnel Section P + 0.8 x 0.76 x tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x ( 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) ) x ( traffic flow of Tunnel Section P / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O )
W9-W16	Volume	0.01171785	0.2343446	0.004498205	0.109824185	--	--	--	1	1 x Tunnel W
T01-T10	Volume	0.00136975	0.0129569	0.00079119	0.015622976	--	--	--	1	1 x Tunnel X
T11-T20	Volume	0.00136975	0.0129569	0.000592595	0.007811488	--	--	--	1	1 x Tunnel X
BaseA	Volume	0.00136975	0.0129569	0.001369753	0.012956888	--	--	--	1	1/3 x Basement roads A,B,C
BaseC	Volume	0.00136975	0.0129569	0.001369753	0.012956888	--	--	--	1	1/3 x Basement roads A,B,C
G01-G30	Volume	--	--	--	--	--	--	--	1	1 x Tunnel Y
G01-G03	Volume	--	--	--	--	--	--	--	1	1 x Tunnel Z
G04-G06	Volume	--	--	--	--	--	--	--	1	1 x Tunnel Z
V1	Point	--	--	--	--	--	--	--	from I-4	--

Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (H12-13)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	H12-13 (2015 EIA, 19-12-2011.x1e)																				Rate (g/km-PM)	Rate (g/s)-NOx	Emission Rate (g/s)	
							PC	taxi	LGV3	LGV4	LGV5	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBS0	FBDD	MC	Total	PM	NOx					
							2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%				
A	73	Lin Chung Rd (underpass)	Northbound	3	275	275	53%	2%	22%	0%	4%	2%	5%	4%	2%	2%	2%	0%	2%	2%	0%	0%	100%	0.1115212	1.3522164	0.0098219	0.0075405			
B	73	Lin Chung Rd (underpass)	Northbound	3	272	275	53%	2%	22%	0%	4%	2%	5%	4%	2%	2%	2%	0%	2%	2%	0%	0%	100%	0.1115212	1.3522164	0.0098219	0.0075405			
C	73	Lin Chung Rd (underpass)	Northbound	3	110	275	53%	2%	22%	0%	4%	2%	5%	4%	2%	2%	2%	0%	2%	2%	0%	0%	100%	0.1115212	1.3522164	0.0098219	0.0113624			
D	73	Lin Chung Rd (underpass)	Northbound	3	176	275	53%	2%	22%	0%	4%	2%	5%	4%	2%	2%	2%	0%	2%	2%	0%	0%	100%	0.1115212	1.3522164	0.0098219	0.01181796			
E	72	Lin Chung Rd (underpass)	Southbound	3	155	820	52%	1%	23%	0%	2%	2%	8%	4%	2%	2%	1%	0%	2%	2%	0%	1%	100%	0.1148320	1.3586954	0.0093054	0.0082972			
F	72	Lin Chung Rd (depressed)	Southbound	3	172	820	52%	1%	23%	0%	2%	2%	8%	4%	2%	2%	1%	0%	2%	2%	0%	1%	100%	0.1148320	1.3586954	0.0093054	0.0082972			
G	118	Lin Chung Rd (depressed)	Southbound	3	121	720	52%	1%	23%	1%	2%	2%	8%	4%	2%	2%	1%	0%	2%	2%	1%	1%	100%	0.1132003	1.3265377	0.0027294	0.0319570			
H	119	Austin Rd W (depressed)	Eastbound	3	173	1145	27%	1%	54%	0%	1%	1%	4%	2%	1%	1%	0%	0%	1%	1%	1%	2%	100%	0.1655421	1.7844444	0.0091087	0.0840693			
I	117	Austin Rd W (depressed)	Eastbound	3	194	340	28%	1%	53%	0%	1%	1%	4%	2%	1%	0%	0%	1%	1%	1%	1%	1%	100%	0.1661145	1.7972794	0.0030438	0.0205301			
J	116	Austin Rd W (depressed)	Westbound	3	194	365	29%	1%	52%	0%	1%	1%	4%	1%	1%	0%	3%	0%	1%	1%	1%	1%	100%	0.1664142	1.7891971	0.0032733	0.0351925			
K	114	Lin Chung Rd (depressed)	Southbound	3	95	110	84%	0%	32%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0981950	0.8903022	0.0002850	0.0025861			
L	112	Lin Chung Rd (depressed)	Northbound	3	95	415	51%	1%	23%	0%	2%	2%	8%	4%	2%	2%	1%	0%	2%	2%	1%	1%	100%	0.1165754	1.3891713	0.0113286	0.0152984			
M	84	Lin Chung Rd	Southbound	3	55	620	52%	1%	23%	0%	2%	2%	8%	4%	2%	2%	1%	0%	2%	2%	0%	1%	100%	0.1172912	1.3848692	0.0111312	0.0133563			
N	77	Lin Chung Rd	Northbound	3	56	580	52%	1%	24%	0%	3%	2%	8%	3%	3%	2%	1%	0%	3%	2%	0%	1%	100%	0.1173109	1.3960316	0.0107677	0.0128308			
O	111	Austin Rd W (depressed)	Eastbound	3	52	635	27%	2%	54%	0%	2%	2%	4%	2%	1%	1%	1%	0%	1%	2%	2%	2%	100%	0.1644198	1.7735435	0.0022268	0.0296527			
P	110	Austin Rd W (depressed)	Westbound	3	52	555	28%	1%	52%	0%	2%	2%	4%	2%	1%	1%	1%	0%	1%	1%	1%	1%	100%	0.1673237	1.8281113	0.0015289	0.0138633			
W	98	West Kowloon Highway (WKH)	Northbound	2	1970	2710	83%	0%	16%	0%	2%	2%	6%	4%	3%	2%	2%	0%	5%	2%	3%	0%	100%	0.0588529	1.4669904	0.0887602	2.1755061			
A	Internal Rd A	Bothbound	4	404	45	44%	0%	33%	0%	0%	0%	0%	0%	0%	0%	0%	22%	0%	0%	0%	0%	0%	100%	0.1699591	1.4821729	0.0008953	0.0074850			
B	Internal Rd B	Bothbound	4	361	80	38%	0%	25%	0%	0%	0%	0%	0%	0%	0%	0%	23%	0%	0%	0%	0%	0%	100%	0.1802552	1.7130959	0.0014458	0.0137229			
C	Internal Rd C	Bothbound	4	521	35	29%	0%	14%	0%	0%	0%	0%	0%	0%	0%	0%	57%	0%	0%	0%	0%	0%	100%	0.2889978	2.3433221	0.0012000	0.0118696			
X	I144	Reposition of Gascoigne Rd Flyover	Westbound	3	180	1635	34%	1%	11%	1%	7%	4%	12%	11%	2%	1%	1%	0%	1%	9%	9%	1%	100%	0.1401460	2.8205301	0.0114569	0.2305783			

Note: (B) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
 Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

**Scenario 2** 20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)				Volume source - calculated by number of portal/opening involved				Area source - calculated by emission rate divided by area				Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)
		Emission Rate - Portal/Opening (g/s)		Emission Rate - Portal/Opening (g/s) - Volume source		Emission Rate - Portal/Opening (g/s) - Area source		Emission Rate - Portal/Opening (g/s) - Area source		Emission Rate - Portal/Opening (g/s) - Area source		Emission Rate - Portal/Opening (g/s) - Area source			
		PM	NOx	PM	NOx	PM	NOx	Area	Area	PM	NOx	Area	Area		
A	Area	0.00012438	0.0015081	-	-	2.53211E-07	3.07023E-06	491.2	1	-	-	-	-	0.2 x Tunnel Section A	
B	Area	0.00245693	0.0297907	-	-	7.1861E-06	8.71328E-05	341.9	1	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)					
CE	Area	0.00067204	0.0103935	-	-	1.37265E-06	1.63999E-05	635.3	1	0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E					
D1-D7	Volume	0.00253521	0.0307939	0.00241448	0.002827907	-	-	-	-	-	-	-	-	0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D	
F	Area	0.00117078	0.0138517	-	-	4.21302E-06	4.99162E-05	277.5	1	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F					
H-I	Volume	0.02053802	0.2286662	0.003423003	0.038111033	-	-	-	-	-	-	-	-	1 x Tunnel Section I + 1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x Tunnel Section K + 0.8 x 0.38 x Tunnel Section O + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section I / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section J + traffic flow of Tunnel Section L / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + Tunnel Section N)))	
J	Area	0.00138139	0.014479	-	-	8.95434E-07	9.3855E-06	1542.7	1	0.2 x Tunnel Section J = 0.2 x (1 - 0.14) x Tunnel Section K + 0.2 x Tunnel Section O = 0.2 x 1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + Tunnel Section N)))					
L1-L5	Volume	0.00333135	0.0380502	0.00444418	0.005073366	-	-	-	-	-	-	-	-	1 x Tunnel Section L + 0.8 x 0.24 x Tunnel Section J + 0.8 x 0.62 x Tunnel Section O = 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + Tunnel Section N)))	
L6-L10	Volume	0.00110393	0.0130936	0.00022209	0.002536683	-	-	-	-	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)	
M1-M4	Volume	0.00110393	0.0130936	0.000193989	0.00218226	-	-	-	-	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + Tunnel Section N)))	
M5-M8	Volume	0.00110393	0.0130936	0.000183989	0.00218226	-	-	-	-	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)	
N1-N4	Volume	0.00110393	0.0130936	0.000183989	0.00218226	-	-	-	-	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)	
N5-N8	Volume	0.00110393	0.0130936	0.000183989	0.00218226	-	-	-	-	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)	
P1-P4	Volume	0.00383639	0.0393342	0.00039732	0.004555703	-	-	-	-	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + Tunnel Section N)))	
P5-P8	Volume	0.00383639	0.0393342	0.00039732	0.004555703	-	-	-	-	-	-	-	-	1 x Tunnel W	
W1-W8	Volume	0.00383639	0.0393342	0.00039732	0.004555703	-	-	-	-	-	-	-	-	1 x Tunnel W	
W9-W16	Volume	0.00383639	0.0393342	0.00039732	0.004555703	-	-	-	-	-	-	-	-	1 x Tunnel W	
T01-T10	Volume	0.01145693	0.2305783	0.00070796	0.008371896	-	-	-	-	-	-	-	-	1 x Tunnel X	
T11-T20	Volume	0.01145693	0.2305783	0.00070796	0.008371896	-	-	-	-	-	-	-	-	1 x Tunnel X	
BaseA	Volume	0.00116803	0.0110258	0.001168035	0.011025814	-	-	-	-	-	-	-	-	1/3 x Basement roads A,B,C	
BaseC	Volume	0.00116803	0.0110258	0.001168035	0.011025814	-	-	-	-	-	-	-	-	1/3 x Basement roads A,B,C	
901-909	Volume	-	-	-	-	-	-	-	-	-	-	-	-	1 x Tunnel Y	
901-903	Volume	-	-	-	-	-	-	-	-	-	-	-	-	1 x Tunnel Z	
904-906	Volume	-	-	-	-	-	-	-	-	-	-	-	-	1 x Tunnel Z	
V1	Paint	-	-	-	-	-	-	-	-	-	-	-	-	from 1-4	

Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (H13-14)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	H13-14 (2015 EIA, 19-12-2011.x16)																		Rate (g/km-PM)		Emission Rate (g/s)	
							PC	taxi	LGV3	LGV4	LGV5	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBS0	FBDD	MC	Total	PM	NOx	PM	NOx	
A <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	73	355	52%	1%	23%	0%	3%	2%	8%	4%	1%	1%	0%	3%	1%	0%	0%	100%	0.1205109	1.4308445	0.0098675	0.0103001		
B <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	272	355	52%	1%	23%	0%	3%	2%	8%	4%	1%	1%	0%	3%	1%	0%	0%	100%	0.1205109	1.4308445	0.0098675	0.0103001		
C <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	110	355	52%	1%	23%	0%	3%	2%	8%	4%	1%	1%	0%	3%	1%	0%	0%	100%	0.1205109	1.4308445	0.0098675	0.0103001		
D <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	176	355	52%	1%	23%	0%	3%	2%	8%	4%	1%	1%	0%	3%	1%	0%	0%	100%	0.1205109	1.4308445	0.0098675	0.0103001		
E <sup>1</sup>	72	Lin Chung Rd (underpass)	Southbound	3	155	620	54%	1%	23%	0%	2%	2%	8%	4%	2%	1%	0%	2%	2%	0%	1%	100%	0.1107060	1.2881744	0.0098675	0.0103001		
F <sup>1</sup>	72	Lin Chung Rd (depressed)	Southbound	3	172	620	54%	1%	23%	0%	2%	2%	8%	4%	2%	1%	0%	2%	2%	0%	1%	100%	0.1107060	1.2881744	0.0098675	0.0103001		
G <sup>1</sup>	118	Lin Chung Rd (depressed)	Southbound	3	121	705	53%	1%	23%	1%	3%	1%	8%	4%	2%	1%	0%	2%	1%	0%	1%	100%	0.1124899	1.3189998	0.0098675	0.0103001		
H <sup>1</sup>	119	Austin Rd W (depressed)	Eastbound	3	173	1110	29%	1%	53%	0%	1%	1%	3%	2%	1%	1%	0%	0%	0%	1%	2%	100%	0.1614658	1.6922797	0.0098675	0.0103001		
I <sup>1</sup>	117	Austin Rd W (depressed)	Eastbound	3	194	335	30%	1%	52%	0%	1%	1%	4%	3%	1%	0%	0%	0%	0%	1%	1%	100%	0.1581962	1.6705672	0.0098675	0.0103001		
J <sup>1</sup>	116	Austin Rd W (depressed)	Westbound	3	194	375	31%	1%	51%	0%	1%	1%	4%	3%	1%	0%	0%	0%	0%	1%	1%	100%	0.1579677	1.6500713	0.0098675	0.0103001		
K <sup>1</sup>	114	Lin Chung Rd (depressed)	Southbound	3	95	395	53%	0%	32%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1013909	0.9325919	0.0098675	0.0103001		
L <sup>1</sup>	112	Lin Chung Rd (depressed)	Northbound	3	95	470	53%	1%	23%	0%	2%	2%	5%	3%	2%	1%	0%	2%	1%	0%	1%	100%	0.1127220	1.2817837	0.0098675	0.0103001		
M <sup>1</sup>	84	Lin Chung Rd	Southbound	3	55	585	53%	1%	24%	0%	3%	2%	5%	4%	2%	2%	1%	0%	2%	0%	1%	100%	0.1111367	1.2941034	0.0098675	0.0103001		
N <sup>1</sup>	77	Lin Chung Rd	Northbound	3	55	715	52%	1%	23%	0%	3%	2%	5%	4%	2%	2%	1%	0%	2%	1%	0%	100%	0.1144628	1.3362030	0.0098675	0.0103001		
O <sup>1</sup>	111	Austin Rd W (depressed)	Eastbound	3	52	690	27%	1%	53%	0%	2%	2%	4%	2%	1%	1%	0%	1%	2%	2%	2%	100%	0.1642927	1.7622519	0.0098675	0.0103001		
P <sup>1</sup>	110	Austin Rd W (depressed)	Westbound	3	52	505	28%	1%	51%	0%	2%	2%	5%	2%	1%	1%	0%	1%	1%	1%	2%	100%	0.1677254	1.8466717	0.0098675	0.0103001		
Q <sup>1</sup>	98	West Kowloon Highway (WKH)	Northbound	2	1970	2770	53%	0%	15%	0%	3%	2%	6%	4%	3%	2%	2%	0%	5%	2%	3%	0%	100%	0.0582988	1.4393940	0.0098675	2.1818415	
A	Internal Rd A	Bothbound	4	404	35	45%	0%	29%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1785564	1.6120202	0.0098675	0.0083177		
B	Internal Rd B	Bothbound	4	361	55	38%	0%	31%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1855212	1.5729274	0.0098675	0.0103001		
C	Internal Rd C	Bothbound	4	521	30	33%	0%	17%	0%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	0%	100%	0.2189880	2.1353672	0.0098675	0.0092711		
X <sup>1</sup>	I144	Reposition of Gascoigne Rd Flyover	Westbound	3	180	1620	34%	0%	11%	1%	1%	4%	12%	11%	2%	1%	0%	1%	1%	0%	1%	100%	0.1397600	2.7864835	0.0113206	0.2257052		

Note: (1) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
 Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2 20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)		Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)	
		PM	NOx	PM	NOx	PM	NOx			(Area)
A	Area	0.0001795	0.00206	-	-	3.5321E-07	4.19385E-06	491.2	1	0.2 x Tunnel Section A
B	Area	0.00342734	0.0406933	-	-	1.0024E-05	0.000119021	341.9	1	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)
CE	Area	0.0005623	0.0111666	-	-	1.48897E-05	1.75769E-05	635.3	1	0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
D1-D7	Volume	0.00353653	0.0418698	0.00039813	0.00399901	-	-	-	-	0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D
F	Area	0.00112871	0.0131337	-	-	4.06742E-05	4.73285E-05	277.5	1	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F
H-4	Volume	0.01951967	0.2136215	0.00253279	0.025603583	-	-	-	-	1 x Tunnel Section I + 1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x Tunnel Section K + 0.8 x 0.38 x Tunnel Section O + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B - Tunnel Section Internal Road C) x (traffic flow of Tunnel Section I / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section J + 0.8 x 0.24 x Tunnel Section J + 0.8 x 0.62 x Tunnel Section O + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section L + traffic flow of Tunnel Section L))
JCO1	Area	0.00129316	0.0134029	-	-	8.38247E-07	9.68797E-06	1542.7	-	0.2 x Tunnel Section J + 0.2 x (1 - 0.14) x Tunnel Section K + 0.2 x Tunnel Section O + 0.2 x 1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section L + traffic flow of Tunnel Section L))
L1-L5	Volume	0.0033292	0.0371131	0.000443894	0.004848118	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
LE1-L10	Volume	0.00114221	0.013319	0.00021947	0.002474209	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
M1-M4	Volume	0.0033292	0.0370785	0.00190369	0.002219829	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section L + traffic flow of Tunnel Section L))
M5-M8	Volume	0.00114221	0.013319	0.00190369	0.002219829	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
N1-N4	Volume	0.0033292	0.0370785	0.00190369	0.002219829	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
NS-N8	Volume	0.0033292	0.0370785	0.00190369	0.002219829	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
P1-P4	Volume	0.0033292	0.0370785	0.00190369	0.002219829	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section L + traffic flow of Tunnel Section L))
PS-P8	Volume	0.0033292	0.0370785	0.00190369	0.002219829	-	-	-	-	1 x Tunnel W
W1-W8	Volume	0.0033292	0.0370785	0.00190369	0.002219829	-	-	-	-	1 x Tunnel X
WB-W16	Volume	0.0033292	0.0370785	0.00190369	0.002219829	-	-	-	-	1 x Tunnel Y
T01-T10	Volume	0.0033292	0.0370785	0.00190369	0.002219829	-	-	-	-	1 x Tunnel Z
T11-T20	Volume	0.0033292	0.0370785	0.00190369	0.002219829	-	-	-	-	1 x Tunnel Z
BaseA	Volume	0.00094289	0.0086184	0.00094289	0.0086184	-	-	-	-	1/3 x Basement roads A,B,C
BaseC	Volume	0.00094289	0.0086184	0.00094289	0.0086184	-	-	-	-	1/3 x Basement roads A,B,C
901-930	Volume	-	-	-	-	-	-	-	-	1 x Tunnel Y
901-903	Volume	-	-	-	-	-	-	-	-	1 x Tunnel Z
904-906	Volume	-	-	-	-	-	-	-	-	1 x Tunnel Z
V1	Paint	-	-	-	-	-	-	-	-	from 1-4

Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (H14-15)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	H14-15 (2015 EIA, 19-12-2011.x16)																		Rate (g/km-PM)	Rate (g/s)-NOx	Emission Rate (g/s)	
							PC	taxi	LGV3	LGV4	LGV5	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBS0	FBDD	MC	Total	PM			NOx	
A <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	290	53%	2%	22%	0%	3%	2%	5%	3%	2%	2%	2%	0%	2%	0%	100%	0.1108930	1.3257027	0.0098521	0.0077959				
B <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	272	290	53%	2%	22%	0%	3%	2%	5%	3%	2%	2%	2%	0%	2%	100%	0.1108930	1.3257027	0.0098521	0.0077959				
C <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	110	290	53%	2%	22%	0%	3%	2%	5%	3%	2%	2%	2%	0%	2%	100%	0.1108930	1.3257027	0.0098521	0.0077959				
D <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	176	290	53%	2%	22%	0%	3%	2%	5%	3%	2%	2%	2%	0%	2%	100%	0.1108930	1.3257027	0.0098521	0.0077959				
E <sup>1</sup>	72	Lin Chung Rd (underpass)	Southbound	3	155	830	55%	1%	23%	0%	2%	2%	8%	4%	2%	2%	1%	0%	2%	100%	0.1097523	1.2790129	0.0093026	0.0084983				
F <sup>1</sup>	72	Lin Chung Rd (depressed)	Southbound	3	172	830	55%	1%	23%	0%	2%	2%	8%	4%	2%	2%	1%	0%	2%	100%	0.1097523	1.2790129	0.0093026	0.0084983				
G <sup>1</sup>	118	Lin Chung Rd (depressed)	Southbound	3	121	660	54%	1%	22%	1%	3%	1%	5%	4%	2%	1%	1%	0%	2%	100%	0.1105299	1.2991527	0.0095634	0.0081295				
H <sup>1</sup>	119	Austin Rd W (depressed)	Eastbound	3	173	1090	51%	1%	51%	0%	1%	1%	3%	2%	1%	1%	0%	0%	1%	1%	100%	0.1582427	1.6918077	0.0062889	0.0068178			
I <sup>1</sup>	117	Austin Rd W (depressed)	Eastbound	3	194	335	33%	1%	49%	0%	1%	1%	4%	3%	1%	0%	0%	0%	1%	1%	100%	0.1515504	1.6320511	0.0027359	0.0294931			
J <sup>1</sup>	116	Austin Rd W (depressed)	Westbound	3	194	390	30%	1%	49%	0%	1%	1%	4%	3%	1%	0%	0%	0%	1%	1%	100%	0.1522437	1.6011564	0.0031997	0.036510			
K <sup>1</sup>	114	Lin Chung Rd (depressed)	Southbound	3	95	95	83%	0%	32%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	100%	0.1017290	0.9382234	0.0002950	0.002321				
L <sup>1</sup>	112	Lin Chung Rd (depressed)	Northbound	3	95	365	52%	1%	22%	0%	3%	3%	5%	4%	2%	1%	1%	0%	1%	100%	0.1110324	1.2946555	0.0010752	0.0124643				
M <sup>1</sup>	84	Lin Chung Rd	Southbound	3	55	570	54%	1%	23%	0%	3%	2%	5%	4%	2%	2%	1%	0%	2%	100%	0.1106403	1.3055727	0.0090810	0.0115849				
N <sup>1</sup>	77	Lin Chung Rd	Northbound	3	55	550	53%	1%	23%	0%	3%	2%	5%	5%	2%	2%	1%	0%	2%	100%	0.1124187	1.3362689	0.0090810	0.0114325				
O <sup>1</sup>	111	Austin Rd W (depressed)	Eastbound	3	52	660	51%	1%	51%	0%	2%	2%	4%	2%	1%	1%	1%	0%	1%	1%	100%	0.1574999	1.6848658	0.0019595	0.0205300			
P <sup>1</sup>	110	Austin Rd W (depressed)	Westbound	3	52	500	29%	1%	30%	0%	2%	2%	5%	2%	1%	1%	0%	1%	1%	100%	0.1651335	1.8474765	0.0011925	0.0133429				
W	88	West Kowloon Highway (WKH)	Northbound	2	1970	3380	55%	0%	15%	0%	3%	2%	5%	4%	3%	2%	2%	0%	5%	2%	100%	0.0568192	1.4044621	0.0047235	2.5977088			
A	Internal Rd A	Bothbound	4	404	40	90%	0%	25%	0%	0%	0%	0%	0%	0%	0%	25%	0%	0%	0%	100%	0.1545502	1.4418274	0.0006938	0.0062917				
B	Internal Rd B	Bothbound	4	361	70	45%	0%	25%	0%	0%	0%	0%	0%	0%	0%	21%	0%	0%	0%	100%	0.1658985	1.4511263	0.0011647	0.0101861				
C	Internal Rd C	Bothbound	4	521	30	33%	0%	17%	0%	0%	0%	0%	0%	0%	0%	50%	0%	0%	0%	100%	0.2198628	2.1022109	0.0099290	0.0091271				
X	I144	Repositioning of Gascoigne Rd Flyover	Westbound	3	180	1930	35%	1%	11%	1%	7%	4%	12%	11%	2%	1%	1%	0%	1%	100%	0.1388937	2.7873581	0.0134032	0.2898901				

Note: (1) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
 Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2

20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)		Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)	
		Emission Rate - Portal/ Opening (g/s)		Emission Rate - Portal/ Opening (g/s) - Volume source		Emission Rate - Portal/ Opening (g/s) - Area source				
		PM	NOx	PM	NOx	PM	NOx			(Area)
A	Area	0.00013042	0.0015592	-	-	2.65518E-07	3.17421E-06	491.2	1	0.2 x Tunnel Section A
B	Area	0.00257635	0.0307997	-	-	7.53338E-06	9.00839E-05	341.9	1	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)
CE	Area	0.00069696	0.0101835	-	-	1.36489E-06	1.60318E-05	635.3	1	0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
D1-D7	Volume	0.00255943	0.031761	0.00253184	0.00326761	-	-	-	-	0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D
F	Area	0.00113703	0.0132506	-	-	4.09742E-06	4.77498E-05	277.5	1	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F
H-4	Volume	0.01897423	0.2036733	0.003162372	0.03497888	-	-	-	-	1 x Tunnel Section I + 1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x Tunnel Section K + 0.8 x 0.38 x Tunnel Section O + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B - Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section I / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section J + traffic flow of Tunnel Section L / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O))
J-K1	Area	0.00126091	0.0130277	-	-	6.17342E-07	8.44477E-06	1542.7	1	0.2 x Tunnel Section J + 0.2 x (1 - 0.14) x Tunnel Section K + 0.2 x Tunnel Section O + 0.2 x 1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O))
L1-L5	Volume	0.00286588	0.0324274	0.000384784	0.004323649	-	-	-	-	1 x Tunnel Section L + 0.8 x 0.24 x Tunnel Section J + 0.8 x 0.62 x Tunnel Section O + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O))
LE-L10	Volume	0.00097141	0.0115087	0.000192392	0.002161825	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
M1-M4	Volume	0.00097141	0.0115087	0.000191901	0.001918122	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
MS-M8	Volume	0.00097141	0.0115087	0.000191901	0.001918122	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
N1-N4	Volume	0.00097141	0.0115087	0.000191901	0.001918122	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
NS-N8	Volume	0.00097141	0.0115087	0.000191901	0.001918122	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
P1-P4	Volume	0.00362318	0.0371595	0.00003893	0.000193255	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O))
PS-P8	Volume	0.00362318	0.0371595	0.00003893	0.000193255	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O))
W1-W8	Volume	0.00362318	0.0371595	0.00003893	0.000193255	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O))
W9-W16	Volume	0.00362318	0.0371595	0.00003893	0.000193255	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section O))
T01-T10	Volume	0.01340324	0.2689001	0.004363478	0.108237886	-	-	-	-	1 x Tunnel W
T11-T20	Volume	0.01340324	0.2689001	0.004363478	0.108237886	-	-	-	-	1 x Tunnel X
BaseA	Volume	0.00092909	0.008535	0.000929091	0.008534982	-	-	-	-	1/3 x Basement roads A,B,C
BaseC	Volume	0.00092909	0.008535	0.000929091	0.008534982	-	-	-	-	1/3 x Basement roads A,B,C
901-930	Volume	-	-	-	-	-	-	-	-	1 x Tunnel Y
901-903	Volume	-	-	-	-	-	-	-	-	1 x Tunnel Z
904-906	Volume	-	-	-	-	-	-	-	-	1 x Tunnel Z
V1	Paint	-	-	-	-	-	-	-	-	from 1-4

Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (Hr15-16)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	Hr 15-16 (2015 EIA, 19-12-2011.x16)																Rate (g/km-PM)	NOx	Emission Rate (g/s)		
							PC	taxi	LG3	LG4	LG6	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBS0	FBD0	MC			Total	PM	NOx
A <sup>1</sup>	73	Lin Cheung Rd (underpass)	Northbound	3	272	370	54%	1%	22%	0%	3%	0%	5%	4%	1%	1%	1%	0%	2%	1%	0%	100%	0.1108224	1.3421993	0.008315	0.0100703	
B <sup>1</sup>	73	Lin Cheung Rd (underpass)	Northbound	3	272	370	54%	1%	22%	0%	3%	0%	5%	4%	1%	1%	1%	0%	2%	1%	0%	100%	0.1108224	1.3421993	0.008315	0.0100703	
D <sup>1</sup>	73	Lin Cheung Rd (underpass)	Northbound	3	110	370	54%	1%	22%	0%	3%	0%	5%	4%	1%	1%	1%	0%	2%	1%	0%	100%	0.1108224	1.3421993	0.008315	0.0100703	
D <sup>2</sup>	73	Lin Cheung Rd (underpass)	Northbound	3	176	370	54%	1%	22%	0%	3%	0%	5%	4%	1%	1%	1%	0%	2%	1%	0%	100%	0.1108224	1.3421993	0.008315	0.0100703	
E <sup>1</sup>	72	Lin Cheung Rd (underpass)	Southbound	3	155	840	55%	1%	22%	1%	3%	2%	5%	5%	2%	2%	1%	0%	2%	1%	0%	100%	0.1004353	1.1996396	0.003711	0.0366823	
E <sup>2</sup>	72	Lin Cheung Rd (depressed)	Southbound	3	172	840	55%	1%	22%	1%	3%	2%	5%	5%	2%	2%	1%	0%	2%	1%	0%	100%	0.1004353	1.1996396	0.003711	0.0366823	
G <sup>1</sup>	118	Lin Cheung Rd (depressed)	Southbound	3	121	875	54%	1%	22%	1%	3%	1%	5%	4%	2%	1%	1%	0%	1%	0%	1%	100%	0.1021868	1.2118609	0.002384	0.0274896	
H <sup>1</sup>	119	Austin Rd W (depressed)	Eastbound	3	173	1280	53%	1%	49%	0%	2%	2%	4%	3%	1%	1%	0%	0%	2%	1%	2%	100%	0.1458971	1.5789733	0.0089748	0.0971244	
I <sup>1</sup>	117	Austin Rd W (depressed)	Eastbound	3	194	400	35%	1%	48%	0%	1%	1%	5%	3%	1%	1%	0%	0%	1%	1%	1%	100%	0.1419147	1.5273814	0.003591	0.0328236	
J <sup>1</sup>	116	Austin Rd W (depressed)	Westbound	3	194	500	35%	1%	45%	0%	2%	2%	4%	2%	1%	1%	0%	0%	2%	1%	1%	100%	0.1417755	1.5644763	0.0036201	0.0421539	
K <sup>1</sup>	114	Lin Cheung Rd (depressed)	Southbound	3	95	395	63%	0%	32%	0%	0%	2%	5%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0970331	0.9105323	0.0002433	0.0022827	
L <sup>1</sup>	112	Lin Cheung Rd (depressed)	Northbound	3	95	420	55%	1%	23%	0%	2%	2%	5%	4%	2%	1%	1%	0%	1%	1%	0%	100%	0.1002029	1.1568494	0.0011152	0.0138217	
M <sup>1</sup>	84	Lin Cheung Rd	Southbound	3	55	550	54%	1%	23%	0%	3%	2%	4%	4%	2%	2%	1%	0%	2%	2%	0%	1%	100%	0.1030646	1.2325114	0.0008978	0.0107355
N <sup>1</sup>	77	Lin Cheung Rd	Northbound	3	55	665	54%	1%	23%	0%	3%	2%	5%	5%	2%	2%	1%	0%	2%	2%	0%	1%	100%	0.1049602	1.2438549	0.0010859	0.0128670
O <sup>1</sup>	111	Austin Rd W (depressed)	Eastbound	3	52	990	53%	2%	49%	0%	2%	2%	5%	3%	1%	1%	1%	0%	1%	2%	1%	100%	0.1474459	1.5816576	0.0021865	0.0228177	
P <sup>1</sup>	110	Austin Rd W (depressed)	Westbound	3	52	990	53%	1%	47%	0%	2%	2%	4%	3%	1%	1%	1%	0%	1%	2%	2%	100%	0.1468227	1.6763221	0.0012513	0.0142860	
W	88	West Kowloon Highway (WKH)	Northbound	2	1970	3445	55%	0%	14%	0%	3%	2%	5%	4%	3%	2%	2%	0%	4%	2%	3%	0%	100%	0.0555149	1.3914694	0.004657	2.623170
A	Internal Rd A	Bothbound	4	404	50	50%	0%	30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1547026	1.3996760	0.000881	0.0075171	
B	Internal Rd B	Bothbound	4	361	50	50%	0%	28%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1766884	1.6302366	0.0015862	0.0147174	
C	Internal Rd C	Bothbound	4	521	45	33%	0%	22%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.2116818	2.0191565	0.0013786	0.0131498	
X	I144	Repositioning of Cascoigne Rd Flyover	Westbound	3	180	1900	35%	0%	11%	1%	7%	4%	11%	11%	1%	1%	1%	10%	4%	1%	0%	100%	0.1297838	2.6714914	0.0123295	0.2537917	

Note: (i) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
 Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2 20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)		Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)	
		PM	NOx	PM	NOx	PM	NOx			(Area)
A	Area	0.0001663	0.002014	-	-	3.38549E-07	4.10025E-06	491.2	1	0.2 x Tunnel Section A
B	Area	0.00328497	0.0397851	-	-	9.60799E-06	0.000118365	341.9	1	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)
CE	Area	0.00069975	0.0108046	-	-	1.41827E-06	1.70074E-05	835.3	1	0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
D1-D7	Volume	0.00322822	0.003939793	-	-	-	-	-	-	0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D
DE-D14	Volume	0.000161411	0.001954892	-	-	-	-	-	-	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F
F	Area	0.00105703	0.0126255	-	-	3.8091E-06	4.54974E-05	277.5	1	1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x Tunnel Section I + 0.14 x Tunnel Section J + 0.14 x Tunnel Section K + 0.8 x 0.36 x Tunnel Section O + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section I / (traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section P))
H-4	Volume	0.01954502	0.2179241	-	-	0.002575704	0.036320983	-	-	0.2 x Tunnel Section L + 0.8 x 0.24 x Tunnel Section O + 0.8 x 0.62 x Tunnel Section O + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section L / (traffic flow of Tunnel Section L + traffic flow of Tunnel Section L + traffic flow of Tunnel Section P))
I5-I8	Volume	-	-	0.001620752	0.018160342	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
JK01	Area	0.00148327	0.0157059	-	-	9.61478E-07	1.01808E-05	1542.7	1	0.5 x (Tunnel Section M + Tunnel Section N)
L1-L5	Volume	-	-	0.000426558	0.004845478	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
LE-L10	Volume	-	-	0.00013279	0.002422799	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
M1-M4	Volume	-	-	0.00185297	0.001968991	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
MS-M8	Volume	-	-	8.26485E-05	0.000983481	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
N1-N4	Volume	-	-	0.000185297	0.001968991	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
NS-N8	Volume	-	-	8.26485E-05	0.000983481	-	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
P1-P4	Volume	-	-	0.00094971	0.001203762	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section L + traffic flow of Tunnel Section L + traffic flow of Tunnel Section P))
PS-P8	Volume	-	-	0.000347436	0.003668791	-	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section P / (traffic flow of Tunnel Section L + traffic flow of Tunnel Section L + traffic flow of Tunnel Section P))
W1-W8	Volume	-	-	0.008721307	0.218597581	-	-	-	-	1 x Tunnel W
W9-W16	Volume	-	-	0.004369654	0.109298791	-	-	-	-	1 x Tunnel W
T01-T10	Volume	0.01232946	0.2537917	-	-	-	-	-	-	1 x Tunnel X
T11-T20	Volume	-	-	0.000410862	0.008495723	-	-	-	-	1 x Tunnel X
BaseA	Volume	0.0012786	0.0117947	0.001278604	0.011794742	-	-	-	-	1/3 x Basement roads A,B,C
BaseC	Volume	0.0012786	0.0117947	0.001278604	0.011794742	-	-	-	-	1/3 x Basement roads A,B,C
901-930	Volume	-	-	-	-	-	-	-	-	1 x Tunnel Y
901-903	Volume	-	-	-	-	-	-	-	-	1 x Tunnel Z
904-906	Volume	-	-	-	-	-	-	-	-	1 x Tunnel Z
V1	Paint	-	-	-	-	-	-	-	-	from I-4



Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (H16-17)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	H 16-17 (2015 EIA 19-12-2011.xls)																Rate (g/km-		Emission Rate (g/s)		
							PC	taxi	LGV3	LGV4	LGV6	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBS0	FBD0	MC	Total	PM	NOx		
A <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	73	450	54%	1%	21%	0%	3%	2%	4%	4%	1%	1%	0%	2%	2%	0%	1%	100%	0.1021659	1.2906422	0.0029239	0.0117774	
B <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	272	450	54%	1%	21%	0%	3%	2%	4%	4%	1%	1%	0%	2%	2%	0%	1%	100%	0.1021659	1.2906422	0.0029239	0.0439818	
C <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	110	450	54%	1%	21%	0%	3%	2%	4%	4%	1%	1%	0%	2%	2%	0%	1%	100%	0.1021659	1.2906422	0.0014048	0.0177463	
D <sup>1</sup>	73	Lin Chung Rd (underpass)	Northbound	3	176	450	54%	1%	21%	0%	3%	2%	4%	4%	1%	1%	0%	2%	2%	0%	1%	100%	0.1021659	1.2906422	0.0022478	0.0289941	
E <sup>1</sup>	72	Lin Chung Rd (underpass)	Southbound	3	155	640	55%	1%	22%	0%	3%	2%	4%	4%	1%	1%	0%	2%	2%	0%	1%	100%	0.0994555	1.1899776	0.0027488	0.0329160	
F <sup>1</sup>	72	Lin Chung Rd (depressed)	Southbound	3	172	640	55%	1%	22%	1%	3%	2%	4%	4%	2%	1%	1%	0%	2%	2%	0%	1%	100%	0.0994555	1.1899776	0.0030411	0.0364174
G <sup>1</sup>	118	Lin Chung Rd (depressed)	Southbound	3	121	655	55%	1%	22%	1%	3%	2%	4%	4%	2%	1%	1%	0%	2%	2%	0%	1%	100%	0.1029337	1.2344056	0.0029259	0.0295656
H <sup>1</sup>	119	Austin Rd W (depressed)	Eastbound	3	173	1255	35%	1%	17%	0%	2%	2%	4%	3%	1%	1%	0%	0%	0%	1%	2%	100%	0.1410138	1.5103551	0.0065845	0.0910581	
I <sup>1</sup>	117	Austin Rd W (depressed)	Eastbound	3	194	400	38%	1%	46%	0%	1%	1%	1%	3%	1%	1%	0%	0%	0%	1%	0%	100%	0.1379342	1.3635989	0.0029711	0.0293929	
J <sup>1</sup>	116	Austin Rd W (depressed)	Westbound	3	194	520	36%	1%	43%	0%	2%	2%	3%	3%	1%	1%	0%	0%	0%	2%	1%	100%	0.1416634	1.5803407	0.0039697	0.0442847	
K <sup>1</sup>	114	Lin Chung Rd (depressed)	Southbound	3	95	78	87%	0%	33%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0772351	0.6202375	0.0011529	0.0012276	
L <sup>1</sup>	112	Lin Chung Rd (depressed)	Northbound	3	95	480	55%	1%	22%	0%	3%	2%	4%	4%	2%	1%	1%	0%	1%	1%	0%	100%	0.1000350	1.1603599	0.0012970	0.0147003	
M <sup>1</sup>	84	Lin Chung Rd	Southbound	3	56	540	55%	1%	23%	0%	3%	2%	4%	4%	2%	1%	1%	0%	2%	2%	0%	1%	100%	0.1033841	1.2487185	0.0008863	0.0104892
N <sup>1</sup>	77	Lin Chung Rd	Northbound	3	56	770	55%	1%	22%	1%	3%	2%	4%	4%	2%	1%	1%	0%	1%	1%	0%	1%	100%	0.1017174	1.2009051	0.0012183	0.0143806
O <sup>1</sup>	111	Austin Rd W (depressed)	Eastbound	3	52	655	36%	1%	46%	0%	2%	2%	4%	3%	1%	1%	0%	0%	0%	2%	1%	2%	100%	0.1396371	1.5234272	0.0016262	0.0210148
P <sup>1</sup>	110	Austin Rd W (depressed)	Westbound	3	52	575	36%	1%	46%	0%	2%	2%	4%	3%	1%	1%	0%	0%	0%	2%	1%	1%	100%	0.1435663	1.5721260	0.0011924	0.0130744
Q <sup>1</sup>	88	West Kowloon Highway (WKH)	Northbound	2	1970	3510	56%	0%	14%	0%	3%	2%	4%	2%	2%	1%	0%	4%	2%	3%	0%	0%	100%	0.0543383	1.3756115	0.1043703	2.6422058
A	Internal Rd A	Bothbound	4	404	50	50%	0%	30%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	100%	0.1521985	1.3253152	0.0008540	0.0074365	
B	Internal Rd B	Bothbound	4	361	85	41%	0%	29%	0%	0%	0%	0%	0%	0%	0%	0%	24%	0%	0%	0%	0%	100%	0.1738185	1.5172152	0.0014713	0.0129222	
C	Internal Rd C	Bothbound	4	521	45	33%	0%	22%	0%	0%	0%	0%	0%	0%	0%	0%	44%	0%	0%	0%	0%	100%	0.2061317	1.9848207	0.0013424	0.0129288	
R <sup>1</sup>	1144	Reposition of Gascoigne Rd Flyover	Westbound	1	180	1885	38%	0%	11%	1%	7%	4%	11%	11%	1%	1%	1%	0%	1%	10%	4%	0%	100%	0.1271305	2.6322257	0.0119821	0.2489873

Note: (B) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon. Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2 20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)				Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)
		Emission Rate - Portal/ Opening (g/s) - Volume source		Emission Rate - Portal/ Opening (g/s) - Area source		PM	NOx	PM	NOx		
		PM	NOx	PM	NOx	(Area)					
A	Area	0.00018645	0.00235554	-	-	3.75988E-07	4.79524E-06	491.2	1	0.2 x Tunnel Section A	
B	Area	0.00368316	0.0465296	-	-	1.07726E-05	0.000136088	341.9	1	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)	
CE	Area	0.00053633	0.0114679	-	-	1.47363E-06	1.80511E-05	835.3	1	0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E	
D1-D7	Volume	0.000390551	0.0490111	0.00031953	0.004572485	-	-	-	1	0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D	
F	Area	0.00104671	0.0125344	-	-	3.77194E-06	4.51889E-05	277.5	1	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F	
H-4	Volume	0.0187912	0.2067385	0.003131866	0.034456414	-	-	-	1	1 x Tunnel Section I + 1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x Tunnel Section K + 0.8 x 0.38 x Tunnel Section C + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section I / traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section I / traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section L / traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section P)	
J0-1	Area	0.00145	0.0154907	0.000441068	0.004992647	-	-	-	1	0.2 x Tunnel Section J + 0.2 x (1 - 0.14) x Tunnel Section K + 0.2 x Tunnel Section O + 0.2 x 1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C) x (traffic flow of Tunnel Section L / traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section P)	
L1-L5	Volume	0.0010433	0.0124349	0.000220534	0.002496324	-	-	-	1	0.5 x (Tunnel Section M + Tunnel Section N)	
M1-M4	Volume	0.0010433	0.0124349	0.000173884	0.002072485	-	-	-	1	0.5 x (Tunnel Section M + Tunnel Section N)	
N1-N4	Volume	0.0010433	0.0124349	0.000220534	0.002496324	-	-	-	1	0.5 x (Tunnel Section M + Tunnel Section N)	
N5-N8	Volume	0.00409771	0.0432931	0.000682951	0.007215629	-	-	-	1	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C)) x (traffic flow of Tunnel Section P / traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section	
P1-P4	Volume	0.00409771	0.0432931	0.000682951	0.007215629	-	-	-	1	1 x Tunnel W	
PS-P8	Volume	0.10437029	2.6422058	0.008897524	0.220183818	-	-	-	1	1 x Tunnel X	
W1-W8	Volume	0.01198205	0.2489873	0.000748684	0.008385676	-	-	-	1	1 x Tunnel Y	
Y1-Y4	Volume	0.001198205	0.0110985	0.00009402	0.000839576	-	-	-	1	1 x Tunnel Z	
BaseA	Volume	0.00122259	0.0110985	0.00122259	0.01109848	-	-	-	1	1/3 x Basement roads A,B,C	
BaseC	Volume	0.00122259	0.0110985	0.00122259	0.01109848	-	-	-	1	1/3 x Basement roads A,B,C	
901-903	Volume	-	-	-	-	-	-	-	-	-	
904-906	Volume	-	-	-	-	-	-	-	-	-	
V1	Paint	-	-	-	-	-	-	-	-	from 1-4	

Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (H17-18)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	H17-18 (2015 EIA, 19-12-2011.x16)																					Rate (g/km-PM)	Rate (g/s-NOx)	Emission Rate (g/s)	
							PC	taxi	LGV3	LGV4	LGV5	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBS0	FBS1	MC	Total	PM	NOx						
A <sup>1</sup>	73	Lin Cheung Rd (underpass)	Northbound	3	73	540	55%	1%	21%	0%	4%	2%	5%	6%	1%	1%	0%	2%	2%	0%	1%	100%	0.1014318	1.2563505	0.0011107	0.0137570					
B <sup>1</sup>	73	Lin Cheung Rd (underpass)	Northbound	3	272	540	55%	1%	21%	0%	4%	2%	5%	6%	1%	1%	1%	0%	2%	2%	0%	1%	100%	0.1014318	1.2563505	0.0013844	0.0512591				
C <sup>1</sup>	73	Lin Cheung Rd (underpass)	Northbound	3	110	540	55%	1%	21%	0%	4%	2%	5%	6%	1%	1%	1%	0%	2%	2%	0%	1%	100%	0.1014318	1.2563505	0.0018736	0.0207298				
D <sup>1</sup>	73	Lin Cheung Rd (underpass)	Northbound	3	176	540	55%	1%	21%	0%	4%	2%	5%	6%	1%	1%	1%	0%	2%	2%	0%	1%	100%	0.1014318	1.2563505	0.0028078	0.0319177				
E <sup>1</sup>	72	Lin Cheung Rd (underpass)	Southbound	3	155	860	55%	1%	22%	1%	3%	2%	5%	5%	2%	1%	1%	0%	2%	2%	0%	1%	100%	0.0980087	1.1728445	0.0027951	0.0332528				
F <sup>1</sup>	72	Lin Cheung Rd (depressed)	Southbound	3	172	860	55%	1%	22%	1%	3%	2%	5%	5%	2%	1%	1%	0%	2%	2%	0%	2%	100%	0.0980087	1.1728445	0.0039065	0.0389774				
G <sup>1</sup>	118	Lin Cheung Rd (depressed)	Southbound	3	121	860	55%	1%	22%	1%	3%	2%	5%	5%	2%	1%	1%	0%	2%	2%	0%	2%	100%	0.0977730	1.1767631	0.0021361	0.0257980				
H <sup>1</sup>	119	Austin Rd W (depressed)	Eastbound	3	173	1215	38%	1%	43%	0%	2%	2%	5%	3%	1%	1%	0%	0%	0%	2%	1%	1%	100%	0.1359302	1.4655883	0.0073078	0.0857260				
I <sup>1</sup>	117	Austin Rd W (depressed)	Eastbound	3	194	365	39%	1%	44%	0%	1%	1%	5%	3%	1%	1%	0%	0%	0%	1%	0%	1%	100%	0.1359302	1.3374192	0.0028437	0.0284685				
J <sup>1</sup>	116	Austin Rd W (depressed)	Westbound	3	194	540	37%	1%	43%	0%	2%	2%	5%	3%	1%	1%	0%	0%	0%	2%	1%	1%	100%	0.1382649	1.5407843	0.0040235	0.0448362				
K <sup>1</sup>	114	Lin Cheung Rd (depressed)	Southbound	3	95	86	65%	0%	35%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0813252	0.6538689	0.0001824	0.0014667				
L <sup>1</sup>	112	Lin Cheung Rd (depressed)	Northbound	3	95	510	57%	1%	22%	0%	3%	2%	5%	5%	2%	1%	1%	0%	1%	1%	0%	1%	100%	0.0927374	1.1253201	0.0013102	0.0151447				
M <sup>1</sup>	84	Lin Cheung Rd	Southbound	3	55	525	55%	1%	22%	0%	3%	2%	5%	5%	1%	1%	1%	0%	2%	2%	0%	1%	100%	0.1017097	1.2512942	0.0008306	0.0102189				
N <sup>1</sup>	77	Lin Cheung Rd	Northbound	3	56	860	55%	1%	22%	1%	3%	2%	5%	5%	1%	1%	1%	0%	1%	1%	0%	1%	100%	0.0999051	1.1765577	0.0013365	0.0157665				
O <sup>1</sup>	111	Austin Rd W (depressed)	Eastbound	3	52	625	39%	1%	44%	0%	2%	2%	4%	3%	1%	1%	1%	0%	1%	2%	1%	1%	100%	0.1346947	1.4432168	0.0016023	0.0196839				
P <sup>1</sup>	110	Austin Rd W (depressed)	Westbound	3	52	575	38%	1%	43%	0%	2%	2%	4%	3%	1%	1%	1%	0%	1%	2%	1%	1%	100%	0.1359376	1.5134603	0.0011262	0.0125709				
W	88	West Kowloon Highway (WKH)	Northbound	2	1970	4185	87%	0%	13%	0%	3%	2%	5%	4%	2%	2%	1%	0%	4%	2%	3%	0%	100%	0.0531229	1.3581898	0.1210787	0.3655598				
A	Internal Rd A	Bothbound	4	404	86	84%	0%	31%	0%	0%	0%	0%	0%	0%	0%	0%	0%	23%	0%	0%	0%	0%	100%	0.1638192	1.4453494	0.0001950	0.0105430				
B	Internal Rd B	Bothbound	4	361	105	45%	0%	23%	0%	0%	0%	0%	0%	0%	0%	0%	0%	24%	0%	0%	0%	0%	100%	0.1688820	1.4554378	0.0017758	0.0157457				
C	Internal Rd C	Bothbound	4	521	95	38%	0%	18%	0%	0%	0%	0%	0%	0%	0%	0%	0%	45%	0%	0%	0%	0%	100%	0.1979458	1.9409644	0.0015758	0.0154471				
X	I144	Reposition of Gascoigne Rd Flyover	Westbound	3	180	1865	38%	0%	11%	1%	8%	4%	10%	12%	1%	1%	1%	0%	1%	1%	0%	0%	100%	0.1245703	2.6362905	0.0116162	0.2456341				

Note: (B) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
 Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)		Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)
		Emission Rate - Portal/ Opening (g/s)		Emission Rate - Portal/ Opening (g/s) - Volume source		Emission Rate - Portal/ Opening (g/s) - Area source			
		PM	NOx	PM	NOx	PM	NOx		
80.955	0.873								
A	Area	0.00022214	0.0027514	-	-	4.52231E-07	5.6014E-08	491.2	0.2 x Tunnel Section A
B	Area	0.00438803	0.0543509	-	-	1.28343E-06	0.000158867	341.9	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x ( 30.935 / 50 ) x ( 0.8 x Tunnel Section A + 1 x Tunnel Section B )
C	Area	0.00101853	0.0123933	-	-	1.8048E-08	1.950077E-05	835.3	0.2 x Tunnel Section C + 0.2 x ( 1/3 x ( 19.065 / 50 ) x ( 0.8 x Tunnel Section A + 1 x Tunnel Section B ) ) + 0.2 x Tunnel Section E
D-D14	Volume	0.00452784	0.0560828	0.00431223	0.00534196	-	-	-	0.8 x Tunnel Section C + 0.8 x ( 1/3 x ( 19.065 / 50 x ( 0.8 x Tunnel Section A + 1 x Tunnel Section B ) ) + 1 x Tunnel Section D
F	Area	0.00106372	0.0127271	-	-	3.83323E-06	4.58634E-05	277.5	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F
H	Volume	0.01806947	0.1999547	0.003011578	0.03325783	-	-	-	1 x Tunnel Section I + 1 x Tunnel Section G + 1 x Tunnel Section H + 0.14 x Tunnel Section K + 0.8 x 0.38 x Tunnel Section O + 0.8 x ( 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) x ( traffic flow of Tunnel Section I / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section J + 0.2 x ( 1 - 0.14 ) x Tunnel Section K + 0.2 x 1/3 x Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) x ( traffic flow of Tunnel Section L / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + Tunnel Section N) )
J	Area	0.00149964	0.0158585	-	-	9.72098E-07	1.02797E-05	1542.7	0.2 x Tunnel Section J + 0.2 x ( 1 - 0.14 ) x Tunnel Section K + 0.2 x 1/3 x Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) x ( traffic flow of Tunnel Section L / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + Tunnel Section N) )
L1-L5	Volume	0.00339478	0.0379974	0.00452637	0.00506632	-	-	-	1 x Tunnel Section L + 0.8 x 0.24 x Tunnel Section J + 0.8 x 0.62 x Tunnel Section O + 0.8 x ( 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) x ( traffic flow of Tunnel Section L / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + Tunnel Section N) )
L6-L10	Volume	0.00106357	0.0129927	0.00226319	0.00253216	-	-	-	0.5 x ( Tunnel Section M + Tunnel Section N)
M1-M4	Volume	0.00106357	0.0129927	0.00180595	0.002165449	-	-	-	0.5 x ( Tunnel Section M + Tunnel Section N)
M5-M8	Volume	0.00106357	0.0129927	0.00180595	0.002165449	-	-	-	0.5 x ( Tunnel Section M + Tunnel Section N)
N1-N4	Volume	0.00106357	0.0129927	0.00180595	0.002165449	-	-	-	0.5 x ( Tunnel Section M + Tunnel Section N)
NE-N8	Volume	0.00416904	0.0440608	0.002934939	0.00344494	-	-	-	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x ( 1/3 x ( Tunnel Section Internal Road A + Tunnel Section Internal Road B + Tunnel Section Internal Road C ) x ( traffic flow of Tunnel Section P / ( traffic flow of Tunnel Section I + traffic flow of Tunnel Section L + traffic flow of Tunnel Section M + Tunnel Section N) )
P1-P4	Volume	0.00106357	0.0129927	0.00180595	0.002165449	-	-	-	1 x Tunnel W
PS-P8	Volume	0.00106357	0.0129927	0.00180595	0.002165449	-	-	-	1 x Tunnel X
W1-W8	Volume	0.00106357	0.0129927	0.00180595	0.002165449	-	-	-	1/3 x Basement roads A,B,C
W9-W16	Volume	0.00106357	0.0129927	0.00180595	0.002165449	-	-	-	1/3 x Basement roads A,B,C
T0-T10	Volume	0.00106357	0.0129927	0.00180595	0.002165449	-	-	-	1 x Tunnel Y
T11-T20	Volume	0.00106357	0.0129927	0.00180595	0.002165449	-	-	-	1 x Tunnel Z
BaseA	Volume	0.00106357	0.0129927	0.00180595	0.002165449	-	-	-	1 x Tunnel Y
BaseC	Volume	0.00106357	0.0129927	0.00180595	0.002165449	-	-	-	1 x Tunnel Z
901-903	Volume	-	-	-	-	-	-	-	1 x Tunnel Y
904-906	Volume	-	-	-	-	-	-	-	1 x Tunnel Z
V1	Point	-	-	-	-	-	-	-	from 1-4









Appendix 3.18b - Emission Rates of Portal, Top Openings and Ventilation Exhaust (H22-23)

Remarks (Tunnel name - Portal & top opening of underpass in EIA of Rd Works in WK)	WKCD section no.	Road name	Bound	Road Type	Length (m)	Total (veh/hr)	H 22-23 (2015 EIA 19-12-2011.xls)																	Rate (g/km-PM)	Emission Rate (g/s)-NOx	Rate (g/km-PM)	Emission Rate (g/s)-NOx
							PC	taxi	LGV3	LGV4	LGV6	HGV7	HGV8	PLB	PV4	PV5	NFB6	NFB7	NFB8	FBSD	FBD0	MC	Total				
A'	73	Lin Cheung Rd (underpass)	Northbound	3	73	300	53%	2%	22%	0%	2%	2%	2%	2%	2%	0%	2%	2%	2%	0%	100%	0.0953154	1.2002245	0.0005736	0.0073014		
B'	73	Lin Cheung Rd (underpass)	Northbound	3	272	300	53%	2%	22%	0%	2%	2%	2%	2%	2%	0%	2%	2%	2%	0%	100%	0.0953154	1.2002245	0.0005736	0.0073014		
C'	73	Lin Cheung Rd (underpass)	Northbound	3	110	300	53%	2%	22%	0%	2%	2%	2%	2%	2%	0%	2%	2%	2%	0%	100%	0.0953154	1.2002245	0.0005736	0.0073014		
D'	73	Lin Cheung Rd (underpass)	Northbound	3	176	300	53%	2%	22%	0%	2%	2%	2%	2%	2%	0%	2%	2%	2%	0%	100%	0.0953154	1.2002245	0.0005736	0.0073014		
E'	72	Lin Cheung Rd (underpass)	Southbound	3	155	410	55%	1%	23%	0%	2%	1%	2%	2%	1%	1%	1%	1%	1%	0%	100%	0.0952218	1.1936981	0.0004333	0.0194623		
F'	72	Lin Cheung Rd (depressed)	Southbound	3	172	410	55%	1%	23%	0%	2%	1%	2%	2%	1%	1%	1%	1%	1%	0%	100%	0.0952218	1.1936981	0.0004333	0.0194623		
G'	118	Lin Cheung Rd (depressed)	Southbound	3	121	400	55%	1%	23%	0%	2%	1%	2%	2%	1%	1%	1%	1%	1%	0%	100%	0.0951177	1.1944109	0.0004235	0.0149154		
H'	119	Austin Rd W (depressed)	Eastbound	3	173	960	35%	1%	47%	0%	2%	2%	2%	2%	2%	1%	1%	1%	1%	2%	100%	0.1328399	1.5011441	0.0056148	0.0623399		
I'	117	Austin Rd W (depressed)	Eastbound	3	194	280	38%	2%	46%	0%	2%	2%	2%	2%	0%	0%	0%	0%	2%	0%	100%	0.1256163	1.2765566	0.0018554	0.0192633		
J'	116	Austin Rd W (depressed)	Westbound	3	194	360	35%	1%	43%	0%	1%	1%	4%	3%	1%	0%	0%	1%	1%	1%	100%	0.1328806	1.5171168	0.0025740	0.0294321		
K'	114	Lin Cheung Rd (depressed)	Southbound	3	95	110	59%	0%	32%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.0811531	0.7553885	0.0002256	0.0021827		
L'	112	Lin Cheung Rd (depressed)	Northbound	3	95	335	54%	1%	22%	0%	2%	1%	4%	4%	1%	1%	1%	1%	1%	0%	100%	0.0921965	1.1342628	0.0008163	0.0100272		
M'	84	Lin Cheung Rd	Southbound	3	55	355	55%	1%	24%	0%	2%	1%	4%	4%	1%	1%	1%	1%	0%	100%	0.0929667	1.1149716	0.0005134	0.0061571			
N'	77	Lin Cheung Rd	Northbound	3	56	525	54%	1%	23%	0%	2%	2%	2%	2%	1%	1%	1%	1%	1%	0%	100%	0.0956100	1.1435129	0.0007908	0.0093387		
O'	111	Austin Rd W (depressed)	Eastbound	3	52	735	36%	1%	46%	0%	1%	1%	4%	3%	1%	1%	1%	1%	1%	2%	100%	0.1321463	1.4524372	0.0013457	0.0145667		
P'	110	Austin Rd W (depressed)	Westbound	3	52	410	35%	1%	45%	0%	1%	1%	4%	3%	1%	1%	1%	1%	1%	2%	100%	0.1351002	1.5335984	0.0008001	0.0093623		
W'	88	West Kowloon Highway (WKH)	Northbound	2	1970	1755	56%	0%	14%	0%	3%	2%	2%	4%	3%	2%	1%	0%	4%	2%	3%	0%	100%	0.0535551	1.3757223	0.0514425	1.3212093
A	Internal Rd A	Bothbound	4	404	105	45%	0%	29%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1513914	1.4363008	0.0017839	0.0169244		
B	Internal Rd B	Bothbound	4	361	155	42%	0%	26%	0%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.1631965	1.5598607	0.0025368	0.0242455		
C	Internal Rd C	Bothbound	4	521	75	23%	0%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%	0.2107940	2.0657596	0.0022880	0.0223136		
X'	1144	Repositioning of Gascoigne Rd Flyover	Westbound	3	180	1575	38%	0%	11%	1%	7%	4%	11%	11%	1%	1%	1%	1%	4%	0%	100%	0.1165184	2.5438244	0.0091789	0.2002626		

Note: (B) Tunnel name is based on Portal & top opening of underpass in EIA of Road Works in West Kowloon.  
 Note: Emission rate is calculated by emission factor provided by Vehicular Emission Control Section of EPD provided the vehicle fleet average emission factors for pollutants multiplied by traffic flow of each roads.

Scenario 2 20%

Portal/ opening ID	Source Type	Calculated by the formula shown (extracted from the approved EIA of Road Works at West Kowloon)		Volume source - calculated by number of portal/opening involved		Area source - calculated by emission rate divided by area		Formula from Scenario	Emission calculation formula (Extracted from the approved EIA of Road Works at West Kowloon)	
		Emission Rate - Portal/Opening (g/s)		Emission Rate - Portal/Opening (g/s) - Volume source		Emission Rate - Portal/Opening (g/m2-s) - Area source				
		PM	NOx	PM	NOx	PM	NOx			(Area)
A	Area	0.00011597	0.0014603	-	-	2.36089E-07	2.97287E-06	491.2	1	0.2 x Tunnel Section A
B	Area	0.0022908	0.028846	-	-	6.70019E-06	8.43897E-05	341.9	1	2/3 x (0.8 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)
CE	Area	0.00056811	0.0069371	-	-	8.94288E-07	1.09194E-05	835.3	1	0.2 x Tunnel Section C + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section E
D-D14	Volume	0.00236376	0.0297651	0.00021252	0.00283769	-	-	-	1	0.8 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 1 x Tunnel Section D
F	Area	0.0006238	0.0074414	-	-	2.24794E-06	2.68158E-05	277.5	1	0.2 x 0.8 x Tunnel Section E + 0.2 x Tunnel Section F
H-44	Volume	0.01216735	0.1357391	0.00207891	0.022623182	-	-	-	1	1 x Tunnel Section H + 1 x Tunnel Section G + 1 x Tunnel Section F + 0.14 x Tunnel Section K + 0.8 x 0.38 x Tunnel Section C + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section I + 0.2 x Tunnel Section J + 0.2 x Tunnel Section L + 0.2 x Tunnel Section M + 0.2 x Tunnel Section N + 0.2 x Tunnel Section O + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section P
I-44	Volume	0.00255267	0.0300982	0.00040356	0.00401309	-	-	-	1	1 x Tunnel Section L + 0.8 x 0.24 x Tunnel Section J + 0.8 x 0.82 x Tunnel Section O + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section P
JCO1	Area	0.00126502	0.0134131	-	-	6.20004E-07	6.89455E-06	1542.7	1	0.2 x Tunnel Section J + 0.2 x (1 - 0.14) x Tunnel Section K + 0.2 x Tunnel Section O + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section P
L1-L5	Volume	0.0006471	0.0077479	0.000170178	0.002006545	-	-	-	1	0.5 x (Tunnel Section M + Tunnel Section N)
M1-M4	Volume	0.0006471	0.0077479	0.000170178	0.002006545	-	-	-	1	0.5 x (Tunnel Section M + Tunnel Section N)
M5-M8	Volume	0.0006471	0.0077479	0.000170178	0.002006545	-	-	-	1	0.5 x (Tunnel Section M + Tunnel Section N)
N1-N4	Volume	0.0006471	0.0077479	0.000170178	0.002006545	-	-	-	1	0.5 x (Tunnel Section M + Tunnel Section N)
NS-NB	Volume	0.0006471	0.0077479	0.000170178	0.002006545	-	-	-	1	0.5 x (Tunnel Section M + Tunnel Section N)
PI-P4	Volume	0.00323206	0.0332147	0.000239677	0.002538762	-	-	-	1	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section L + 0.2 x Tunnel Section M + 0.2 x Tunnel Section N + 0.2 x Tunnel Section O + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section P
PS-P8	Volume	0.00323206	0.0332147	0.000239677	0.002538762	-	-	-	1	1 x Tunnel Section P + 0.8 x 0.76 x Tunnel Section J + 0.8 x 0.86 x Tunnel Section K + 0.8 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section L + 0.2 x Tunnel Section M + 0.2 x Tunnel Section N + 0.2 x Tunnel Section O + 0.2 x (1/3 x (19.065 / 50) x (0.8 x Tunnel Section A + 1 x Tunnel Section B)) + 0.2 x Tunnel Section P
W1-W8	Volume	0.05144254	1.3212093	0.004288878	0.110100772	-	-	-	1	1 x Tunnel W
WB-W16	Volume	0.00917582	0.2003262	0.002143439	0.055053886	-	-	-	1	1 x Tunnel X
701-710	Volume	0.00917582	0.2003262	0.002143439	0.055053886	-	-	-	1	1 x Tunnel X
711-720	Volume	0.00917582	0.2003262	0.002143439	0.055053886	-	-	-	1	1 x Tunnel X
BaseA	Volume	0.00220282	0.021161	0.00220282	0.02116099	-	-	-	1	1/3 x Basement roads A,B,C
BaseC	Volume	0.00220282	0.021161	0.00220282	0.02116099	-	-	-	1	1/3 x Basement roads A,B,C
901-930	Volume	-	-	-	-	-	-	-	1	1 x Tunnel Y
901-903	Volume	-	-	-	-	-	-	-	1	1 x Tunnel Z
904-906	Volume	-	-	-	-	-	-	-	1	1 x Tunnel Z
V1	Point	-	-	-	-	-	-	-	1	from 1-4

