

Calculation of Portal Emissions (Construction Phase – Year 2023)

Description	Length (m)	Source Name	Link No.	No. of Portal Sources	Hour	Q (veh/hr)	Total Emission Factor					Total Emission Rate					Daily Emission Rate / Diurnal Profile (from 1st 50m for Each Portal Source)					Daily Emission Rate / Diurnal Profile (from 2nd 50m for Each Portal Source)					Remarks																
							NO (g/mile-veh)	NO ₂ (g/mile-veh)	RSP (g/mile-veh)	FSP (g/mile-veh)	TSP (g/mile-veh)	NO (g/s)	NO ₂ (g/s)	RSP (g/s)	FSP (g/s)	TSP (g/s)	NO (g/s) / %	NO ₂ (g/s) / %	RSP (g/s) / %	FSP (g/s) / %	TSP (g/s) / %	NO (g/s) / %	NO ₂ (g/s) / %	RSP (g/s) / %	FSP (g/s) / %	TSP (g/s) / %																	
Existing Tunnel X1+X2	-	X1 - X6	-	6	1	1645	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
					2	1138	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
					3	811	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					4	644	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					5	626	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					6	788	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					7	2002	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					8	5227	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					9	6154	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					10	5361	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					11	4612	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					12	4298	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					13	2709	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					14	2803	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					15	3017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					16	3116	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					17	3185	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					18	3375	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					19	3396	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					20	2668	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					21	2015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					22	1912	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					23	1845	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					24	1459	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					Daily	64806.45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
Existing Tunnel Y	77	Y1 - Y10	108	10	1	361	-	-	0.0102	0.0093	0.0103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
					2	248	-	-	0.0112	0.0103	0.0113	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					3	175	-	-	0.0123	0.0113	0.0124	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					4	138	-	-	0.0134	0.0123	0.0135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					5	134	-	-	0.0145	0.0133	0.0146	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					6	167	-	-	0.0156	0.0143	0.0157	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					7	421	-	-	0.0167	0.0153	0.0168	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					8	1090	-	-	0.0179	0.0164	0.0179	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					9	1291	-	-	0.0167	0.0152	0.0167	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					10	1070	-	-	0.0189	0.0173	0.0189	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					11	893	-	-	0.0206	0.0189	0.0207	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					12	836	-	-	0.0206	0.0189	0.0207	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
					13	583	-	-	0.0262	0.0241	0.0263	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					14	595	-	-	0.0271	0.0249	0.0271	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					15	634	-	-	0.0291	0.0268	0.0292	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					16	668	-	-	0.0258	0.0236	0.0258	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					17	690	-	-	0.0236	0.0216	0.0236	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					18	759	-	-	0.0210	0.0192	0.0211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					19	820	-	-	0.0158	0.0145	0.0159	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					20	659	-	-	0.0133	0.0122	0.0134	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					21	493	-	-	0.0159	0.0146	0.0160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					22	474	-	-	0.0139	0.0128	0.0140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
					23	467	-	-	0.0114	0.01																																	

Calculation of Portal Emissions (Construction Phase – Year 2023)

Description	Length (m)	Source Name	Link No.	No. of Portal Sources	Hour	Q (veh/hr)	Total Emission Factor					Total Emission Rate					Daily Emission Rate / Diurnal Profile (from 1st 50m for Each Portal Source)					Daily Emission Rate / Diurnal Profile (from 2nd 50m for Each Portal Source)					Remarks
							NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	
							(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	
Existing Tunnel Z	140	Z1 - Z6	184	6	1	1226	-	-	0.0121	0.0111	0.0122	-	-	3.578E-04	3.290E-04	3.608E-04	-	-	1.4%	1.4%	1.4%	-	-	1.4%	1.4%	1.4%	
					2	846	-	-	0.0133	0.0122	0.0134	-	-	2.714E-04	2.497E-04	2.737E-04	-	-	1.1%	1.1%	1.1%	-	-	1.1%	1.1%	1.1%	
					3	602	-	-	0.0145	0.0133	0.0146	-	-	2.104E-04	1.936E-04	2.120E-04	-	-	0.8%	0.8%	0.8%	-	-	0.8%	0.8%	0.8%	
					4	477	-	-	0.0157	0.0144	0.0158	-	-	1.807E-04	1.662E-04	1.820E-04	-	-	0.7%	0.7%	0.7%	-	-	0.7%	0.7%	0.7%	
					5	463	-	-	0.0169	0.0155	0.0170	-	-	1.887E-04	1.736E-04	1.899E-04	-	-	0.7%	0.7%	0.8%	-	-	0.7%	0.7%	0.8%	
					6	582	-	-	0.0180	0.0166	0.0182	-	-	2.537E-04	2.333E-04	2.552E-04	-	-	1.0%	1.0%	1.0%	-	-	1.0%	1.0%	1.0%	
					7	1476	-	-	0.0193	0.0177	0.0194	-	-	6.896E-04	6.307E-04	6.905E-04	-	-	2.7%	2.7%	2.7%	-	-	2.7%	2.7%	2.7%	
					8	3846	-	-	0.0206	0.0190	0.0207	-	-	1.914E-03	1.762E-03	1.924E-03	-	-	7.6%	7.6%	7.6%	-	-	7.6%	7.6%	7.6%	
					9	4534	-	-	0.0196	0.0180	0.0196	-	-	2.145E-03	1.975E-03	2.148E-03	-	-	8.5%	8.5%	8.5%	-	-	8.5%	8.5%	8.5%	
					10	3903	-	-	0.0224	0.0206	0.0225	-	-	2.112E-03	1.945E-03	2.121E-03	-	-	8.4%	8.4%	8.4%	-	-	8.4%	8.4%	8.4%	
					11	3334	-	-	0.0246	0.0227	0.0247	-	-	1.962E-03	1.826E-03	1.988E-03	-	-	7.9%	7.9%	7.9%	-	-	7.9%	7.9%	7.9%	
					12	3111	-	-	0.0247	0.0227	0.0248	-	-	1.856E-03	1.710E-03	1.862E-03	-	-	7.4%	7.4%	7.4%	-	-	7.4%	7.4%	7.4%	
					13	2089	-	-	0.0287	0.0264	0.0288	-	-	1.451E-03	1.331E-03	1.452E-03	-	-	5.8%	5.7%	5.7%	-	-	5.8%	5.7%	5.7%	
					14	2154	-	-	0.0295	0.0271	0.0295	-	-	1.536E-03	1.409E-03	1.536E-03	-	-	6.1%	6.1%	6.1%	-	-	6.1%	6.1%	6.1%	
					15	2312	-	-	0.0317	0.0291	0.0317	-	-	1.769E-03	1.627E-03	1.770E-03	-	-	7.0%	7.0%	7.0%	-	-	7.0%	7.0%	7.0%	
					16	2401	-	-	0.0282	0.0259	0.0282	-	-	1.635E-03	1.503E-03	1.636E-03	-	-	6.5%	6.5%	6.5%	-	-	6.5%	6.5%	6.5%	
					17	2460	-	-	0.0255	0.0234	0.0255	-	-	1.513E-03	1.391E-03	1.514E-03	-	-	6.0%	6.0%	6.0%	-	-	6.0%	6.0%	6.0%	
					18	2633	-	-	0.0225	0.0206	0.0225	-	-	1.430E-03	1.314E-03	1.432E-03	-	-	5.7%	5.7%	5.7%	-	-	5.7%	5.7%	5.7%	
					19	2704	-	-	0.0167	0.0154	0.0167	-	-	1.091E-03	1.003E-03	1.093E-03	-	-	4.3%	4.3%	4.3%	-	-	4.3%	4.3%	4.3%	
					20	2137	-	-	0.0136	0.0124	0.0136	-	-	7.013E-04	6.401E-04	7.022E-04	-	-	2.8%	2.8%	2.8%	-	-	2.8%	2.8%	2.8%	
					21	1610	-	-	0.0166	0.0152	0.0166	-	-	6.450E-04	5.899E-04	6.455E-04	-	-	2.6%	2.5%	2.6%	-	-	2.6%	2.5%	2.6%	
					22	1533	-	-	0.0142	0.0130	0.0142	-	-	5.265E-04	4.812E-04	5.270E-04	-	-	2.1%	2.1%	2.1%	-	-	2.1%	2.1%	2.1%	
					23	1488	-	-	0.0113	0.0104	0.0114	-	-	4.072E-04	3.749E-04	4.110E-04	-	-	1.6%	1.6%	1.6%	-	-	1.6%	1.6%	1.6%	
					24	1173	-	-	0.0128	0.0118	0.0129	-	-	3.642E-04	3.352E-04	3.672E-04	-	-	1.4%	1.4%	1.5%	-	-	1.4%	1.4%	1.5%	
					Daily	49096.01	-	-	-	-	-	-	-	-	-	-	-	5.607E-03	5.154E-03	5.620E-03	-	-	2.804E-03	2.577E-03	2.810E-03		

Calculation of Portal Emissions (Construction Phase – Year 2023)

Portal Emissions (Volume Source)

Road Name	Source Name	X	Y	NO	Daily Emission Rate (QS) (g/s) ^[1]					HS	SY	SZ	total NO	total NO ₂	total RSP	total FSP	total TSP
					NO ₂	RSP	FSP	TSP									
Existing Tsing Sha Highway (WB) (Existing Tunnel X1+X2)	X1	836094.7	825973.3	-	-	7.239E-03	6.653E-03	7.256E-03	12.75	9.12	2.56	-	-	-	-	-	-
	X2	836087.6	825958.2	-	-	7.239E-03	6.653E-03	7.256E-03	12.75	9.12	2.56	-	-	-	-	-	-
	X3	836080.4	825943.1	-	-	7.239E-03	6.653E-03	7.256E-03	12.75	9.12	2.56	-	-	-	-	-	-
	X4	836074.4	825927.6	-	-	3.619E-03	3.326E-03	3.628E-03	12.75	9.12	2.56	-	-	-	-	-	-
	X5	836068.6	825911.9	-	-	3.619E-03	3.326E-03	3.628E-03	12.75	9.12	2.56	-	-	-	-	-	-
	X6	836062.9	825896.3	-	-	3.619E-03	3.326E-03	3.628E-03	12.75	9.12	2.56	-	-	-	-	-	-
Existing Tsing Sha Highway (WB) (Existing Tunnel Y)	Y1	836120.1	826109.7	-	-	4.683E-04	4.295E-04	4.696E-04	13.50	5.12	3.26	-	-	3.258E-02	2.994E-02	3.265E-02	-
	Y2	836116.9	826100.2	-	-	4.683E-04	4.295E-04	4.696E-04	13.50	5.12	3.26	-	-	-	-	-	-
	Y3	836113.8	826090.8	-	-	4.683E-04	4.295E-04	4.696E-04	13.50	5.12	3.26	-	-	-	-	-	-
	Y4	836110.6	826081.2	-	-	4.683E-04	4.295E-04	4.696E-04	13.50	5.12	3.26	-	-	-	-	-	-
	Y5	836107.4	826071.8	-	-	4.683E-04	4.295E-04	4.696E-04	13.50	5.12	3.26	-	-	-	-	-	-
	Y6	836104.1	826062.3	-	-	2.342E-04	2.147E-04	2.348E-04	13.50	5.12	3.26	-	-	-	-	-	-
	Y7	836100.6	826052.9	-	-	2.342E-04	2.147E-04	2.348E-04	13.50	5.12	3.26	-	-	-	-	-	-
	Y8	836097.1	826043.5	-	-	2.342E-04	2.147E-04	2.348E-04	13.50	5.12	3.26	-	-	-	-	-	-
	Y9	836093.6	826034.2	-	-	2.342E-04	2.147E-04	2.348E-04	13.50	5.12	3.26	-	-	-	-	-	-
	Y10	836090.1	826024.8	-	-	2.342E-04	2.147E-04	2.348E-04	13.50	5.12	3.26	-	-	3.512E-03	3.221E-03	3.522E-03	-
Existing Tsing Sha Highway (WB) (Existing Tunnel Z)	Z1	836213.1	826342.4	-	-	5.607E-03	5.154E-03	5.620E-03	13.00	8.60	2.79	-	-	-	-	-	-
	Z2	836200.7	826328.7	-	-	5.607E-03	5.154E-03	5.620E-03	13.00	8.60	2.79	-	-	-	-	-	-
	Z3	836188.4	826313.7	-	-	5.607E-03	5.154E-03	5.620E-03	13.00	8.60	2.79	-	-	-	-	-	-
	Z4	836179.3	826297.8	-	-	2.804E-03	2.577E-03	2.810E-03	13.00	8.60	2.79	-	-	-	-	-	-
	Z5	836170.6	826281.2	-	-	2.804E-03	2.577E-03	2.810E-03	13.00	8.60	2.79	-	-	-	-	-	-
	Z6	836163.4	826264.2	-	-	2.804E-03	2.577E-03	2.810E-03	13.00	8.60	2.79	-	-	2.523E-02	2.319E-02	2.529E-02	-

Note:

[1] The emission rates for portals are calculated from the results of EMFAC-HK model and traffic data adopted in this study.

Calculation of Portal Emissions (Construction Phase – Year 2023)

Hourly Profile for Portals

Hour	Portal X Existing Tsing Sha Highway (WB)					Portal Y Existing Tsing Sha Highway (WB)					Portal Z Existing Tsing Sha Highway (WB)				
	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP
Hour 1	-	-	1.5%	1.5%	1.5%	-	-	1.4%	1.4%	1.4%	-	-	1.4%	1.4%	1.4%
Hour 2	-	-	1.1%	1.1%	1.1%	-	-	1.1%	1.1%	1.1%	-	-	1.1%	1.1%	1.1%
Hour 3	-	-	0.8%	0.9%	0.9%	-	-	0.8%	0.8%	0.8%	-	-	0.8%	0.8%	0.8%
Hour 4	-	-	0.7%	0.7%	0.7%	-	-	0.7%	0.7%	0.7%	-	-	0.7%	0.7%	0.7%
Hour 5	-	-	0.8%	0.8%	0.8%	-	-	0.7%	0.7%	0.7%	-	-	0.7%	0.7%	0.8%
Hour 6	-	-	1.0%	1.0%	1.0%	-	-	1.0%	1.0%	1.0%	-	-	1.0%	1.0%	1.0%
Hour 7	-	-	2.8%	2.8%	2.8%	-	-	2.7%	2.7%	2.7%	-	-	2.7%	2.7%	2.7%
Hour 8	-	-	8.0%	8.0%	8.0%	-	-	7.4%	7.4%	7.4%	-	-	7.6%	7.6%	7.6%
Hour 9	-	-	9.4%	9.4%	9.4%	-	-	8.1%	8.1%	8.1%	-	-	8.5%	8.5%	8.5%
Hour 10	-	-	9.1%	9.1%	9.1%	-	-	7.7%	7.6%	7.6%	-	-	8.4%	8.4%	8.4%
Hour 11	-	-	8.3%	8.3%	8.3%	-	-	7.0%	7.0%	7.0%	-	-	7.9%	7.9%	7.9%
Hour 12	-	-	7.7%	7.8%	7.8%	-	-	6.5%	6.5%	6.5%	-	-	7.4%	7.4%	7.4%
Hour 13	-	-	5.5%	5.5%	5.5%	-	-	5.8%	5.8%	5.8%	-	-	5.8%	5.7%	5.7%
Hour 14	-	-	5.8%	5.9%	5.8%	-	-	6.1%	6.1%	6.1%	-	-	6.1%	6.1%	6.1%
Hour 15	-	-	6.7%	6.8%	6.7%	-	-	7.0%	7.0%	7.0%	-	-	7.0%	7.0%	7.0%
Hour 16	-	-	6.2%	6.2%	6.2%	-	-	6.5%	6.5%	6.5%	-	-	6.5%	6.5%	6.5%
Hour 17	-	-	5.7%	5.7%	5.7%	-	-	6.2%	6.2%	6.1%	-	-	6.0%	6.0%	6.0%
Hour 18	-	-	5.3%	5.3%	5.3%	-	-	6.0%	6.0%	6.0%	-	-	5.7%	5.7%	5.7%
Hour 19	-	-	4.0%	4.0%	4.0%	-	-	4.9%	4.9%	4.9%	-	-	4.3%	4.3%	4.3%
Hour 20	-	-	2.5%	2.5%	2.5%	-	-	3.3%	3.3%	3.3%	-	-	2.8%	2.8%	2.8%
Hour 21	-	-	2.3%	2.3%	2.3%	-	-	3.0%	3.0%	3.0%	-	-	2.6%	2.5%	2.6%
Hour 22	-	-	1.9%	1.9%	1.9%	-	-	2.5%	2.5%	2.5%	-	-	2.1%	2.1%	2.1%
Hour 23	-	-	1.4%	1.4%	1.4%	-	-	2.0%	2.0%	2.0%	-	-	1.6%	1.6%	1.6%
Hour 24	-	-	1.3%	1.3%	1.3%	-	-	1.7%	1.8%	1.8%	-	-	1.4%	1.4%	1.5%

Calculation of Portal Emissions (With Project (With Direct Noise Remedies) Scenario – Year 2028)

Hourly Profile for Portals

Hour	Portal X Existing Tsing Sha Highway (WB)					Portal Y Existing Tsing Sha Highway (WB)					Portal Z Existing Tsing Sha Highway (WB)					Portal A Proposed T4 (EB)								
	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP				
Hour 1	1.8%	1.1%	1.4%	1.4%	-	2.0%	1.3%	1.4%	1.4%	-	1.8%	1.1%	1.4%	1.4%	-	1.3%	0.9%	1.0%	1.0%	-	0.9%	0.7%	0.7%	0.7%
Hour 2	1.3%	0.9%	1.1%	1.1%	-	1.4%	1.0%	1.1%	1.1%	-	1.3%	0.9%	1.0%	1.0%	-	0.9%	0.7%	0.7%	0.7%	-	0.7%	0.5%	0.5%	0.5%
Hour 3	0.9%	0.7%	0.8%	0.8%	-	1.0%	0.8%	0.8%	0.8%	-	0.9%	0.7%	0.8%	0.8%	-	0.7%	0.5%	0.5%	0.5%	-	0.5%	0.5%	0.5%	0.5%
Hour 4	0.7%	0.6%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-	0.5%	0.5%	0.5%	0.5%	-	0.5%	0.5%	0.5%	0.5%
Hour 5	0.7%	0.6%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-	0.5%	0.5%	0.5%	0.5%	-	0.5%	0.5%	0.5%	0.5%
Hour 6	1.0%	0.8%	1.0%	1.0%	-	1.0%	0.9%	0.9%	0.9%	-	1.0%	0.9%	0.9%	0.9%	-	0.7%	0.6%	0.7%	0.6%	-	0.7%	0.6%	0.6%	0.6%
Hour 7	2.5%	2.3%	2.6%	2.6%	-	2.7%	2.5%	2.5%	2.5%	-	2.6%	2.3%	2.5%	2.5%	-	1.8%	1.8%	1.8%	1.8%	-	1.8%	1.8%	1.8%	1.8%
Hour 8	7.9%	7.6%	7.6%	7.6%	-	7.2%	7.1%	7.0%	7.0%	-	6.9%	6.6%	6.9%	6.9%	-	4.8%	4.9%	4.9%	4.9%	-	4.8%	4.9%	4.9%	4.9%
Hour 9	9.5%	9.4%	9.5%	9.5%	-	7.4%	7.5%	7.7%	7.8%	-	7.6%	7.5%	7.9%	7.9%	-	4.9%	5.2%	5.5%	5.5%	-	4.9%	5.2%	5.5%	5.5%
Hour 10	9.3%	9.3%	9.0%	9.0%	-	7.6%	7.7%	7.5%	7.5%	-	7.8%	7.8%	7.9%	7.9%	-	5.2%	5.5%	5.5%	5.5%	-	5.2%	5.5%	5.5%	5.5%
Hour 11	8.4%	8.5%	8.2%	8.2%	-	7.2%	7.4%	7.0%	7.0%	-	7.4%	7.5%	7.5%	7.4%	-	5.0%	5.3%	5.2%	5.2%	-	5.0%	5.3%	5.2%	5.2%
Hour 12	7.3%	7.5%	7.5%	7.6%	-	6.5%	6.9%	6.6%	6.6%	-	6.7%	6.9%	7.0%	7.0%	-	4.5%	4.9%	4.9%	4.9%	-	4.5%	4.9%	4.9%	4.9%
Hour 13	5.1%	5.8%	5.7%	5.7%	-	5.3%	6.2%	5.9%	5.9%	-	5.6%	6.4%	6.1%	6.1%	-	6.7%	7.6%	7.5%	7.5%	-	6.7%	7.6%	7.5%	7.5%
Hour 14	5.4%	6.2%	6.0%	6.0%	-	5.5%	6.6%	6.2%	6.2%	-	5.9%	6.9%	6.5%	6.5%	-	7.1%	8.2%	8.0%	8.0%	-	7.1%	8.2%	8.0%	8.0%
Hour 15	6.1%	7.1%	6.9%	6.9%	-	6.1%	7.5%	7.0%	7.0%	-	6.6%	7.8%	7.4%	7.4%	-	7.7%	9.3%	9.2%	9.2%	-	7.7%	9.3%	9.2%	9.2%
Hour 16	5.8%	6.6%	6.4%	6.4%	-	6.0%	7.0%	6.6%	6.5%	-	6.4%	7.3%	6.9%	6.9%	-	7.8%	8.7%	8.5%	8.5%	-	7.8%	8.7%	8.5%	8.5%
Hour 17	5.6%	6.2%	5.9%	5.9%	-	5.9%	6.6%	6.2%	6.2%	-	6.2%	6.9%	6.3%	6.3%	-	7.5%	8.3%	7.9%	7.9%	-	7.5%	8.3%	7.9%	7.9%
Hour 18	5.3%	5.7%	5.4%	5.4%	-	5.8%	6.2%	6.0%	6.0%	-	5.9%	6.3%	5.9%	5.9%	-	7.3%	7.7%	7.5%	7.5%	-	7.3%	7.7%	7.5%	7.5%
Hour 19	4.0%	3.9%	4.0%	4.0%	-	4.7%	4.4%	5.0%	5.0%	-	4.5%	4.4%	4.5%	4.5%	-	6.0%	5.5%	5.9%	6.0%	-	6.0%	5.5%	5.9%	6.0%
Hour 20	2.7%	2.4%	2.5%	2.5%	-	3.4%	2.8%	3.4%	3.4%	-	3.1%	2.7%	2.9%	2.9%	-	4.3%	3.5%	3.8%	3.9%	-	4.3%	3.5%	3.8%	3.9%
Hour 21	2.6%	2.3%	2.4%	2.4%	-	3.2%	2.7%	3.1%	3.1%	-	3.0%	2.6%	2.7%	2.7%	-	4.1%	3.3%	3.4%	3.4%	-	4.1%	3.3%	3.4%	3.4%
Hour 22	2.3%	1.8%	1.9%	1.9%	-	3.1%	2.2%	2.7%	2.7%	-	2.7%	2.1%	2.2%	2.2%	-	4.0%	2.7%	2.8%	2.8%	-	4.0%	2.7%	2.8%	2.8%
Hour 23	2.1%	1.4%	1.5%	1.5%	-	2.8%	1.8%	2.2%	2.2%	-	2.5%	1.6%	1.8%	1.8%	-	3.8%	2.1%	2.2%	2.2%	-	3.8%	2.1%	2.2%	2.2%
Hour 24	1.7%	1.3%	1.4%	1.4%	-	2.3%	1.6%	1.9%	1.9%	-	2.0%	1.5%	1.6%	1.6%	-	3.1%	1.9%	2.0%	2.0%	-	3.1%	1.9%	2.0%	2.0%

Hour	Portal B Proposed T4 (EB)					Portal C Proposed T4 (WB)					Portal D Proposed T4 (WB)					Portal E Proposed T4 (WB)								
	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP				
Hour 1	1.3%	0.9%	0.9%	0.9%	-	1.0%	0.6%	0.6%	0.6%	-	2.1%	1.3%	1.3%	1.3%	-	2.4%	1.4%	1.5%	1.5%	-	2.4%	1.4%	1.5%	1.5%
Hour 2	0.9%	0.7%	0.7%	0.7%	-	1.5%	1.0%	1.0%	1.0%	-	1.5%	1.0%	1.0%	1.0%	-	1.8%	1.1%	1.1%	1.1%	-	1.8%	1.1%	1.1%	1.1%
Hour 3	0.7%	0.5%	0.5%	0.5%	-	1.1%	0.8%	0.8%	0.8%	-	1.1%	0.8%	0.8%	0.8%	-	1.2%	0.8%	0.9%	0.9%	-	1.2%	0.8%	0.9%	0.9%
Hour 4	0.5%	0.5%	0.5%	0.5%	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%
Hour 5	0.5%	0.5%	0.5%	0.5%	-	0.9%	0.7%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	0.9%	0.8%	0.8%	0.8%	-	0.9%	0.8%	0.8%	0.8%
Hour 6	0.7%	0.6%	0.7%	0.6%	-	1.1%	1.0%	1.0%	1.0%	-	1.1%	1.0%	1.0%	1.0%	-	1.2%	1.0%	1.1%	1.1%	-	1.2%	1.0%	1.1%	1.1%
Hour 7	1.8%	1.8%	1.8%	1.8%	-	2.8%	2.6%	2.6%	2.6%	-	2.8%	2.6%	2.6%	2.6%	-	3.0%	2.9%	2.9%	2.9%	-	3.0%	2.9%	2.9%	2.9%
Hour 8	4.8%	4.9%	4.9%	4.9%	-	7.5%	7.4%	7.4%	7.4%	-	7.4%	7.3%	7.3%	7.3%	-	8.0%	8.0%	8.0%	8.0%	-	8.0%	8.0%	8.0%	8.0%
Hour 9	4.9%	5.2%	5.5%	5.5%	-	7.5%	7.7%	8.2%	8.2%	-	7.4%	7.7%	8.2%	8.1%	-	8.0%	8.3%	8.8%	8.8%	-	8.0%	8.3%	8.8%	8.8%
Hour 10	5.2%	5.5%	5.5%	5.5%	-	7.6%	7.7%	7.6%	7.6%	-	7.5%	7.6%	7.6%	7.6%	-	8.0%	8.0%	8.0%	8.0%	-	8.0%	8.0%	8.0%	8.0%
Hour 11	5.0%	5.3%	5.2%	5.2%	-	7.1%	7.2%	7.0%	7.0%	-	7.0%	7.1%	6.9%	6.9%	-	7.5%	7.5%	7.3%	7.3%	-	7.5%	7.5%	7.3%	7.3%
Hour 12	4.5%	4.9%	4.9%	4.9%	-	6.3%	6.6%	6.6%	6.6%	-	6.3%	6.6%	6.5%	6.5%	-	6.7%	6.9%	6.9%	6.9%	-	6.7%	6.9%	6.9%	6.9%
Hour 13	6.7%	7.6%	7.5%	7.5%	-	5.3%	6.2%	6.1%	6.1%	-	5.2%	6.2%	6.1%	6.1%	-	4.9%	5.8%	5.7%	5.7%	-	4.9%	5.8%	5.7%	5.7%
Hour 14	7.1%	8.2%	8.0%	8.0%	-	5.5%	6.6%	6.4%	6.4%	-	5.5%	6.6%	6.4%	6.4%	-	5.1%	6.2%	6.0%	6.0%	-	5.1%	6.2%	6.0%	6.0%
Hour 15	7.7%	9.3%	9.2%	9.2%	-	6.1%	7.5%	7.4%	7.4%	-	6.0%	7.5%	7.4%	7.4%	-	5.5%	7.0%	6.9%	6.9%	-	5.5%	7.0%	6.9%	6.9%
Hour 16	7.6%	8.7%	8.5%	8.5%	-	6.0%	7.1%	6.9%	6.9%	-	5.9%	7.1%	6.9%	6.9%	-	5.5%	6.7%	6.4%	6.4%	-	5.5%	6.7%	6.4%	6.4%
Hour 17	7.5%	8.3%	7.8%	7.8%	-	5.9%	6.7%	6.3%	6.3%	-	5.8%	6.7%	6.3%	6.3%	-	5.4%	6.3%	5.9%	5.9%	-	5.4%	6.3%	5.9%	5.9%
Hour 18	7.3%	7.7%	7.5%	7.5%	-	5.7%	6.2%	6.1%	6.1%	-	5.7%	6.2%	6.0%	6.0%	-	5.3%	5.8%	5.7%	5.7%	-	5.3%	5.8%	5.7%	5.7%
Hour 19	6.0%	5.5%	5.8%	5.8%	-	4.8%	4.5%	4.9%	4.9%	-	4.7%	4.5%	4.8%	4.8%	-	4.4%	4.3%	4.6%	4.6%	-	4.4%	4.3%	4.6%	4.6%
Hour 20	4.3%	3.5%	3.8%	3.9%	-	3.4%	2.9%	3.1%	3.2%	-	3.4%	2.8%	3.1%	3.1%	-	3.2%	2.7%	3.0%	3.0%	-	3.2%	2.7%	3.0%	3.0%
Hour 21	4.1%	3.3%	3.4%	3.4%	-	3.3%	2.7%	2.8%	2.8%	-	3.3%	2.7%	2.8%	2.8%	-	3.1%	2.5%	2.8%	2.8%	-	3.1%	2.5%	2.8%	2.8%
Hour 22	4.0%	2.7%	2.8%	2.8%	-	3.2%	2.2%	2.3%	2.3%	-	3.1%	2.2%	2.3%	2.3%	-	3.0%	2.1%	2.1%	2.1%	-	3.0%	2.1%	2.1%	2.1%
Hour 23	3.8%	2.1%	2.2%	2.2%	-	3.0%	1.7%	1.8%	1.8%	-	3.0%	1.7%	1.8%	1.8%	-	2.9%	1.7%	1.7%	1.7%	-	2.9%	1.7%	1.7%	1.7%
Hour 24	3.1%	1.9%	2.0%	2.0%	-	2.4%	1.6%	1.6%	1.6%	-	2.4%	1.6%	1.6%	1.6%	-	2.3%	1.5%	1.5%	1.5%	-	2.3%	1.5%	1.5%	1.5%

Hour	Portal F Proposed T4 (WB)					Portal G Proposed T4 (EB)					Portal H Proposed T4 (WB)				
	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP
Hour 1	0.9%	0.7%	0.7%	0.7%	-	1.3%	0.8%	0.9%	0.9%	-	1.9%	1.3%	1.9%	1.9%	-
Hour 2	0.6%	0.6%	0.6%	0.6%	-	0.9%	0.7%	0.7%	0.7%	-	1.4%	1.0%	1.3%	1.3%	-
Hour 3	0.5%	0.4%	0.4%	0.4%	-	0.7%	0.5%	0.5%	0.5%	-	1.0%	0.8%	1.0%	1.0%	-
Hour 4	0.4%	0.4%	0.4%	0.4%	-	0.5%	0.4%	0.4%	0.4%	-	0.8%	0.7%	0.8%	0.8%	-
Hour 5	0.4%	0.4%	0.4%	0.4%	-	0.5%	0.5%	0.5%	0.5%	-	0.8%	0.7%	0.8%	0.8%	-
Hour 6	0.5%	0.5%	0.5%	0.5%	-	0.7%	0.6%	0.6%	0.6%	-	1.0%	0.9%	1.1%	1.1%	-
Hour 7	1.4%	1.5%	1.5%	1.5%	-	1.8%	1.7%	1.7%	1.7%	-	2.7%	2.6%	2.9%	2.9%	-
Hour 8	4.0%	4.4%	4.3%	4.3%	-	4.8%	4.8%	4.6%	4.6%	-	7.3%	7.3%	7.8%	7.8%	-
Hour 9	4.3%	4.8%	4.9%	4.9%	-	5.0%	5.2%	5.2%	5.2%	-	8.1%	8.3%	8.9%	8.9%	-
Hour 10	4.9%	5.5%	5.3%	5.3%	-	5.2%	5.5%	5.1%	5.1%	-	8.4%	8.9%	8.9%	8.9%	-
Hour 11	4.8%	5.5%	5.2%	5.2%	-	4.9%	5.3%	4.8%	4.8%	-	7.8%	8.5%	8.2%	8.2%	-
Hour 12	4.4%	5.1%	4.9%	4.9%	-	4.4%	4.9%	4.6%	4.6%	-	7.0%	7.8%	7.7%	7.7%	-
Hour 13	7.2%	7.8%	7.7%	7.7%	-	6.7%	7.6%	7.4%	7.4%	-	4.9%	5.6%	5.0%	5.0%	-
Hour 14	7.7%	8.5%	8.2%	8.2%	-	7.1%	8.1%	7.7%	7.7%	-	5.1%	6.0%	5.2%	5.2%	-
Hour 15	8.5%	9.7%	9.4%	9.4%	-	7.8%	9.3%	8.8%	8.8%	-	5.6%	6.8%	5.9%	5.9%	-
Hour 16	8.3%	9.1%	8.8%	8.8%	-	7.7%	8.8%	8.3%	8.3%	-	5.5%	6.4%	5.6%	5.6%	-
Hour 17	8.1%	8.5%	8.1%	8.1%	-	7.6%	8.4%	7.8%	7.8%	-	5.5%	6.1%	5.3%		

Calculation of Portal Emissions (With Project (With Direct Noise Remedies) Scenario – Year 2028)

Description	Length (m)	Source Name	Link No.	No. of Portal Sources	Hour	Q (veh/hr)	Total Emission Factor					Total Emission Rate					Daily Emission Rate / Diurnal Profile (from 1st 50m for Each Portal Source)					Daily Emission Rate / Diurnal Profile (from 2nd 50m for Each Portal Source)					Remarks		
							NO (g/mile-veh)	NO _x (g/mile-veh)	RSP (g/mile-veh)	FSP (g/mile-veh)	TSP (g/mile-veh)	NO (g/s)	NO _x (g/s)	RSP (g/s)	FSP (g/s)	TSP (g/s)	NO (g/s) / %	NO _x (g/s) / %	RSP (g/s) / %	FSP (g/s) / %	TSP (g/s) / %	NO (g/s) / %	NO _x (g/s) / %	RSP (g/s) / %	FSP (g/s) / %	TSP (g/s) / %			
Existing Tunnel Z	140	Z1 - Z6	184	6	1	1363	0.3358	0.0347	0.0102	0.0094	-	1.106E-02	1.143E-03	3.347E-04	3.085E-04	-	1.8%	1.1%	1.4%	1.4%	-	1.8%	1.1%	1.4%	1.4%	-			
					2	940	0.3452	0.0386	0.0110	0.0102	-	7.838E-03	8.773E-04	2.501E-04	2.306E-04	-	1.3%	0.9%	1.0%	1.0%	-	1.3%	0.9%	1.0%	1.0%	-			
					3	667	0.3554	0.0425	0.0119	0.0109	-	5.732E-03	6.872E-04	1.914E-04	1.765E-04	-	0.9%	0.7%	0.8%	0.8%	-	0.9%	0.7%	0.8%	0.8%	-			
					4	529	0.3656	0.0466	0.0127	0.0117	-	4.671E-03	5.954E-04	1.626E-04	1.499E-04	-	0.8%	0.6%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-			
					5	513	0.3757	0.0506	0.0136	0.0125	-	4.654E-03	6.262E-04	1.682E-04	1.550E-04	-	0.8%	0.6%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-			
					6	643	0.3859	0.0545	0.0144	0.0133	-	5.995E-03	8.470E-04	2.242E-04	2.066E-04	-	1.0%	0.9%	0.9%	0.9%	-	1.0%	0.9%	0.9%	0.9%	-			
					7	1629	0.3983	0.0588	0.0153	0.0141	-	1.568E-02	2.314E-03	6.028E-04	5.545E-04	-	2.6%	2.3%	2.5%	2.5%	-	2.6%	2.3%	2.5%	2.5%	-			
					8	4240	0.4168	0.0642	0.0164	0.0151	-	4.270E-02	6.581E-03	1.677E-03	1.544E-03	-	6.9%	6.6%	6.9%	6.9%	-	6.9%	6.6%	6.9%	6.9%	-			
					9	5004	0.3858	0.0616	0.0158	0.0146	-	4.665E-02	7.444E-03	1.910E-03	1.760E-03	-	7.6%	7.5%	7.9%	7.9%	-	7.6%	7.5%	7.9%	7.9%	-			
					10	4273	0.4648	0.0751	0.0186	0.0171	-	4.799E-02	7.749E-03	1.916E-03	1.764E-03	-	7.8%	7.8%	7.9%	7.9%	-	7.8%	7.8%	7.9%	7.9%	-			
					11	3632	0.5202	0.0853	0.0207	0.0189	-	4.565E-02	7.482E-03	1.814E-03	1.663E-03	-	7.4%	7.5%	7.5%	7.4%	-	7.4%	7.5%	7.5%	7.4%	-			
					12	3391	0.5016	0.0841	0.0207	0.0191	-	4.110E-02	6.892E-03	1.696E-03	1.564E-03	-	6.7%	6.9%	7.0%	7.0%	-	6.7%	6.9%	7.0%	7.0%	-			
					13	2544	0.5618	0.1039	0.0242	0.0222	-	3.453E-02	6.383E-03	1.484E-03	1.367E-03	-	5.6%	6.4%	6.1%	6.1%	-	5.6%	6.4%	6.1%	6.1%	-			
					14	2617	0.5760	0.1077	0.0247	0.0228	-	3.642E-02	6.812E-03	1.964E-03	1.441E-03	-	5.9%	6.9%	6.5%	6.5%	-	5.9%	6.9%	6.5%	6.5%	-			
					15	2803	0.5999	0.1152	0.0266	0.0245	-	4.063E-02	7.801E-03	1.802E-03	1.682E-03	-	6.6%	7.8%	7.4%	7.4%	-	6.6%	7.8%	7.4%	7.4%	-			
					16	2922	0.5552	0.1035	0.0236	0.0218	-	3.920E-02	7.304E-03	1.666E-03	1.536E-03	-	6.4%	7.3%	6.9%	6.9%	-	6.4%	7.3%	6.9%	6.9%	-			
					17	2998	0.5271	0.0945	0.0211	0.0194	-	3.819E-02	6.847E-03	1.525E-03	1.407E-03	-	6.2%	6.9%	6.3%	6.3%	-	6.2%	6.9%	6.3%	6.3%	-			
					18	3230	0.4643	0.0802	0.0183	0.0169	-	3.624E-02	6.257E-03	1.431E-03	1.320E-03	-	5.9%	6.3%	5.9%	5.9%	-	5.9%	6.3%	5.9%	5.9%	-			
					19	3362	0.3426	0.0536	0.0135	0.0124	-	2.783E-02	4.357E-03	1.096E-03	1.011E-03	-	4.5%	4.4%	4.5%	4.5%	-	4.5%	4.4%	4.5%	4.5%	-			
					20	2668	0.2862	0.0419	0.0110	0.0101	-	1.922E-02	2.702E-03	7.079E-04	6.519E-04	-	3.1%	2.7%	2.9%	2.9%	-	3.1%	2.7%	2.9%	2.9%	-			
					21	2304	0.3788	0.0528	0.0136	0.0125	-	1.824E-02	2.566E-03	6.597E-04	6.073E-04	-	3.0%	2.8%	2.7%	2.7%	-	3.0%	2.8%	2.7%	2.7%	-			
					22	1914	0.3620	0.0452	0.0117	0.0108	-	1.674E-02	2.092E-03	5.417E-04	4.988E-04	-	2.7%	2.1%	2.2%	2.2%	-	2.7%	2.1%	2.2%	2.2%	-			
					23	1865	0.3366	0.0360	0.0095	0.0088	-	1.517E-02	1.622E-03	4.301E-04	3.961E-04	-	2.5%	1.6%	1.8%	1.8%	-	2.5%	1.6%	1.8%	1.8%	-			
					24	1468	0.3511	0.0412	0.0107	0.0098	-	1.245E-02	1.460E-03	3.788E-04	3.491E-04	-	2.0%	1.5%	1.6%	1.6%	-	2.0%	1.5%	1.6%	1.6%	-			
Daily					57215	-	-	-	-	-	6.146E-01	9.943E-02	2.423E-02	2.232E-02	-	1.366E-01	2.210E-02	5.385E-03	4.960E-03	-	6.829E-02	1.105E-02	2.693E-03	2.480E-03	-				
Proposed Tunnel A	119	A1-A14	304	14	1	316	0.2791	0.0280	0.0067	0.0062	-	1.811E-03	1.818E-04	4.324E-05	3.993E-05	-	1.3%	0.9%	0.9%	0.9%	-	1.3%	0.9%	0.9%	0.9%	-			
					2	217	0.2877	0.0315	0.0075	0.0069	-	1.282E-03	1.405E-04	3.320E-05	3.065E-05	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-			
					3	153	0.2956	0.0350	0.0082	0.0075	-	9.316E-04	1.102E-04	2.599E-05	2.383E-05	-	0.7%	0.5%	0.5%	0.5%	-	0.7%	0.5%	0.5%	0.5%	-			
					4	121	0.3043	0.0385	0.0090	0.0082	-	7.569E-04	9.580E-05	2.249E-05	2.047E-05	-	0.5%	0.5%	0.5%	0.5%	-	0.5%	0.5%	0.5%	0.5%	-			
					5	117	0.3130	0.0421	0.0098	0.0090	-	7.518E-04	1.010E-04	2.364E-05	2.153E-05	-	0.5%	0.5%	0.5%	0.5%	-	0.5%	0.5%	0.5%	0.5%	-			
					6	146	0.3218	0.0456	0.0106	0.0097	-	9.657E-04	1.369E-04	3.195E-05	2.912E-05	-	0.7%	0.6%	0.7%	0.6%	-	0.7%	0.6%	0.7%	0.6%	-			
					7	369	0.3316	0.0493	0.0115	0.0106	-	2.511E-03	3.735E-04	8.673E-05	7.996E-05	-	1.8%	1.8%	1.8%	1.8%	-	1.8%	1.8%	1.8%	1.8%	-			
					8	956	0.3425	0.0532	0.0123	0.0113	-	6.724E-03	1.044E-03	2.414E-04	2.220E-04	-	4.8%	4.9%	4.9%	4.9%	-	4.8%	4.9%	4.9%	4.9%	-			
					9	1132	0.2964	0.0477	0.0115	0.0106	-	6.891E-03	1.108E-03	2.680E-04	2.467E-04	-	4.9%	5.2%	5.5%	5.5%	-	4.9%	5.2%	5.5%	5.5%	-			
					10	939	0.3760	0.0604	0.0139	0.0128	-	7.254E-03	1.166E-03	2.681E-04	2.467E-04	-	5.2%	5.5%	5.5%	5.5%	-	5.2%	5.5%	5.5%	5.5%	-			
					11	784	0.4319	0.0700	0.0158	0.0145	-	6.956E-03	1.127E-03	2.545E-04	2.340E-04	-	5.0%	5.3%	5.5%	5.5%	-	5.0%	5.3%	5.5%	5.5%	-			
					12	734	0.4154	0.0693	0.0159	0.0147	-	6.267E-03	1.045E-03	2.404E-04	2.212E-04	-	4.5%	4.9%	4.9%	4.9%	-	4.5%	4.9%	4.9%	4.9%	-			
					13	1083	0.4238	0.0730	0.0167	0.0153	-	9.424E-03	1.622E-03	3.708E-04	3.412E-04	-	6.7%	7.6%	7.5%	7.5%	-	6.7%	7.6%	7.5%	7.5%	-			
					14	1096	0.4380	0.0770	0.0174	0.0160	-	9.863E-03	1.733E-03	3.920E-04	3.606E-04	-	7.1%	8.2%	8.0%	8.0%	-	7.1%	8.2%	8.0%	8.0%	-			
					15	1157	0.4537	0.0826	0.0190	0.0174	-	1.078E-02	1.964E-03	4.506E-04	4.145E-04	-	7.7%	9.3%	9.2%	9.2%	-	7.7%	9.3%	9.2%	9.2%	-			
					16	1241	0.4170	0.0727	0.0165	0.0152	-	1.063E-02	1.854E-03	4.198E-04	3.862E-04	-	7.6%	8.5%	8.5%	8.5%	-	7.6%	8.5%	8.5%	8.5%	-			
					17	1286	0.3969	0.0663	0.0146	0.0134	-	1.048E-02	1.751E-03	3.846E-04	3.546E-04	-	7.5%	8.3%	7.8%	7.8%	-	7.5%	8.3%	7.8%	7.8%	-			
					18	1450	0.3420	0.0545	0.0123	0.0113	-	1.019E-02	1.623E-03	3.666E-04	3.379E-04	-	7.3%	7.7%	7.5%	7.5%	-	7.3%	7.7%	7.5%	7.5%	-			
					19	1645	0.2482	0.0347	0.0067	0.0060	-	8.386E-03	1.174E-03	2.924E-04	2.699E-04	-	6.0%	5.5%	5.9%	6.0%	-	6.0%	5.5%	5.9%	6.0%	-			
					20	1337	0.2187	0.0269	0.0069	0.0063	-	6.006E-03	7.384E-04	1.890E-04	1.744E-04	-	4.3%	3.5%	3.8%	3.9%	-	4.3%	3.5%	3.8%	3.8%	-			
					21	988	0.2852	0.0340	0.0083	0.0076	-	5.787E-03	6.905E-04	1.679E-04	1.547E-04	-	4.1%	3.3%	3.4%	3.4%	-	4.1%	3.3%	3.4%	3.4%	-			
					22	959	0.2812	0.0290	0.0069	0.0064	-	5.537E-03	5.718E-04	1.367E-04	1.260E-04	-	4.0%	2.7%	2.8%	2.8%	-	4.0%	2.7%	2.8%	2.8%	-			
					23	957	0.2703	0.0230	0.0055	0.0051	-	5.316E-03	4.527E-04	1.085E-04	1.001E-04	-	3.8%	2.1%	2.2%	2.2%	-	3.8%	2.1%	2.2%	2.2%	-			
					24																								

Calculation of Portal Emissions (With Project (With Direct Noise Remedies) Scenario – Year 2028)

Description	Length (m)	Source Name	Link No.	No. of Portal Sources	Hour	Total Emission Factor					Total Emission Rate					Daily Emission Rate / Diurnal Profile (from 1st 50m for Each Portal Source)					Daily Emission Rate / Diurnal Profile (from 2nd 50m for Each Portal Source)					Remarks																
						Q (veh/hr)	NO (g/mile-veh)	NO _x (g/mile-veh)	RSP (g/mile-veh)	FSP (g/mile-veh)	TSP (g/mile-veh)	NO (g/s)	NO _x (g/s)	RSP (g/s)	FSP (g/s)	TSP (g/s)	NO (g/s) / %	NO _x (g/s) / %	RSP (g/s) / %	FSP (g/s) / %	TSP (g/s) / %	NO (g/s) / %	NO _x (g/s) / %	RSP (g/s) / %	FSP (g/s) / %		TSP (g/s) / %															
Proposed Tunnel D	227	D1-D14	302	14	1	591	0.2597	0.0228	0.0055	0.0051	-	6.019E-03	5.280E-04	1.277E-04	1.179E-04	-	2.1%	1.3%	1.3%	1.3%	-	2.1%	1.3%	1.3%	1.3%	-	-	-	-	-	-	-	-	-	-	-						
					2	405	0.2652	0.0256	0.0062	0.0057	-	4.203E-03	4.064E-04	9.763E-05	9.018E-05	-	1.5%	1.0%	1.0%	1.0%	-	1.5%	1.0%	1.0%	1.0%	-	1.5%	1.0%	1.0%	1.0%	-	-	-	-	-	-	-	-	-	-		
					3	285	0.2714	0.0286	0.0068	0.0063	-	3.032E-03	3.190E-04	7.621E-05	7.036E-05	-	1.1%	0.8%	0.8%	0.8%	-	1.1%	0.8%	0.8%	0.8%	-	1.1%	0.8%	0.8%	0.8%	-	-	-	-	-	-	-	-	-	-	-	
					4	224	0.2777	0.0316	0.0075	0.0069	-	2.437E-03	2.789E-04	6.584E-05	6.077E-05	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	-	-	-	-	-	-	-	-	-	-	
					5	215	0.2841	0.0346	0.0082	0.0076	-	2.397E-03	2.917E-04	6.908E-05	6.374E-05	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	-	-	-	-	-	-	-	-	-	-	
					6	268	0.2906	0.0376	0.0089	0.0082	-	3.050E-03	3.950E-04	9.325E-05	8.602E-05	-	1.1%	1.0%	1.0%	1.0%	-	1.1%	1.0%	1.0%	1.0%	-	1.1%	1.0%	1.0%	1.0%	-	-	-	-	-	-	-	-	-	-	-	
					7	673	0.2981	0.0408	0.0096	0.0089	-	7.860E-03	1.076E-03	2.534E-04	2.334E-04	-	2.8%	2.6%	2.6%	2.6%	-	2.8%	2.6%	2.6%	2.6%	-	2.8%	2.6%	2.6%	2.6%	-	-	-	-	-	-	-	-	-	-	-	
					8	1737	0.3087	0.0445	0.0104	0.0096	-	2.101E-02	3.030E-03	7.052E-04	6.505E-04	-	7.4%	7.3%	7.3%	7.3%	-	7.4%	7.3%	7.3%	7.3%	-	7.4%	7.3%	7.3%	7.3%	-	-	-	-	-	-	-	-	-	-	-	-
					9	2064	0.2616	0.0391	0.0098	0.0089	-	2.116E-02	3.166E-03	7.987E-04	7.194E-04	-	7.4%	7.7%	8.2%	8.1%	-	7.4%	7.7%	8.2%	8.1%	-	7.4%	7.7%	8.2%	8.1%	-	-	-	-	-	-	-	-	-	-	-	-
					10	1660	0.3285	0.0482	0.0112	0.0103	-	2.137E-02	3.137E-03	7.292E-04	6.730E-04	-	7.5%	7.6%	7.6%	7.6%	-	7.5%	7.6%	7.6%	7.6%	-	7.5%	7.6%	7.6%	7.6%	-	-	-	-	-	-	-	-	-	-	-	-
					11	1358	0.3761	0.0553	0.0126	0.0116	-	2.001E-02	2.941E-03	6.682E-04	6.161E-04	-	7.0%	7.1%	6.9%	6.9%	-	7.0%	7.1%	6.9%	6.9%	-	7.0%	7.1%	6.9%	6.9%	-	-	-	-	-	-	-	-	-	-	-	-
					12	1276	0.3565	0.0542	0.0126	0.0116	-	1.783E-02	2.712E-03	6.316E-04	5.814E-04	-	6.3%	6.6%	6.5%	6.5%	-	6.3%	6.6%	6.5%	6.5%	-	6.3%	6.6%	6.5%	6.5%	-	-	-	-	-	-	-	-	-	-	-	-
					13	914	0.4159	0.0712	0.0163	0.0150	-	1.489E-02	2.548E-03	5.844E-04	5.376E-04	-	5.2%	6.2%	6.1%	6.1%	-	5.2%	6.2%	6.1%	6.1%	-	5.2%	6.2%	6.1%	6.1%	-	-	-	-	-	-	-	-	-	-	-	
					14	925	0.4299	0.0751	0.0170	0.0157	-	1.558E-02	2.722E-03	6.177E-04	5.682E-04	-	5.5%	6.6%	6.4%	6.4%	-	5.5%	6.6%	6.4%	6.4%	-	5.5%	6.6%	6.4%	6.4%	-	-	-	-	-	-	-	-	-	-	-	-
					15	975	0.4468	0.0809	0.0186	0.0171	-	1.708E-02	3.093E-03	7.105E-04	6.537E-04	-	6.0%	7.5%	7.4%	7.4%	-	6.0%	7.5%	7.4%	7.4%	-	6.0%	7.5%	7.4%	7.4%	-	-	-	-	-	-	-	-	-	-	-	-
					16	1047	0.4106	0.0712	0.0161	0.0149	-	1.685E-02	2.922E-03	6.625E-04	6.095E-04	-	5.9%	7.1%	6.9%	6.9%	-	5.9%	7.1%	6.9%	6.9%	-	5.9%	7.1%	6.9%	6.9%	-	-	-	-	-	-	-	-	-	-	-	
					17	1086	0.3894	0.0647	0.0143	0.0131	-	1.657E-02	2.752E-03	6.076E-04	5.590E-04	-	5.8%	6.3%	6.3%	6.3%	-	5.8%	6.3%	6.3%	6.3%	-	5.8%	6.3%	6.3%	6.3%	-	-	-	-	-	-	-	-	-	-	-	
					18	1228	0.3355	0.0531	0.0121	0.0111	-	1.614E-02	2.555E-03	5.803E-04	5.336E-04	-	5.7%	6.2%	6.0%	6.0%	-	5.7%	6.2%	6.0%	6.0%	-	5.7%	6.2%	6.0%	6.0%	-	-	-	-	-	-	-	-	-	-	-	
					19	1398	0.2439	0.0338	0.0085	0.0078	-	1.336E-02	1.855E-03	4.650E-04	4.262E-04	-	4.7%	4.5%	4.8%	4.8%	-	4.7%	4.5%	4.8%	4.8%	-	4.7%	4.5%	4.8%	4.8%	-	-	-	-	-	-	-	-	-	-	-	
					20	1138	0.2161	0.0263	0.0068	0.0062	-	9.632E-03	1.171E-03	3.012E-04	2.779E-04	-	3.4%	2.8%	3.1%	3.1%	-	3.4%	2.8%	3.1%	3.1%	-	3.4%	2.8%	3.1%	3.1%	-	-	-	-	-	-	-	-	-	-	-	
					21	840	0.2821	0.0332	0.0081	0.0075	-	9.285E-03	1.094E-03	2.666E-04	2.457E-04	-	3.3%	2.7%	2.8%	2.8%	-	3.3%	2.7%	2.8%	2.8%	-	3.3%	2.7%	2.8%	2.8%	-	-	-	-	-	-	-	-	-	-	-	
					22	816	0.2787	0.0284	0.0068	0.0063	-	8.907E-03	9.068E-04	2.172E-04	2.003E-04	-	3.1%	2.2%	2.3%	2.3%	-	3.1%	2.2%	2.3%	2.3%	-	3.1%	2.2%	2.3%	2.3%	-	-	-	-	-	-	-	-	-	-	-	
					23	816	0.2676	0.0224	0.0054	0.0050	-	8.551E-03	7.164E-04	1.725E-04	1.593E-04	-	3.0%	1.7%	1.8%	1.8%	-	3.0%	1.7%	1.8%	1.8%	-	3.0%	1.7%	1.8%	1.8%	-	-	-	-	-	-	-	-	-	-	-	
					24	634	0.2769	0.0261	0.0062	0.0057	-	8.679E-03	6.479E-04	1.545E-04	1.426E-04	-	2.4%	1.6%	1.6%	1.6%	-	2.4%	1.6%	1.6%	1.6%	-	2.4%	1.6%	1.6%	1.6%	-	-	-	-	-	-	-	-	-	-	-	
Daily						22573.3	-	-	-	-	-	2.841E-01	4.126E-02	9.646E-03	8.877E-03	-	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	1.363E-02	1.965E-03	4.693E-04	4.227E-04	-	-	-	-	-	-	-	-	-								
Proposed Tunnel E	193	E1-E14	306	14	1	558	0.2544	0.0214	0.0052	0.0048	-	4.730E-03	3.974E-04	9.670E-05	8.929E-05	-	2.4%	1.5%	1.5%	1.5%	-	2.4%	1.5%	1.5%	1.5%	-	-	-	-	-	-	-	-	-	-	-	-					
					2	381	0.2591	0.0241	0.0058	0.0054	-	3.292E-03	3.058E-04	7.386E-05	6.924E-05	-	1.6%	1.1%	1.1%	1.1%	-	1.6%	1.1%	1.1%	1.1%	-	1.6%	1.1%	1.1%	1.1%	-	-	-	-	-	-	-	-	-	-		
					3	268	0.2647	0.0268	0.0064	0.0060	-	2.966E-03	2.399E-04	5.761E-05	5.321E-05	-	1.2%	0.8%	0.9%	0.9%	-	1.2%	0.8%	0.9%	0.9%	-	1.2%	0.8%	0.9%	0.9%	-	-	-	-	-	-	-	-	-	-	-	
					4	211	0.2703	0.0297	0.0071	0.0065	-	1.897E-03	2.081E-04	4.974E-05	4.592E-05	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	-	-	-	-	-	-	-	-	-	-	
					5	202	0.2761	0.0325	0.0077	0.0071	-	1.860E-03	2.191E-04	5.216E-05	4.814E-05	-	0.9%	0.8%	0.8%	0.8%	-	0.9%	0.8%	0.8%	0.8%	-	0.9%	0.8%	0.8%	0.8%	-	-	-	-	-	-	-	-	-	-	-	
					6	251	0.2819	0.0354	0.0084	0.0078	-	2.360E-03	2.967E-04	7.038E-05	6.493E-05	-	1.2%	1.0%	1.1%	1.1%	-	1.2%	1.0%	1.1%	1.1%	-	1.2%	1.0%	1.1%	1.1%	-	-	-	-	-	-	-	-	-	-	-	
					7	631	0.2886	0.0385	0.0091	0.0084	-	6.065E-03	8.081E-04	1.912E-04	1.761E-04	-	3.0%	2.9%	2.9%	2.9%	-	3.0%	2.9%	2.9%	2.9%	-	3.0%	2.9%	2.9%	2.9%	-	-	-	-	-	-	-	-	-	-	-	
					8	1626	0.2972	0.0417	0.0098	0.0090	-	1.610E-02	2.260E-03	5.308E-04	4.894E-04	-	8.0%	8.0%	8.0%	8.0%	-	8.0%	8.0%	8.0%	8.0%	-	8.0%	8.0%	8.0%	8.0%	-	-	-	-	-	-	-	-	-	-	-	
					9	1934	0.2498	0.0364	0.0091	0.0084	-	1.610E-02	2.347E-03	5.852E-04	5.404E-04	-	8.0%	8.3%	8.8%	8.8%	-	8.0%	8.3%	8.8%	8.8%	-	8.0%	8.3%	8.8%	8.8%	-	-	-	-	-	-	-	-	-	-	-	
					10	1542	0.3121	0.0442	0.0104	0.0096	-	1.603E-02	2.273E-03	5.347E-04	4.933E-04	-	8.0%	8.0%	8.0%	8.0%	-	8.0%	8.0%	8.0%	8.0%	-	8.0%	8.0%	8.0%	8.0%	-	-	-	-	-	-	-	-	-	-	-	
					11	1254	0.3575	0.0507	0.0116	0.0107	-	1.493E-02	2.117E-03	4.846E-04	4.461E-04																											

Calculation of Portal Emissions (With Project (With Direct Noise Remedies) Scenario – Year 2028)

Description	Length (m)	Source Name	Link No.	No. of Portal Sources	Hour	Q (veh/hr)	Total Emission Factor					Total Emission Rate					Daily Emission Rate / Diurnal Profile (from 1st 50m for Each Portal Source)					Daily Emission Rate / Diurnal Profile (from 2nd 50m for Each Portal Source)					Remarks	
							NO (g/mile-veh)	NO _x (g/mile-veh)	RSP (g/mile-veh)	FSP (g/mile-veh)	TSP (g/mile-veh)	NO (g/s)	NO _x (g/s)	RSP (g/s)	FSP (g/s)	TSP (g/s)	NO (g/s) / %	NO _x (g/s) / %	RSP (g/s) / %	FSP (g/s) / %	TSP (g/s) / %	NO (g/s) / %	NO _x (g/s) / %	RSP (g/s) / %	FSP (g/s) / %	TSP (g/s) / %		
Proposed Tunnel G1 to G5	-	G1-G8	-	8	1	1074	-	-	-	-	-	2.358E-02	2.351E-03	6.517E-04	6.009E-04	-	1.3%	0.8%	0.9%	0.9%	-	1.3%	0.8%	0.9%	0.9%	-	1xTunnel G1 + 1xTunnel G2 + 1xTunnel G3 + 1xTunnel G4 + 1xTunnel G5 + 1/3xTunnel B	
					2	739	-	-	-	-	-	1.667E-02	1.807E-03	1.807E-03	4.901E-04	4.515E-04	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%		-
					3	523	-	-	-	-	-	1.212E-02	1.414E-03	3.769E-04	3.466E-04	-	0.7%	0.5%	0.5%	0.5%	-	0.7%	0.5%	0.5%	0.5%	-		-
					4	413	-	-	-	-	-	9.839E-03	1.225E-03	3.216E-04	2.957E-04	-	0.5%	0.4%	0.4%	0.4%	-	0.5%	0.4%	0.4%	0.4%	-		-
					5	400	-	-	-	-	-	9.765E-03	1.289E-03	3.339E-04	3.070E-04	-	0.5%	0.5%	0.5%	0.5%	-	0.5%	0.5%	0.5%	0.5%	-		-
					6	500	-	-	-	-	-	1.254E-02	1.744E-03	4.466E-04	4.106E-04	-	0.7%	0.6%	0.6%	0.6%	-	0.7%	0.6%	0.6%	0.6%	-		-
					7	1263	-	-	-	-	-	3.264E-02	4.758E-03	1.204E-03	1.108E-03	-	1.8%	1.7%	1.7%	1.7%	-	1.8%	1.7%	1.7%	1.7%	-		-
					8	3279	-	-	-	-	-	8.788E-02	1.396E-02	3.332E-03	3.064E-03	-	4.8%	4.8%	4.6%	4.6%	-	4.8%	4.8%	4.6%	4.6%	-		-
					9	3879	-	-	-	-	-	9.194E-02	1.437E-02	3.740E-03	3.444E-03	-	5.0%	5.2%	5.2%	5.2%	-	5.0%	5.2%	5.2%	5.2%	-		-
					10	3252	-	-	-	-	-	9.557E-02	1.510E-02	3.714E-03	3.420E-03	-	5.2%	5.5%	5.1%	5.1%	-	5.2%	5.5%	5.1%	5.1%	-		-
					11	2732	-	-	-	-	-	9.092E-02	1.458E-02	3.503E-03	3.224E-03	-	4.9%	5.3%	4.8%	4.8%	-	4.9%	5.3%	4.8%	4.8%	-		-
					12	2556	-	-	-	-	-	8.208E-02	1.352E-02	3.298E-03	3.036E-03	-	4.4%	4.9%	4.6%	4.6%	-	4.4%	4.9%	4.6%	4.6%	-		-
					13	3307	-	-	-	-	-	1.239E-01	2.100E-02	5.316E-03	4.894E-03	-	6.7%	7.6%	7.4%	7.4%	-	6.7%	7.6%	7.4%	7.4%	-		-
					14	3374	-	-	-	-	-	1.302E-01	2.249E-02	5.576E-03	5.132E-03	-	7.1%	8.1%	7.7%	7.7%	-	7.1%	8.1%	7.7%	7.7%	-		-
					15	3588	-	-	-	-	-	1.445E-01	2.582E-02	6.386E-03	5.869E-03	-	7.8%	9.3%	8.8%	8.8%	-	7.8%	9.3%	8.8%	8.8%	-		-
					16	3789	-	-	-	-	-	1.416E-01	2.446E-02	5.973E-03	5.494E-03	-	7.7%	8.8%	8.3%	8.3%	-	7.7%	8.8%	8.3%	8.3%	-		-
					17	3914	-	-	-	-	-	1.409E-01	2.313E-02	5.641E-03	5.190E-03	-	7.6%	8.4%	7.8%	7.8%	-	7.6%	8.4%	7.8%	7.8%	-		-
					18	4317	-	-	-	-	-	1.394E-01	2.176E-02	5.530E-03	5.096E-03	-	7.6%	7.9%	7.7%	7.7%	-	7.6%	7.9%	7.7%	7.7%	-		-
					19	4694	-	-	-	-	-	1.141E-01	1.565E-02	4.567E-03	4.198E-03	-	6.2%	5.7%	6.3%	6.3%	-	6.2%	5.7%	6.3%	6.3%	-		-
					20	3776	-	-	-	-	-	8.021E-02	9.589E-03	3.084E-03	2.842E-03	-	4.3%	3.5%	4.3%	4.3%	-	4.3%	3.5%	4.3%	4.3%	-		-
					21	2817	-	-	-	-	-	7.539E-02	8.964E-03	2.789E-03	2.551E-03	-	4.1%	3.2%	3.8%	3.8%	-	4.1%	3.2%	3.8%	3.8%	-		-
					22	2714	-	-	-	-	-	7.106E-02	7.454E-03	2.366E-03	2.180E-03	-	3.8%	2.7%	3.3%	3.3%	-	3.8%	2.7%	3.3%	3.3%	-		-
					23	2677	-	-	-	-	-	6.619E-02	5.905E-03	1.955E-03	1.802E-03	-	3.6%	2.1%	2.7%	2.7%	-	3.6%	2.1%	2.7%	2.7%	-		-
					24	2093	-	-	-	-	-	5.328E-02	5.252E-03	1.666E-03	1.535E-03	-	2.9%	1.9%	2.3%	2.3%	-	2.9%	1.9%	2.3%	2.3%	-		-
					Daily	61669.5	0.4690	0.0458	0.0189	0.0174	-	1.846E+00	2.770E-01	7.224E-02	6.649E-02	-	3.077E-01	4.616E-02	1.204E-02	1.108E-02	-	1.539E-01	2.308E-02	6.020E-03	5.541E-03	-		
Proposed Tunnel H	389	H1-H14	83	14	1	711	0.4784	0.0501	0.0197	0.0181	-	2.240E-02	2.185E-03	9.018E-04	8.301E-04	-	1.9%	1.3%	1.9%	1.9%	-	1.9%	1.3%	1.9%	1.9%	-		
					2	493	0.4878	0.0544	0.0205	0.0189	-	1.583E-02	1.658E-03	6.518E-04	5.999E-04	-	1.4%	1.0%	1.3%	1.3%	-	1.4%	1.0%	1.3%	1.3%	-		-
					3	352	0.4878	0.0544	0.0205	0.0189	-	1.152E-02	1.285E-03	4.843E-04	4.458E-04	-	1.0%	0.8%	1.0%	1.0%	-	1.0%	0.8%	1.0%	1.0%	-		-
					4	280	0.4973	0.0587	0.0213	0.0196	-	9.352E-03	1.104E-03	4.006E-04	3.687E-04	-	0.8%	0.7%	0.8%	0.8%	-	0.8%	0.7%	0.8%	0.8%	-		-
					5	273	0.5068	0.0629	0.0221	0.0203	-	9.282E-03	1.152E-03	4.046E-04	3.724E-04	-	0.8%	0.7%	0.8%	0.8%	-	0.8%	0.7%	0.8%	0.8%	-		-
					6	344	0.5161	0.0671	0.0229	0.0210	-	1.191E-02	1.549E-03	5.279E-04	4.858E-04	-	1.0%	0.9%	1.1%	1.1%	-	1.0%	0.9%	1.1%	1.1%	-		-
					7	875	0.5272	0.0714	0.0236	0.0217	-	3.998E-02	4.196E-03	1.386E-03	1.277E-03	-	2.7%	2.6%	2.9%	2.9%	-	2.7%	2.6%	2.9%	2.9%	-		-
					8	2289	0.5505	0.0775	0.0248	0.0228	-	8.460E-02	1.190E-02	3.774E-03	3.477E-03	-	7.3%	7.3%	7.8%	7.8%	-	7.3%	7.3%	7.8%	7.8%	-		-
					9	2688	0.5220	0.0755	0.0240	0.0221	-	9.421E-02	1.383E-02	4.329E-03	3.987E-03	-	8.1%	8.3%	8.9%	8.9%	-	8.1%	8.3%	8.9%	8.9%	-		-
					10	2377	0.6079	0.0917	0.0271	0.0249	-	9.702E-02	1.464E-02	4.321E-03	3.977E-03	-	8.4%	8.9%	8.9%	8.9%	-	8.4%	8.9%	8.9%	8.9%	-		-
					11	2062	0.6517	0.1009	0.0290	0.0267	-	9.022E-02	1.397E-02	4.013E-03	3.690E-03	-	7.8%	8.5%	8.2%	8.2%	-	7.8%	8.5%	8.2%	8.2%	-		-
					12	1918	0.6308	0.0997	0.0290	0.0267	-	8.122E-02	1.283E-02	3.738E-03	3.441E-03	-	7.0%	7.8%	7.7%	7.7%	-	7.0%	7.8%	7.7%	7.7%	-		-
					13	1739	0.4845	0.0786	0.0208	0.0192	-	5.656E-02	9.177E-03	2.429E-03	2.237E-03	-	4.9%	5.6%	5.0%	5.0%	-	4.9%	5.6%	5.0%	5.0%	-		-
					14	1765	0.4979	0.0826	0.0214	0.0197	-	5.900E-02	9.783E-03	2.538E-03	2.337E-03	-	5.1%	6.0%	5.2%	5.2%	-	5.1%	6.0%	5.2%	5.2%	-		-
					15	1867	0.5138	0.0883	0.0230	0.0211	-	6.442E-02	1.107E-02	2.880E-03	2.652E-03	-	5.6%	6.8%	5.9%	5.9%	-	5.6%	6.8%	5.9%	5.9%	-		-
					16	1990	0.4747	0.0783	0.0203	0.0186	-	6.342E-02	1.046E-02	2.710E-03	2.481E-03	-	5.5%	6.4%	5.6%	5.6%	-	5.5%	6.4%	5.6%	5.6%	-		-
					17	2063	0.4596	0.0717	0.0187	0.0172	-	6.368E-02	9.936E-03	2.587E-03	2.384E-03	-	5.5%	6.1%	5.3%	5.3%	-	5.5%	6.1%	5.3%	5.3%	-		-
					18	2311	0.4106	0.0602	0.0166	0.0153	-	6.371E-02	9.347E-03	2.574E-03	2.367E-03	-	5.5%	5.7%	5.3%	5.3%	-	5.5%	5.7%	5.3%	5.3%	-		-
					19	2584	0.3128	0.0398	0.0128	0.0116	-	5.427E-02	6.903E-03	2.183E-03	2.012E-03	-	4.7%	4.2%	4.5%	4.5%	-	4.7%	4.2%	4.5%	4.5%	-		-
					20	2094	0.2810	0.0312	0.0108	0.0100	-	3.952E-02	4.391E-03	1.520E-03	1.401E-03	-	3.4%	2.7%	3.1%	3.1%	-	3.4%	2.7%	3.1%	3.1%	-		-
					21	1555	0.3563	0.0392	0.0129	0.0119	-	3.720E-02	4.095E-03	1.352E-03	1.245E-03	-	3.2%	2.8%	2.8%	2.8%	-	3.2%	2.8%	2.8%	2.8%	-		-
					22	1506	0.3510	0.0339	0.0116	0.0107	-	3.549E-02	3.433E-03	1.169E-03	1.078E-03	-	3.1%	2.1%	2.4%	2.4%	-	3.1%	2.1%	2.4%	2.4%	-		-
					23	1496	0.3332	0.0273	0.0097	0.0090	-	3.348E-02	2.739E-03	9.786E-04	9.016E-04	-	2.9%	1.7%	2.0%	2.0%	-	2.9%	1.7%	2.0%	2.0%	-		-
					24	1165	0.3423	0.0311	0.0106	0.0097	-	2.678E-02	2.433E-03	8.262E-04	7.610E-04	-	2.3%	1.5%	1.7%	1.7%	-	2.3%	1.5%	1.7%	1.7%	-		-
					Daily	36796.9	1.156E+00	1.639E-01	4.481E-02	4.481E-02	-	1.101E-01	1.561E-02	4.636E-03	4.267E-03	-	5.505E-02	7.804E-03	2.318E-03	2.134E-03	-	-	-	-	-			

Calculation of Portal Emissions (With Project (With Direct Noise Remedies) Scenario – Year 2028)

Portal Emissions (Volume Source)

Road Name	Source Name	X	Y	NO	NO ₂	RSP	FSP	TSP	HS	SY	SZ	total NO	total NO ₂	total RSP	total FSP	total TSP	
Existing Tsing Sha Highway (WB) (Existing Tunnel X1+X2)	X1	836094.7	825973.3	1.788E-01	2.980E-02	6.922E-03	6.366E-03	-	12.75	9.12	2.56	-	-	-	-	-	
	X2	836087.6	825969.2	1.786E-01	2.980E-02	6.922E-03	6.366E-03	-	12.75	9.12	2.56	-	-	-	-	-	
	X3	836080.4	825943.1	1.786E-01	2.980E-02	6.922E-03	6.366E-03	-	12.75	9.12	2.56	-	-	-	-	-	
	X4	836074.4	825927.6	8.928E-02	1.490E-02	3.461E-03	3.183E-03	-	12.75	9.12	2.56	-	-	-	-	-	
	X5	836068.6	825911.9	8.928E-02	1.490E-02	3.461E-03	3.183E-03	-	12.75	9.12	2.56	-	-	-	-	-	
	X6	836062.9	825896.3	8.928E-02	1.490E-02	3.461E-03	3.183E-03	-	12.75	9.12	2.56	-	-	-	-	-	
Existing Tsing Sha Highway (WB) (Existing Tunnel Y)	Y1	836120.1	826109.7	1.092E-02	1.596E-03	4.261E-04	3.922E-04	-	13.50	5.12	3.26	-	-	-	-	-	
	Y2	836116.9	826100.2	1.092E-02	1.596E-03	4.261E-04	3.922E-04	-	13.50	5.12	3.26	-	-	-	-	-	
	Y3	836113.8	826090.8	1.092E-02	1.596E-03	4.261E-04	3.922E-04	-	13.50	5.12	3.26	-	-	-	-	-	
	Y4	836110.6	826081.2	1.092E-02	1.596E-03	4.261E-04	3.922E-04	-	13.50	5.12	3.26	-	-	-	-	-	
	Y5	836107.4	826071.8	1.092E-02	1.596E-03	4.261E-04	3.922E-04	-	13.50	5.12	3.26	-	-	-	-	-	
	Y6	836104.1	826062.3	5.458E-03	7.979E-04	2.131E-04	1.961E-04	-	13.50	5.12	3.26	-	-	-	-	-	
	Y7	836100.6	826052.9	5.458E-03	7.979E-04	2.131E-04	1.961E-04	-	13.50	5.12	3.26	-	-	-	-	-	
	Y8	836097.1	826043.5	5.458E-03	7.979E-04	2.131E-04	1.961E-04	-	13.50	5.12	3.26	-	-	-	-	-	
	Y9	836093.6	826034.5	5.458E-03	7.979E-04	2.131E-04	1.961E-04	-	13.50	5.12	3.26	-	-	-	-	-	
	Y10	836090.1	826024.8	5.458E-03	7.979E-04	2.131E-04	1.961E-04	-	13.50	5.12	3.26	-	-	-	-	-	
Existing Tsing Sha Highway (WB) (Existing Tunnel Z)	Z1	836213.1	826342.4	1.366E-01	2.210E-02	5.385E-03	4.960E-03	-	13.00	8.60	2.79	-	-	-	-	-	
	Z2	836200.7	826328.7	1.366E-01	2.210E-02	5.385E-03	4.960E-03	-	13.00	8.60	2.79	-	-	-	-	-	
	Z3	836189.4	826313.7	1.366E-02	2.210E-02	5.385E-03	4.960E-03	-	13.00	8.60	2.79	-	-	-	-	-	
	Z4	836179.3	826297.8	6.829E-02	1.105E-02	2.693E-03	2.480E-03	-	13.00	8.60	2.79	-	-	-	-	-	
	Z5	836170.6	826281.2	6.829E-02	1.105E-02	2.693E-03	2.480E-03	-	13.00	8.60	2.79	-	-	-	-	-	
	Z6	836163.4	826264.2	6.829E-02	1.105E-02	2.693E-03	2.480E-03	-	13.00	8.60	2.79	-	-	-	-	-	
Proposed T4 (EB) - Underpass (Proposed Tunnel A)	A1	837453.6	826130.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A2	837458.7	826125.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A3	837463.8	826120.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A4	837468.8	826115.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A5	837473.9	826110.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A6	837479.0	826105.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A7	837484.1	826100.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A8	837489.2	826095.3	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A9	837494.3	826090.3	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A10	837499.4	826085.2	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A11	837504.5	826080.2	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A12	837509.6	826075.2	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A13	837514.8	826070.3	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	A14	837520.0	826065.4	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.88	-	-	-	-	-	
	Proposed T4 (EB) (Proposed Tunnel B)	B1	837776.3	826035.1	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88	-	-	-	-	-
		B2	837782.9	826030.0	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88	-	-	-	-	-
B3		837789.5	826024.9	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88	-	-	-	-	-	
B4		837796.0	826019.8	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88	-	-	-	-	-	
B5		837802.5	826014.7	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88	-	-	-	-	-	
B6		837809.1	826009.5	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88	-	-	-	-	-	
B7		837815.8	826004.2	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88	-	-	-	-	-	
B8		837822.4	826000.0	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88	-	-	-	-	-	
Proposed T4 (WB) (Proposed Tunnel C)	C1	838028.0	826083.9	2.110E-02	3.064E-03	7.163E-04	6.592E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C2	838021.2	826081.9	2.110E-02	3.064E-03	7.163E-04	6.592E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C3	838014.3	826079.9	2.110E-02	3.064E-03	7.163E-04	6.592E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C4	838007.4	826078.0	2.110E-02	3.064E-03	7.163E-04	6.592E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C5	838000.5	826076.1	2.110E-02	3.064E-03	7.163E-04	6.592E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C6	837993.7	826074.2	2.110E-02	3.064E-03	7.163E-04	6.592E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C7	837986.7	826072.5	2.110E-02	3.064E-03	7.163E-04	6.592E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C8	837979.8	826070.6	1.055E-02	1.532E-03	3.582E-04	3.296E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C9	837972.9	826068.8	1.055E-02	1.532E-03	3.582E-04	3.296E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C10	837966.0	826066.9	1.055E-02	1.532E-03	3.582E-04	3.296E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C11	837959.2	826065.1	1.055E-02	1.532E-03	3.582E-04	3.296E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C12	837952.3	826063.0	1.055E-02	1.532E-03	3.582E-04	3.296E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C13	837945.4	826061.0	1.055E-02	1.532E-03	3.582E-04	3.296E-04	-	13.00	3.40	2.79	-	-	-	-	-	
	C14	837938.5	826058.9	1.055E-02	1.532E-03	3.582E-04	3.296E-04	-	13.00	3.40	2.79	-	-	-	-	-	
Proposed T4 (WB) -Underpass with part of which covered by cantilever (Proposed Tunnel D)	D1	837591.6	826036.2	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D2	837595.0	826040.0	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D3	837598.3	826043.7	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D4	837601.7	826047.4	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D5	837605.0	826051.1	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D6	837608.4	826054.8	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D7	837611.7	826058.5	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D8	837615.0	826062.2	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D9	837618.4	826065.9	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D10	837621.7	826069.6	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D11	837625.1	826073.3	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D12	837628.4	826077.0	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	4.00	3.40	2.88	-	-	-	-	-	
	D13	837631.8	826080.7	2.706E-02	3.												

Calculation of Portal Emissions (With Project (With Direct Noise Remedies) Scenario – Year 2028)

Portal Emissions (Volume Source)

Road Name	Source Name	X	Y	NO	Daily Emission Rate (QS) (g/s) ¹¹¹			TSP	HS	SY	SZ	total NO	total NO ₂	total RSP	total FSP	total TSP
					NO _x	RSP	FSP									
Proposed T4 (WB) (Proposed Tunnel H)	H1	837823.5	826031.1	1.101E-01	1.561E-02	4.636E-03	4.267E-03	-	13.00	3.40	2.79					
	H2	837816.9	826028.2	1.101E-01	1.561E-02	4.636E-03	4.267E-03	-	13.00	3.40	2.79					
	H3	837810.5	826025.3	1.101E-01	1.561E-02	4.636E-03	4.267E-03	-	13.00	3.40	2.79					
	H4	837804.0	826022.3	1.101E-01	1.561E-02	4.636E-03	4.267E-03	-	13.00	3.40	2.79					
	H5	837797.5	826019.2	1.101E-01	1.561E-02	4.636E-03	4.267E-03	-	13.00	3.40	2.79					
	H6	837791.2	826016.1	1.101E-01	1.561E-02	4.636E-03	4.267E-03	-	13.00	3.40	2.79					
	H7	837784.8	826012.9	1.101E-01	1.561E-02	4.636E-03	4.267E-03	-	13.00	3.40	2.79					
	H8	837778.4	826009.7	5.505E-02	7.804E-03	2.318E-03	2.134E-03	-	13.00	3.40	2.79					
	H9	837772.1	826006.3	5.505E-02	7.804E-03	2.318E-03	2.134E-03	-	13.00	3.40	2.79					
	H10	837765.9	826002.9	5.505E-02	7.804E-03	2.318E-03	2.134E-03	-	13.00	3.40	2.79					
	H11	837759.6	825999.5	5.505E-02	7.804E-03	2.318E-03	2.134E-03	-	13.00	3.40	2.79					
	H12	837753.4	825996.9	5.505E-02	7.804E-03	2.318E-03	2.134E-03	-	13.00	3.40	2.79					
	H13	837747.3	825992.3	5.505E-02	7.804E-03	2.318E-03	2.134E-03	-	13.00	3.40	2.79					
	H14	837741.1	825988.7	5.505E-02	7.804E-03	2.318E-03	2.134E-03	-	13.00	3.40	2.79	1.156E+00	1.639E-01	4.868E-02	4.481E-02	-

Note:

¹¹¹ The emission rates for portals are calculated from the results of EMFAC-HK model and traffic data adopted in this study.

Calculation of Portal Emissions (Without Project Scenario – Year 2028)

Description	Length (m)	Source Name	Link No.	No. of Portal Sources	Hour	Q (veh/hr)	Total Emission Factor					Total Emission Rate					Daily Emission Rate / Diurnal Profile (from 1st 50m for Each Portal Source)					Daily Emission Rate / Diurnal Profile (from 2nd 50m for Each Portal Source)					Remarks
							NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	
							(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	
Existing Tunnel X1+X2	-	X1 - X6	-	6	1	1707	-	-	-	-	1.350E-02	1.461E-03	4.348E-04	4.001E-04	-	1.8%	1.2%	1.5%	1.5%	-	1.8%	1.2%	1.5%	1.5%	-		
	2	1180	-	-	-	9.612E-03	1.120E-03	3.242E-04	2.987E-04	-	1.3%	0.9%	1.1%	1.1%	-	1.3%	0.9%	1.1%	1.1%	-	1.3%	0.9%	1.1%	1.1%	-		
	3	840	-	-	-	7.036E-03	8.750E-04	2.475E-04	2.281E-04	-	0.9%	0.7%	0.8%	0.8%	-	0.9%	0.7%	0.8%	0.8%	-	0.9%	0.7%	0.8%	0.8%	-		
	4	668	-	-	-	5.757E-03	7.581E-04	2.099E-04	1.934E-04	-	0.8%	0.6%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-		
	5	649	-	-	-	5.756E-03	7.973E-04	2.168E-04	1.998E-04	-	0.8%	0.6%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-		
	6	816	-	-	-	7.440E-03	1.079E-03	2.887E-04	2.660E-04	-	1.0%	0.9%	1.0%	1.0%	-	1.0%	0.9%	1.0%	1.0%	-	1.0%	0.9%	1.0%	1.0%	-		
	7	2073	-	-	-	1.953E-02	2.948E-03	7.755E-04	7.133E-04	-	2.6%	2.4%	2.7%	2.7%	-	2.6%	2.4%	2.7%	2.7%	-	2.6%	2.4%	2.7%	2.7%	-		
	8	5409	-	-	-	5.913E-02	9.459E-03	2.252E-03	2.069E-03	-	8.0%	7.6%	7.7%	7.7%	-	8.0%	7.6%	7.7%	7.7%	-	8.0%	7.6%	7.7%	7.7%	-		
	9	6370	-	-	-	6.939E-02	1.147E-02	2.726E-03	2.504E-03	-	9.4%	9.2%	9.3%	9.3%	-	9.4%	9.2%	9.3%	9.3%	-	9.4%	9.2%	9.3%	9.3%	-		
	10	5537	-	-	-	7.053E-02	1.183E-02	2.657E-03	2.442E-03	-	9.5%	9.5%	9.1%	9.1%	-	9.5%	9.5%	9.1%	9.1%	-	9.5%	9.5%	9.1%	9.1%	-		
	11	4757	-	-	-	6.377E-02	1.083E-02	2.466E-03	2.267E-03	-	8.6%	8.7%	8.4%	8.4%	-	8.6%	8.7%	8.4%	8.4%	-	8.6%	8.7%	8.4%	8.4%	-		
	12	4435	-	-	-	5.574E-02	9.640E-03	2.290E-03	2.108E-03	-	7.5%	7.7%	7.8%	7.8%	-	7.5%	7.7%	7.8%	7.8%	-	7.5%	7.7%	7.8%	7.8%	-		
	13	2811	-	-	-	3.743E-02	7.149E-03	1.631E-03	1.502E-03	-	5.0%	5.7%	5.6%	5.6%	-	5.0%	5.7%	5.6%	5.6%	-	5.0%	5.7%	5.6%	5.6%	-		
	14	2908	-	-	-	3.979E-02	7.671E-03	1.724E-03	1.589E-03	-	5.4%	6.2%	5.9%	5.9%	-	5.4%	6.2%	5.9%	5.9%	-	5.4%	6.2%	5.9%	5.9%	-		
	15	3130	-	-	-	4.442E-02	8.753E-03	1.989E-03	1.832E-03	-	6.0%	7.0%	6.8%	6.8%	-	6.0%	7.0%	6.8%	6.8%	-	6.0%	7.0%	6.8%	6.8%	-		
	16	3233	-	-	-	4.261E-02	8.177E-03	1.832E-03	1.687E-03	-	5.7%	6.6%	6.3%	6.3%	-	5.7%	6.6%	6.3%	6.3%	-	5.7%	6.6%	6.3%	6.3%	-		
	17	3505	-	-	-	4.123E-02	7.643E-03	1.663E-03	1.532E-03	-	5.6%	6.1%	5.7%	5.7%	-	5.6%	6.1%	5.7%	5.7%	-	5.6%	6.1%	5.7%	5.7%	-		
	18	3503	-	-	-	3.864E-02	6.943E-03	1.539E-03	1.418E-03	-	5.2%	5.6%	5.3%	5.3%	-	5.2%	5.6%	5.3%	5.3%	-	5.2%	5.6%	5.3%	5.3%	-		
	19	3527	-	-	-	2.871E-02	4.757E-03	1.144E-03	1.066E-03	-	3.9%	3.8%	3.9%	3.9%	-	3.9%	3.8%	3.9%	3.9%	-	3.9%	3.8%	3.9%	3.9%	-		
	20	2771	-	-	-	1.943E-02	2.927E-03	7.225E-04	6.655E-04	-	2.6%	2.3%	2.5%	2.5%	-	2.6%	2.3%	2.5%	2.5%	-	2.6%	2.3%	2.5%	2.5%	-		
	21	2093	-	-	-	1.844E-02	2.782E-03	6.866E-04	6.319E-04	-	2.5%	2.2%	2.4%	2.4%	-	2.5%	2.2%	2.4%	2.4%	-	2.5%	2.2%	2.4%	2.4%	-		
	22	1986	-	-	-	1.664E-02	2.262E-03	5.563E-04	5.121E-04	-	2.2%	1.8%	1.9%	1.9%	-	2.2%	1.8%	1.9%	1.9%	-	2.2%	1.8%	1.9%	1.9%	-		
	23	1917	-	-	-	1.475E-02	1.734E-03	4.349E-04	4.004E-04	-	2.0%	1.4%	1.5%	1.5%	-	2.0%	1.4%	1.5%	1.5%	-	2.0%	1.4%	1.5%	1.5%	-		
	24	1516	-	-	-	1.226E-02	1.569E-03	3.871E-04	3.587E-04	-	1.7%	1.3%	1.3%	1.3%	-	1.7%	1.3%	1.3%	1.3%	-	1.7%	1.3%	1.3%	1.3%	-		
					Daily	67139.67	-	-	-	-	7.415E-01	1.246E-01	2.920E-02	2.687E-02	-	1.648E-01	2.770E-02	6.488E-03	5.972E-03	-	8.239E-02	1.385E-02	3.244E-03	2.986E-03	-		
Existing Tunnel Y	77	Y1 - Y10	108	10	1	400	0.3061	0.0279	0.0085	0.0078	1.626E-03	1.482E-04	4.483E-05	4.146E-05	-	2.0%	1.3%	1.4%	1.4%	-	2.0%	1.3%	1.4%	1.4%	-		
	2	274	0.3136	0.0312	0.0092	0.0085	1.143E-03	1.137E-04	3.347E-05	3.087E-05	-	1.4%	1.0%	1.1%	1.1%	-	1.4%	1.0%	1.1%	1.1%	-	1.4%	1.0%	1.1%	1.1%	-	
	3	194	0.3213	0.0345	0.0099	0.0091	8.274E-04	8.887E-05	2.552E-05	2.354E-05	-	1.0%	0.8%	0.8%	0.8%	-	1.0%	0.8%	0.8%	0.8%	-	1.0%	0.8%	0.8%	0.8%	-	
	4	153	0.3282	0.0378	0.0106	0.0097	6.663E-04	7.673E-05	2.162E-05	1.972E-05	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	
	5	147	0.3359	0.0412	0.0114	0.0104	6.576E-04	8.059E-05	2.231E-05	2.035E-05	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	
	6	184	0.3445	0.0447	0.0121	0.0112	8.417E-04	1.091E-04	2.966E-05	2.734E-05	-	1.0%	0.9%	0.9%	0.9%	-	1.0%	0.9%	0.9%	0.9%	-	1.0%	0.9%	0.9%	0.9%	-	
	7	463	0.3533	0.0482	0.0129	0.0119	2.176E-03	2.967E-04	7.951E-05	7.322E-05	-	2.7%	2.5%	2.5%	2.5%	-	2.7%	2.5%	2.5%	2.5%	-	2.7%	2.5%	2.5%	2.5%	-	
	8	1200	0.3633	0.0519	0.0137	0.0126	5.792E-03	8.277E-04	2.183E-04	2.008E-04	-	7.2%	7.0%	6.9%	6.9%	-	7.2%	7.0%	6.9%	6.9%	-	7.2%	7.0%	6.9%	6.9%	-	
	9	1422	0.3160	0.0464	0.0129	0.0119	5.971E-03	8.762E-04	2.429E-04	2.239E-04	-	7.4%	7.5%	7.7%	7.7%	-	7.4%	7.5%	7.7%	7.7%	-	7.4%	7.5%	7.7%	7.7%	-	
	10	1170	0.3937	0.0583	0.0151	0.0139	6.124E-03	9.062E-04	2.353E-04	2.165E-04	-	7.6%	7.7%	7.5%	7.5%	-	7.6%	7.7%	7.5%	7.5%	-	7.6%	7.7%	7.5%	7.5%	-	
	11	972	0.4463	0.0671	0.0169	0.0155	5.766E-03	8.664E-04	2.181E-04	2.006E-04	-	7.2%	7.4%	6.9%	6.9%	-	7.2%	7.4%	6.9%	6.9%	-	7.2%	7.4%	6.9%	6.9%	-	
	12	911	0.4284	0.0662	0.0169	0.0156	5.187E-03	8.022E-04	2.050E-04	1.896E-04	-	6.4%	6.8%	6.5%	6.5%	-	6.4%	6.8%	6.5%	6.5%	-	6.4%	6.8%	6.5%	6.5%	-	
	13	694	0.5333	0.0909	0.0232	0.0214	4.278E-03	7.295E-04	1.806E-04	1.713E-04	-	5.3%	6.2%	5.9%	5.9%	-	5.3%	6.2%	5.9%	5.9%	-	5.3%	6.2%	5.9%	5.9%	-	
	14	616	0.5463	0.0948	0.0238	0.0219	4.475E-03	7.769E-04	1.947E-04	1.793E-04	-	5.6%	6.6%	6.2%	6.2%	-	5.6%	6.6%	6.2%	6.2%	-	5.6%	6.6%	6.2%	6.2%	-	
	15	656	0.5663	0.1014	0.0255	0.0234	4.937E-03	8.839E-04	2.219E-04	2.041E-04	-	6.1%	7.5%	7.1%	7.0%	-	6.1%	7.5%	7.1%	7.0%	-	6.1%	7.5%	7.1%	7.0%	-	
	16	691	0.5225	0.0904	0.0225	0.0207	4.801E-03	8.306E-04	2.068E-04	1.901E-04	-	6.0%	7.1%	6.6%	6.6%	-	6.0%	7.1%	6.6%	6.6%	-	6.0%	7.1%	6.6%	6.6%	-	
	17	714	0.5021	0.0827	0.0206	0.0189	4.765E-03	7.844E-04	1.953E-04	1.795E-04	-	5.9%	6.7%	6.2%	6.2%	-	5.9%	6.7%	6.2%	6.2%	-	5.9%	6.7%	6.2%	6.2%	-	
	18	786	0.4465	0.0696	0.0182	0.0168	4.663E-03	7.273E-04	1.906E-04	1.752E-04	-	5.8%	6.2%	6.1%	6.0%	-	5.8%	6.2%	6.1%	6.0%	-	5.8%	6.2%	6.1%	6.0%	-	
	19	850	0.3377	0.0464	0.0139	0.0127	3.816E-03	5.243E-04	1.566E-04	1.441E-04	-	4.7%	4.5%	5.0%	5.0%	-	4.7%	4.5%	5.0%	5.0%	-	4.7%	4.5%	5.0%	5.0%	-	
	20	683	0.3051	0.0369	0.0119	0.0110	2.771E-03	3.354E-04	1.083E-04	9.990E-05	-	3.4%	2.9%	3.4%	3.4%	-	3.4%	2.9%	3.4%	3.4%	-	3.4%	2.9%	3.4%	3.4%	-	
	21	511	0.3848	0.0464	0.0144	0.0133	2.611E-03	3.149E-04	9.783E-05	9.015E-05	-	3.2%	2.7%	3.1%	3.1%	-	3.2%	2.7%	3.1%	3.1%	-	3.2%	2.7%	3.1%	3.1%	-	
	22	491																									

Calculation of Portal Emissions (Without Project Scenario – Year 2028)

Description	Length (m)	Source Name	Link No.	No. of Portal Sources	Hour	Q (veh/hr)	Total Emission Factor					Total Emission Rate					Daily Emission Rate / Diurnal Profile (from 1st 50m for Each Portal Source)					Daily Emission Rate / Diurnal Profile (from 2nd 50m for Each Portal Source)					Remarks
							NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	
							(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	
Existing Tunnel Z	140	Z1 - Z6	184	6	1	1295	0.3407	0.0356	0.0105	0.0096	-	1.066E-02	1.113E-03	3.274E-04	3.017E-04	-	1.9%	1.2%	1.5%	1.5%	-	1.9%	1.2%	1.5%	1.5%	-	
					2	894	0.3502	0.0396	0.0113	0.0104	-	7.565E-03	8.543E-04	2.445E-04	2.254E-04	-	1.3%	0.9%	1.1%	1.1%	-	1.3%	0.9%	1.1%	1.1%	-	
					3	635	0.3607	0.0436	0.0122	0.0112	-	5.536E-03	6.692E-04	1.870E-04	1.724E-04	-	1.0%	0.7%	0.8%	0.8%	-	1.0%	0.7%	0.8%	0.8%	-	
					4	504	0.3711	0.0476	0.0131	0.0120	-	4.516E-03	5.798E-04	1.588E-04	1.464E-04	-	0.8%	0.6%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-	
					5	488	0.3815	0.0517	0.0139	0.0128	-	4.503E-03	6.098E-04	1.642E-04	1.514E-04	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	
					6	613	0.3919	0.0557	0.0148	0.0136	-	5.805E-03	8.249E-04	2.189E-04	2.017E-04	-	1.0%	0.9%	1.0%	1.0%	-	1.0%	0.9%	1.0%	1.0%	-	
					7	1554	0.4045	0.0600	0.0157	0.0144	-	1.519E-02	2.253E-03	5.884E-04	5.412E-04	-	2.7%	2.5%	2.6%	2.6%	-	2.7%	2.5%	2.6%	2.6%	-	
					8	4047	0.4213	0.0651	0.0167	0.0153	-	4.120E-02	6.368E-03	1.633E-03	1.494E-03	-	7.3%	7.0%	7.3%	7.2%	-	7.3%	7.0%	7.3%	7.2%	-	
					9	4774	0.3885	0.0621	0.0161	0.0149	-	4.482E-02	7.166E-03	1.860E-03	1.714E-03	-	8.0%	7.8%	8.3%	8.3%	-	8.0%	7.8%	8.3%	8.3%	-	
					10	4093	0.4702	0.0762	0.0189	0.0174	-	4.650E-02	7.537E-03	1.873E-03	1.724E-03	-	8.3%	8.2%	8.3%	8.3%	-	8.3%	8.2%	8.3%	8.3%	-	
					11	3487	0.5256	0.0865	0.0210	0.0194	-	4.430E-02	7.293E-03	1.770E-03	1.632E-03	-	7.9%	8.0%	7.9%	7.9%	-	7.9%	8.0%	7.9%	7.9%	-	
					12	3255	0.5099	0.0859	0.0212	0.0195	-	4.011E-02	6.761E-03	1.665E-03	1.535E-03	-	7.1%	7.4%	7.4%	7.4%	-	7.1%	7.4%	7.4%	7.4%	-	
					13	2163	0.5782	0.1076	0.0252	0.0232	-	3.022E-02	5.624E-03	1.316E-03	1.210E-03	-	5.4%	6.2%	5.9%	5.9%	-	5.4%	6.2%	5.9%	5.9%	-	
					14	2229	0.5919	0.1114	0.0257	0.0237	-	3.189E-02	6.000E-03	1.396E-03	1.275E-03	-	5.7%	6.6%	6.2%	6.2%	-	5.7%	6.6%	6.2%	6.2%	-	
					15	2392	0.6154	0.1185	0.0276	0.0254	-	3.557E-02	6.851E-03	1.594E-03	1.468E-03	-	6.3%	7.5%	7.1%	7.1%	-	6.3%	7.5%	7.1%	7.1%	-	
					16	2485	0.5704	0.1068	0.0245	0.0226	-	3.425E-02	6.410E-03	1.472E-03	1.366E-03	-	6.1%	7.0%	6.6%	6.6%	-	6.1%	7.0%	6.6%	6.6%	-	
					17	2547	0.5418	0.0976	0.0219	0.0202	-	3.334E-02	6.006E-03	1.348E-03	1.242E-03	-	5.9%	6.6%	6.0%	6.0%	-	5.9%	6.6%	6.0%	6.0%	-	
					18	2727	0.4793	0.0832	0.0192	0.0177	-	3.158E-02	5.482E-03	1.264E-03	1.164E-03	-	5.6%	6.0%	5.6%	5.6%	-	5.6%	6.0%	5.6%	5.6%	-	
					19	2801	0.3561	0.0562	0.0143	0.0131	-	2.411E-02	3.806E-03	9.654E-04	8.899E-04	-	4.3%	4.2%	4.3%	4.3%	-	4.3%	4.2%	4.3%	4.3%	-	
					20	2215	0.3118	0.0444	0.0117	0.0108	-	1.669E-02	2.374E-03	6.258E-04	5.762E-04	-	3.0%	2.6%	2.8%	2.8%	-	3.0%	2.6%	2.8%	2.8%	-	
					21	1668	0.3921	0.0558	0.0145	0.0134	-	1.580E-02	2.248E-03	5.856E-04	5.390E-04	-	2.8%	2.5%	2.6%	2.6%	-	2.8%	2.5%	2.6%	2.6%	-	
					22	1589	0.3760	0.0479	0.0125	0.0115	-	1.444E-02	1.839E-03	4.816E-04	4.434E-04	-	2.6%	2.0%	2.1%	2.1%	-	2.6%	2.0%	2.1%	2.1%	-	
					23	1543	0.3474	0.0380	0.0103	0.0095	-	1.295E-02	1.417E-03	3.825E-04	3.526E-04	-	2.3%	1.6%	1.7%	1.7%	-	2.3%	1.6%	1.7%	1.7%	-	
					24	1216	0.3637	0.0436	0.0114	0.0105	-	1.069E-02	1.280E-03	3.363E-04	3.099E-04	-	1.5%	1.4%	1.5%	1.5%	-	1.5%	1.4%	1.5%	1.5%	-	
					Daily	51214.68	-	-	-	-	-	5.622E-01	9.136E-02	2.245E-02	2.067E-02	-	1.249E-01	2.030E-02	4.988E-03	4.592E-03	-	6.247E-02	1.015E-02	2.494E-03	2.296E-03	-	

Calculation of Portal Emissions (Without Project Scenario – Year 2028)

Portal Emissions (Volume Source)

Road Name	Source Name	X	Y	Daily Emission Rate (QS) (g/s) ^[1]					TSP	HS	SY	SZ	total NO	total NO ₂	total RSP	total FSP	total TSP
				NO	NO ₂	RSP	FSP	TSP									
Existing Tsing Sha Highway (WB) (Existing Tunnel X1+X2)	X1	836094.7	825973.3	1.648E-01	2.770E-02	6.488E-03	5.972E-03	-	12.75	9.12	2.56						
	X2	836087.6	825958.2	1.648E-01	2.770E-02	6.488E-03	5.972E-03	-	12.75	9.12	2.56						
	X3	836080.4	825943.1	1.648E-01	2.770E-02	6.488E-03	5.972E-03	-	12.75	9.12	2.56						
	X4	836074.4	825927.6	8.239E-02	1.385E-02	3.244E-03	2.986E-03	-	12.75	9.12	2.56						
	X5	836068.6	825911.9	8.239E-02	1.385E-02	3.244E-03	2.986E-03	-	12.75	9.12	2.56						
	X6	836062.9	825896.3	8.239E-02	1.385E-02	3.244E-03	2.986E-03	-	12.75	9.12	2.56			7.415E-01	1.246E-01	2.920E-02	2.687E-02
Existing Tsing Sha Highway (WB) (Existing Tunnel Y)	Y1	836120.1	826109.7	1.073E-02	1.567E-03	4.195E-04	3.861E-04	-	13.50	5.12	3.26						
	Y2	836116.9	826100.2	1.073E-02	1.567E-03	4.195E-04	3.861E-04	-	13.50	5.12	3.26						
	Y3	836113.8	826090.8	1.073E-02	1.567E-03	4.195E-04	3.861E-04	-	13.50	5.12	3.26						
	Y4	836110.6	826081.2	1.073E-02	1.567E-03	4.195E-04	3.861E-04	-	13.50	5.12	3.26						
	Y5	836107.4	826071.8	1.073E-02	1.567E-03	4.195E-04	3.861E-04	-	13.50	5.12	3.26						
	Y6	836104.1	826062.3	5.364E-03	7.836E-04	2.098E-04	1.931E-04	-	13.50	5.12	3.26						
	Y7	836100.6	826052.9	5.364E-03	7.836E-04	2.098E-04	1.931E-04	-	13.50	5.12	3.26						
	Y8	836097.1	826043.5	5.364E-03	7.836E-04	2.098E-04	1.931E-04	-	13.50	5.12	3.26						
	Y9	836093.6	826034.2	5.364E-03	7.836E-04	2.098E-04	1.931E-04	-	13.50	5.12	3.26						
	Y10	836090.1	826024.8	5.364E-03	7.836E-04	2.098E-04	1.931E-04	-	13.50	5.12	3.26			8.046E-02	1.175E-02	3.147E-03	2.896E-03
Existing Tsing Sha Highway (WB) (Existing Tunnel Z)	Z1	836213.1	826342.4	1.249E-01	2.030E-02	4.988E-03	4.592E-03	-	13.00	8.60	2.79						
	Z2	836200.7	826328.7	1.249E-01	2.030E-02	4.988E-03	4.592E-03	-	13.00	8.60	2.79						
	Z3	836189.4	826313.7	1.249E-01	2.030E-02	4.988E-03	4.592E-03	-	13.00	8.60	2.79						
	Z4	836179.3	826297.8	6.247E-02	1.015E-02	2.494E-03	2.296E-03	-	13.00	8.60	2.79						
	Z5	836170.6	826281.2	6.247E-02	1.015E-02	2.494E-03	2.296E-03	-	13.00	8.60	2.79						
	Z6	836163.4	826264.2	6.247E-02	1.015E-02	2.494E-03	2.296E-03	-	13.00	8.60	2.79			5.622E-01	9.136E-02	2.245E-02	2.067E-02

Note:

[1] The emission rates for portals are calculated from the results of EMFAC-HK model and traffic data adopted in this study.

Calculation of Portal Emissions (Without Project Scenario – Year 2028)

Hourly Profile for Portals

Hour	Portal X Existing Tsing Sha Highway (WB)					Portal Y Existing Tsing Sha Highway (WB)					Portal Z Existing Tsing Sha Highway (WB)				
	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP
Hour 1	1.8%	1.2%	1.5%	1.5%	-	2.0%	1.3%	1.4%	1.4%	-	1.9%	1.2%	1.5%	1.5%	-
Hour 2	1.3%	0.9%	1.1%	1.1%	-	1.4%	1.0%	1.1%	1.1%	-	1.3%	0.9%	1.1%	1.1%	-
Hour 3	0.9%	0.7%	0.8%	0.8%	-	1.0%	0.8%	0.8%	0.8%	-	1.0%	0.7%	0.8%	0.8%	-
Hour 4	0.8%	0.6%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-
Hour 5	0.8%	0.6%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-
Hour 6	1.0%	0.9%	1.0%	1.0%	-	1.0%	0.9%	0.9%	0.9%	-	1.0%	0.9%	1.0%	1.0%	-
Hour 7	2.6%	2.4%	2.7%	2.7%	-	2.7%	2.5%	2.5%	2.5%	-	2.7%	2.5%	2.6%	2.6%	-
Hour 8	8.0%	7.6%	7.7%	7.7%	-	7.2%	7.0%	6.9%	6.9%	-	7.3%	7.0%	7.3%	7.2%	-
Hour 9	9.4%	9.2%	9.3%	9.3%	-	7.4%	7.5%	7.7%	7.7%	-	8.0%	7.8%	8.3%	8.3%	-
Hour 10	9.5%	9.5%	9.1%	9.1%	-	7.6%	7.7%	7.5%	7.5%	-	8.3%	8.2%	8.3%	8.3%	-
Hour 11	8.6%	8.7%	8.4%	8.4%	-	7.2%	7.4%	6.9%	6.9%	-	7.9%	8.0%	7.9%	7.9%	-
Hour 12	7.5%	7.7%	7.8%	7.8%	-	6.4%	6.8%	6.5%	6.5%	-	7.1%	7.4%	7.4%	7.4%	-
Hour 13	5.0%	5.7%	5.6%	5.6%	-	5.3%	6.2%	5.9%	5.9%	-	5.4%	6.2%	5.9%	5.9%	-
Hour 14	5.4%	6.2%	5.9%	5.9%	-	5.6%	6.6%	6.2%	6.2%	-	5.7%	6.6%	6.2%	6.2%	-
Hour 15	6.0%	7.0%	6.8%	6.8%	-	6.1%	7.5%	7.1%	7.0%	-	6.3%	7.5%	7.1%	7.1%	-
Hour 16	5.7%	6.6%	6.3%	6.3%	-	6.0%	7.1%	6.6%	6.6%	-	6.1%	7.0%	6.6%	6.6%	-
Hour 17	5.6%	6.1%	5.7%	5.7%	-	5.9%	6.7%	6.2%	6.2%	-	5.9%	6.6%	6.0%	6.0%	-
Hour 18	5.2%	5.6%	5.3%	5.3%	-	5.8%	6.2%	6.1%	6.0%	-	5.6%	6.0%	5.6%	5.6%	-
Hour 19	3.9%	3.8%	3.9%	3.9%	-	4.7%	4.5%	5.0%	5.0%	-	4.3%	4.2%	4.3%	4.3%	-
Hour 20	2.6%	2.3%	2.5%	2.5%	-	3.4%	2.9%	3.4%	3.4%	-	3.0%	2.6%	2.8%	2.8%	-
Hour 21	2.5%	2.2%	2.4%	2.4%	-	3.2%	2.7%	3.1%	3.1%	-	2.8%	2.5%	2.6%	2.6%	-
Hour 22	2.2%	1.8%	1.9%	1.9%	-	3.0%	2.2%	2.7%	2.7%	-	2.6%	2.0%	2.1%	2.1%	-
Hour 23	2.0%	1.4%	1.5%	1.5%	-	2.8%	1.8%	2.2%	2.2%	-	2.3%	1.6%	1.7%	1.7%	-
Hour 24	1.7%	1.3%	1.3%	1.3%	-	2.3%	1.6%	1.9%	1.9%	-	1.9%	1.4%	1.5%	1.5%	-

Calculation of Portal Emissions (With Project (Without Direct Noise Remedies) Scenario – Year 2028)

Description	Length (m)	Source Name	Link No.	No. of Portal Sources	Hour	Q (veh/hr)	Total Emission Factor					Total Emission Rate					Daily Emission Rate / Diurnal Profile (from 1st 50m for Each Portal Source)					Daily Emission Rate / Diurnal Profile (from 2nd 50m for Each Portal Source)					Remarks
							NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	
							(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	
Existing Tunnel Z	140	Z1 - Z6	184	6	1	1363	0.3358	0.0347	0.0102	0.0094	-	1.106E-02	1.143E-03	3.347E-04	3.085E-04	-	1.8%	1.1%	1.4%	1.4%	-	1.8%	1.1%	1.4%	1.4%	-	
					2	940	0.3452	0.0386	0.0110	0.0102	-	7.838E-03	8.773E-04	2.501E-04	2.306E-04	-	1.3%	0.9%	1.0%	1.0%	-	1.3%	0.9%	1.0%	1.0%	-	
					3	667	0.3554	0.0426	0.0119	0.0109	-	5.730E-03	6.872E-04	1.914E-04	1.765E-04	-	0.9%	0.7%	0.8%	0.8%	-	0.9%	0.7%	0.8%	0.8%	-	
					4	529	0.3656	0.0466	0.0127	0.0117	-	4.671E-03	5.954E-04	1.628E-04	1.499E-04	-	0.8%	0.6%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-	
					5	513	0.3757	0.0506	0.0136	0.0125	-	4.654E-03	6.262E-04	1.682E-04	1.550E-04	-	0.8%	0.6%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-	
					6	643	0.3859	0.0545	0.0144	0.0133	-	5.995E-03	8.470E-04	2.242E-04	2.066E-04	-	1.0%	0.9%	0.9%	0.9%	-	1.0%	0.9%	0.9%	0.9%	-	
					7	1629	0.3983	0.0588	0.0153	0.0141	-	1.568E-02	2.314E-03	6.028E-04	5.545E-04	-	2.6%	2.3%	2.5%	2.5%	-	2.6%	2.3%	2.5%	2.5%	-	
					8	4240	0.4168	0.0642	0.0164	0.0151	-	4.270E-02	6.581E-03	1.677E-03	1.544E-03	-	6.9%	6.6%	6.9%	6.9%	-	6.9%	6.6%	6.9%	6.9%	-	
					9	5004	0.3858	0.0616	0.0158	0.0146	-	4.665E-02	7.444E-03	1.910E-03	1.760E-03	-	7.6%	7.5%	7.9%	7.9%	-	7.6%	7.5%	7.9%	7.9%	-	
					10	4273	0.4648	0.0751	0.0186	0.0171	-	4.799E-02	7.749E-03	1.916E-03	1.764E-03	-	7.8%	7.8%	7.9%	7.9%	-	7.8%	7.8%	7.9%	7.9%	-	
					11	3632	0.5202	0.0853	0.0207	0.0189	-	4.565E-02	7.482E-03	1.814E-03	1.663E-03	-	7.4%	7.5%	7.5%	7.4%	-	7.4%	7.5%	7.5%	7.4%	-	
					12	3391	0.5016	0.0841	0.0207	0.0191	-	4.110E-02	6.892E-03	1.696E-03	1.564E-03	-	6.7%	6.9%	7.0%	7.0%	-	6.7%	6.9%	7.0%	7.0%	-	
					13	2544	0.5618	0.1039	0.0242	0.0222	-	3.453E-02	6.389E-03	1.484E-03	1.367E-03	-	5.6%	6.4%	6.1%	6.1%	-	5.6%	6.4%	6.1%	6.1%	-	
					14	2617	0.5760	0.1077	0.0247	0.0228	-	3.642E-02	6.812E-03	1.564E-03	1.441E-03	-	5.9%	6.9%	6.5%	6.5%	-	5.9%	6.9%	6.5%	6.5%	-	
					15	2803	0.5999	0.1152	0.0266	0.0245	-	4.063E-02	7.801E-03	1.802E-03	1.662E-03	-	6.6%	7.8%	7.4%	7.4%	-	6.6%	7.8%	7.4%	7.4%	-	
					16	2922	0.5552	0.1035	0.0236	0.0218	-	3.920E-02	7.304E-03	1.666E-03	1.536E-03	-	6.4%	7.3%	6.9%	6.9%	-	6.4%	7.3%	6.9%	6.9%	-	
					17	2998	0.5271	0.0945	0.0211	0.0194	-	3.819E-02	6.847E-03	1.525E-03	1.407E-03	-	6.2%	6.9%	6.3%	6.3%	-	6.2%	6.9%	6.3%	6.3%	-	
					18	3230	0.4643	0.0802	0.0183	0.0169	-	3.624E-02	6.257E-03	1.431E-03	1.320E-03	-	5.9%	6.3%	5.9%	5.9%	-	5.9%	6.3%	5.9%	5.9%	-	
					19	3362	0.3426	0.0536	0.0135	0.0124	-	2.783E-02	4.357E-03	1.096E-03	1.011E-03	-	4.5%	4.4%	4.5%	4.5%	-	4.5%	4.4%	4.5%	4.5%	-	
					20	2668	0.2982	0.0419	0.0110	0.0101	-	1.922E-02	2.702E-03	7.079E-04	6.519E-04	-	3.1%	2.7%	2.9%	2.9%	-	3.1%	2.7%	2.9%	2.9%	-	
					21	2004	0.3768	0.0528	0.0136	0.0125	-	1.824E-02	2.556E-03	6.597E-04	6.073E-04	-	3.0%	2.6%	2.7%	2.7%	-	3.0%	2.6%	2.7%	2.7%	-	
					22	1914	0.3620	0.0452	0.0117	0.0108	-	1.674E-02	2.092E-03	5.417E-04	4.988E-04	-	2.7%	2.1%	2.2%	2.2%	-	2.7%	2.1%	2.2%	2.2%	-	
					23	1865	0.3366	0.0360	0.0095	0.0088	-	1.517E-02	1.622E-03	4.301E-04	3.961E-04	-	2.5%	1.8%	1.8%	1.8%	-	2.5%	1.8%	1.8%	1.8%	-	
					24	1468	0.3511	0.0412	0.0107	0.0098	-	1.245E-02	1.460E-03	3.788E-04	3.491E-04	-	2.0%	1.5%	1.6%	1.6%	-	2.0%	1.5%	1.6%	1.6%	-	
										Daily	57215.02	-	-	-	-	6.146E-01	9.949E-02	2.423E-02	2.232E-02	-	1.366E-01	2.210E-02	5.385E-03	4.960E-03	-	6.829E-02	1.105E-02
Proposed Tunnel A	119	A1-A14	304	14	1	316	0.2791	0.0280	0.0067	0.0062	-	1.811E-03	1.818E-04	4.324E-05	3.983E-05	-	1.3%	0.9%	0.9%	0.9%	-	1.3%	0.9%	0.9%	0.9%	-	
					2	217	0.2877	0.0315	0.0075	0.0069	-	1.282E-03	1.405E-04	3.320E-05	3.065E-05	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	
					3	153	0.2956	0.0350	0.0082	0.0075	-	9.316E-04	1.102E-04	2.599E-05	2.363E-05	-	0.7%	0.5%	0.5%	0.5%	-	0.7%	0.5%	0.5%	0.5%	-	
					4	121	0.3043	0.0385	0.0090	0.0082	-	7.569E-04	9.580E-05	2.249E-05	2.047E-05	-	0.5%	0.5%	0.5%	0.5%	-	0.5%	0.5%	0.5%	0.5%	-	
					5	117	0.3130	0.0421	0.0098	0.0090	-	7.518E-04	1.010E-04	2.364E-05	2.153E-05	-	0.5%	0.5%	0.5%	0.5%	-	0.5%	0.5%	0.5%	0.5%	-	
					6	146	0.3218	0.0456	0.0106	0.0097	-	9.657E-04	1.369E-04	3.195E-05	2.912E-05	-	0.7%	0.6%	0.7%	0.6%	-	0.7%	0.6%	0.7%	0.6%	-	
					7	369	0.3316	0.0493	0.0115	0.0106	-	2.511E-03	3.735E-04	8.673E-05	7.996E-05	-	1.8%	1.8%	1.8%	1.8%	-	1.8%	1.8%	1.8%	1.8%	-	
					8	956	0.3425	0.0532	0.0123	0.0113	-	6.724E-03	1.044E-03	2.414E-04	2.220E-04	-	4.8%	4.9%	4.9%	4.9%	-	4.8%	4.9%	4.9%	4.9%	-	
					9	1132	0.2964	0.0477	0.0115	0.0106	-	6.891E-03	1.108E-03	2.680E-04	2.467E-04	-	4.9%	5.2%	5.5%	5.5%	-	4.9%	5.2%	5.5%	5.5%	-	
					10	939	0.3760	0.0604	0.0139	0.0128	-	7.254E-03	1.166E-03	2.681E-04	2.467E-04	-	5.2%	5.5%	5.5%	5.5%	-	5.2%	5.5%	5.5%	5.5%	-	
					11	784	0.4319	0.0700	0.0158	0.0145	-	6.956E-03	1.127E-03	2.545E-04	2.340E-04	-	5.0%	5.3%	5.2%	5.2%	-	5.0%	5.3%	5.2%	5.2%	-	
					12	734	0.4154	0.0693	0.0159	0.0147	-	6.267E-03	1.045E-03	2.404E-04	2.212E-04	-	4.5%	4.9%	4.9%	4.9%	-	4.5%	4.9%	4.9%	4.9%	-	
					13	1083	0.4238	0.0730	0.0167	0.0153	-	9.424E-03	1.622E-03	3.708E-04	3.412E-04	-	6.7%	7.6%	7.5%	7.5%	-	6.7%	7.6%	7.5%	7.5%	-	
					14	1096	0.4380	0.0770	0.0174	0.0160	-	9.863E-03	1.739E-03	3.920E-04	3.606E-04	-	7.1%	8.2%	8.0%	8.0%	-	7.1%	8.2%	8.0%	8.0%	-	
					15	1157	0.4537	0.0826	0.0190	0.0174	-	1.078E-02	1.964E-03	4.506E-04	4.145E-04	-	7.7%	9.3%	9.2%	9.2%	-	7.7%	9.3%	9.2%	9.2%	-	
					16	1241	0.4170	0.0727	0.0165	0.0152	-	1.063E-02	1.854E-03	4.198E-04	3.862E-04	-	7.6%	8.7%	8.5%	8.5%	-	7.6%	8.7%	8.5%	8.5%	-	
					17	1286	0.3969	0.0663	0.0146	0.0134	-	1.048E-02	1.751E-03	3.846E-04	3.546E-04	-	7.5%	8.3%	7.8%	7.8%	-	7.5%	8.3%	7.8%	7.8%	-	
					18	1450	0.3420	0.0545	0.0123	0.0113	-	1.019E-02	1.623E-03	3.666E-04	3.379E-04	-	7.3%	7.7%	7.5%	7.5%	-	7.3%	7.7%	7.5%	7.5%	-	
					19	1645	0.2482	0.0347	0.0087	0.0080	-	8.386E-03	1.174E-03	2.924E-04	2.699E-04	-	6.0%	5.5%	5.9%	6.0%	-	6.0%	5.5%	5.9%	6.0%	-	
					20	1337	0.2187	0.0269	0.0069	0.0063	-	6.006E-03	7.384E-04	1.890E-04	1.744E-04	-	4.3%	3.5%	3.9%	3.9%	-	4.3%	3.5%	3.9%	3.9%	-	
					21	988	0.2852	0.0340	0.0083	0.0076	-	5.787E-03	6.905E-04	1.679E-04	1.547E-04	-	4.1%	3.3%	3.4%	3.4%	-	4.1%	3.3%	3.4%	3.4%	-	
					22	959	0.2812	0.0290	0.0069	0.0064	-	5.537E-03	5.718E-04	1.367E-04	1.260E-04	-	4.0%	2.7%	2.8%	2.8%	-	4.0%	2.7%	2.8%	2.8%	-	
					23	957	0.2703	0.0230	0.0055	0.0051	-	5.316E-03	4.527E-04	1.085E-04	1.001E-04	-	3.8%	2.1%	2.2%	2.2%	-	3.8%	2.1%	2.2%	2.2%	-	
					24	745	0.2791	0.0267	0.0063	0.0059	-	4.269E-03	4.079E-04	9.710E-05	8.962E-05	-	3.1%	1.9%	2.0%	2.0%	-	3.1%	1.9%	2.0%	2.0%	-	
										Daily	19927.71	-	-	-	-	1.398E-01	2.121E-02	4.915E-03	4.526E-03	-	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	6.656E-03	1.010E-03

Calculation of Portal Emissions (With Project (Without Direct Noise Remedies) Scenario – Year 2028)

Description	Length (m)	Source Name	Link No.	No. of Portal Sources	Hour	Q (veh/hr)	Total Emission Factor					Total Emission Rate					Daily Emission Rate / Diurnal Profile (from 1st 50m for Each Portal Source)					Daily Emission Rate / Diurnal Profile (from 2nd 50m for Each Portal Source)					Remarks
							NO (g/mile-veh)	NO ₂ (g/mile-veh)	RSP (g/mile-veh)	FSP (g/mile-veh)	TSP (g/mile-veh)	NO (g/s)	NO ₂ (g/s)	RSP (g/s)	FSP (g/s)	TSP (g/s)	NO (g/s) / %	NO ₂ (g/s) / %	RSP (g/s) / %	FSP (g/s) / %	TSP (g/s) / %	NO (g/s) / %	NO ₂ (g/s) / %	RSP (g/s) / %	FSP (g/s) / %	TSP (g/s) / %	
Proposed Tunnel B	229	B1-B14	304	14	1	316	0.2791	0.0280	0.0067	0.0062	-	3.484E-03	3.499E-04	8.321E-05	7.684E-05	-	1.3%	0.9%	0.9%	0.9%	-	1.3%	0.9%	0.9%	0.9%	-	
					2	217	0.2877	0.0315	0.0075	0.0069	-	2.467E-03	2.704E-04	6.390E-05	5.898E-05	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	
					3	153	0.2956	0.0350	0.0082	0.0075	-	1.793E-03	2.121E-04	5.001E-05	4.548E-05	-	0.7%	0.5%	0.5%	0.5%	-	0.7%	0.5%	0.5%	0.5%	-	
					4	121	0.3043	0.0385	0.0090	0.0082	-	1.457E-03	1.843E-04	4.328E-05	3.940E-05	-	0.5%	0.5%	0.5%	0.5%	-	0.5%	0.5%	0.5%	0.5%	-	
					5	117	0.3130	0.0421	0.0098	0.0090	-	1.447E-03	1.944E-04	4.549E-05	4.144E-05	-	0.5%	0.5%	0.5%	0.5%	-	0.5%	0.5%	0.5%	0.5%	-	
					6	146	0.3218	0.0456	0.0106	0.0097	-	1.858E-03	2.635E-04	6.149E-05	5.605E-05	-	0.7%	0.6%	0.6%	0.6%	-	0.7%	0.6%	0.6%	0.6%	-	
					7	369	0.3316	0.0493	0.0115	0.0106	-	4.832E-03	7.188E-04	1.669E-04	1.539E-04	-	1.8%	1.8%	1.8%	1.8%	-	1.8%	1.8%	1.8%	1.8%	-	
					8	956	0.3425	0.0532	0.0123	0.0113	-	1.294E-02	2.010E-03	4.645E-04	4.273E-04	-	4.8%	4.9%	4.9%	4.9%	-	4.8%	4.9%	4.9%	4.9%	-	
					9	1132	0.2964	0.0477	0.0115	0.0106	-	1.326E-02	2.133E-03	5.157E-04	4.748E-04	-	4.9%	5.2%	5.5%	5.5%	-	4.9%	5.2%	5.5%	5.5%	-	
					10	939	0.3760	0.0604	0.0139	0.0128	-	1.396E-02	2.243E-03	5.159E-04	4.747E-04	-	5.2%	5.5%	5.5%	5.5%	-	5.2%	5.5%	5.5%	5.5%	-	
					11	794	0.4319	0.0700	0.0158	0.0145	-	1.338E-02	2.170E-03	4.897E-04	4.504E-04	-	5.0%	5.3%	5.2%	5.2%	-	5.0%	5.3%	5.2%	5.2%	-	
					12	734	0.4154	0.0693	0.0159	0.0147	-	1.206E-02	2.011E-03	4.628E-04	4.256E-04	-	4.5%	4.9%	4.9%	4.9%	-	4.5%	4.9%	4.9%	4.9%	-	
					13	1083	0.4238	0.0730	0.0167	0.0153	-	1.813E-02	3.122E-03	7.138E-04	6.565E-04	-	6.7%	7.6%	7.5%	7.5%	-	6.7%	7.6%	7.5%	7.5%	-	
					14	1096	0.4380	0.0770	0.0174	0.0160	-	1.898E-02	3.335E-03	7.543E-04	6.940E-04	-	7.1%	8.2%	8.0%	8.0%	-	7.1%	8.2%	8.0%	8.0%	-	
					15	1157	0.4537	0.0826	0.0190	0.0174	-	2.075E-02	3.779E-03	8.671E-04	7.977E-04	-	7.7%	9.3%	9.2%	9.2%	-	7.7%	9.3%	9.2%	9.2%	-	
					16	1241	0.4170	0.0727	0.0165	0.0152	-	2.045E-02	3.567E-03	8.078E-04	7.432E-04	-	7.6%	8.7%	8.5%	8.5%	-	7.6%	8.7%	8.5%	8.5%	-	
					17	1286	0.3969	0.0663	0.0146	0.0134	-	2.017E-02	3.370E-03	7.402E-04	6.824E-04	-	7.5%	8.3%	7.8%	7.8%	-	7.5%	8.3%	7.8%	7.8%	-	
					18	1450	0.3420	0.0545	0.0123	0.0113	-	1.960E-02	3.124E-03	7.054E-04	6.502E-04	-	7.3%	7.7%	7.5%	7.5%	-	7.3%	7.7%	7.5%	7.5%	-	
					19	1645	0.2482	0.0347	0.0087	0.0080	-	1.614E-02	2.259E-03	5.627E-04	5.193E-04	-	6.0%	5.5%	5.9%	5.9%	-	6.0%	5.5%	5.9%	5.9%	-	
					20	1337	0.2187	0.0269	0.0069	0.0063	-	1.156E-02	1.421E-03	3.637E-04	3.355E-04	-	4.3%	3.5%	3.8%	3.9%	-	4.3%	3.5%	3.8%	3.9%	-	
					21	988	0.2852	0.0340	0.0083	0.0076	-	1.114E-02	1.329E-03	3.231E-04	2.978E-04	-	4.1%	3.3%	3.4%	3.4%	-	4.1%	3.3%	3.4%	3.4%	-	
					22	959	0.2812	0.0290	0.0069	0.0064	-	1.066E-02	1.100E-03	2.630E-04	2.425E-04	-	4.0%	2.7%	2.8%	2.8%	-	4.0%	2.7%	2.8%	2.8%	-	
					23	957	0.2703	0.0230	0.0055	0.0051	-	1.023E-02	8.712E-04	2.087E-04	1.925E-04	-	3.8%	2.1%	2.2%	2.2%	-	3.8%	2.1%	2.2%	2.2%	-	
					24	745	0.2791	0.0267	0.0063	0.0059	-	8.216E-03	7.849E-04	1.889E-04	1.725E-04	-	3.1%	1.9%	2.0%	2.0%	-	3.1%	1.9%	2.0%	2.0%	-	
					Daily	19927.71						2.690E-01	4.082E-02	9.499E-03	8.799E-03		2.562E-02	3.888E-03	9.009E-04	8.294E-04		1.281E-02	1.944E-03	4.504E-04	4.147E-04		
Proposed Tunnel D	227	D1-D14	302	14	1	591	0.2597	0.0228	0.0055	0.0051	-	6.019E-03	5.280E-04	1.277E-04	1.179E-04	-	2.1%	1.3%	1.3%	1.3%	-	2.1%	1.3%	1.3%	1.3%	-	
					2	405	0.2652	0.0256	0.0062	0.0057	-	4.203E-03	4.064E-04	9.763E-05	9.018E-05	-	1.5%	1.0%	1.0%	1.0%	-	1.5%	1.0%	1.0%	1.0%	-	
					3	285	0.2714	0.0286	0.0068	0.0063	-	3.030E-03	3.190E-04	7.621E-05	7.036E-05	-	1.1%	0.8%	0.8%	0.8%	-	1.1%	0.8%	0.8%	0.8%	-	
					4	224	0.2777	0.0316	0.0075	0.0069	-	2.437E-03	2.769E-04	6.584E-05	6.077E-05	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	
					5	215	0.2841	0.0346	0.0082	0.0076	-	2.397E-03	2.917E-04	6.908E-05	6.374E-05	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	
					6	268	0.2906	0.0376	0.0089	0.0082	-	3.050E-03	3.950E-04	9.325E-05	8.602E-05	-	1.1%	1.0%	1.0%	1.0%	-	1.1%	1.0%	1.0%	1.0%	-	
					7	673	0.2981	0.0408	0.0096	0.0089	-	7.860E-03	1.076E-03	2.534E-04	2.334E-04	-	2.8%	2.6%	2.6%	2.6%	-	2.8%	2.6%	2.6%	2.6%	-	
					8	1737	0.3087	0.0445	0.0104	0.0096	-	2.101E-02	3.030E-03	7.052E-04	6.505E-04	-	7.4%	7.3%	7.3%	7.3%	-	7.4%	7.3%	7.3%	7.3%	-	
					9	2064	0.2616	0.0391	0.0098	0.0089	-	2.116E-02	3.166E-03	7.887E-04	7.184E-04	-	7.4%	7.7%	8.2%	8.1%	-	7.4%	7.7%	8.2%	8.1%	-	
					10	1660	0.3285	0.0482	0.0112	0.0103	-	2.137E-02	3.137E-03	7.292E-04	6.730E-04	-	7.5%	7.6%	7.6%	7.6%	-	7.5%	7.6%	7.6%	7.6%	-	
					11	1358	0.3761	0.0553	0.0126	0.0116	-	2.001E-02	2.941E-03	6.682E-04	6.161E-04	-	7.0%	7.1%	6.9%	6.9%	-	7.0%	7.1%	6.9%	6.9%	-	
					12	1276	0.3565	0.0542	0.0126	0.0116	-	1.783E-02	2.712E-03	6.316E-04	5.814E-04	-	6.3%	6.6%	6.5%	6.5%	-	6.3%	6.6%	6.5%	6.5%	-	
					13	914	0.4159	0.0712	0.0163	0.0150	-	1.489E-02	2.548E-03	5.844E-04	5.378E-04	-	5.2%	6.2%	6.1%	6.1%	-	5.2%	6.2%	6.1%	6.1%	-	
					14	925	0.4299	0.0751	0.0170	0.0157	-	1.558E-02	2.722E-03	6.177E-04	5.682E-04	-	5.5%	6.8%	6.4%	6.4%	-	5.5%	6.8%	6.4%	6.4%	-	
					15	975	0.4468	0.0809	0.0186	0.0171	-	1.708E-02	3.083E-03	7.105E-04	6.537E-04	-	6.0%	7.5%	7.4%	7.4%	-	6.0%	7.5%	7.4%	7.4%	-	
					16	1047	0.4106	0.0712	0.0161	0.0149	-	1.685E-02	2.922E-03	6.625E-04	6.095E-04	-	5.9%	7.1%	6.9%	6.9%	-	5.9%	7.1%	6.9%	6.9%	-	
					17	1086	0.3894	0.0647	0.0143	0.0131	-	1.657E-02	2.752E-03	6.076E-04	5.590E-04	-	5.8%	6.7%	6.3%	6.3%	-	5.8%	6.7%	6.3%	6.3%	-	
					18	1228	0.3355	0.0531	0.0121	0.0111	-	1.614E-02	2.555E-03	5.803E-04	5.336E-04	-	5.7%	6.2%	6.0%	6.0%	-	5.7%	6.2%	6.0%	6.0%	-	
					19	1398	0.2439	0.0338	0.0085	0.0078	-	1.336E-02	1.855E-03	4.650E-04	4.282E-04	-	4.7%	4.5%	4.8%	4.8%	-	4.7%	4.5%	4.8%	4.8%	-	
					20	1138	0.2161	0.0263	0.0068	0.0062	-	9.632E-03	1.171E-03	3.012E-04	2.779E-04	-	3.4%	2.8%	3.1%	3.1%	-	3.4%	2.8%	3.1%	3.1%	-	
					21	840	0.2821	0.0332	0.0081	0.0075	-	9.285E-03	1.094E-03	2.666E-04	2.457E-04	-	3.3%	2.7%	2.8%	2.8%	-	3.3%	2.7%	2.8%	2.8%	-	
					22	816	0.2787	0.0284	0.0068	0.0063	-	8.907E-03	9.068E-04	2.172E-04	2.003E-04	-	3.1%	2.2%	2.3%	2.3%	-	3.1%	2.2%	2.3%	2.3%	-	
					23	816	0.2676	0.0224	0.0054	0.0050	-	8.551E-03	7.164E-04	1.725E-04	1.593E-04	-	3.0%	1.7%	1.8%	1.8%	-	3.0%	1.7%	1.8%	1.8%	-	
					24	634	0.2769	0.0261	0.0062	0.0057	-	6.879E-03	6.479E-04	1.545E-04	1.426E-04	-	2.4%	1.6%	1.6%	1.6%	-	2.4%	1.6%	1.6%	1.6%	-	
					Daily	22573.33						2.841E-01	4.126E-02	9.646E-03	8.877E-03		2.706E-02	3.930E-03	9.187E-04	8.455E-04		1.353E-02	1.965E-03	4.593E-			

Calculation of Portal Emissions (With Project (Without Direct Noise Remedies) Scenario – Year 2028)

Description	Length (m)	Source Name	Link No.	No. of Portal Sources	Hour	Q (veh/hr)	Total Emission Factor					Total Emission Rate					Daily Emission Rate / Diurnal Profile (from 1st 50m for Each Portal Source)					Daily Emission Rate / Diurnal Profile (from 2nd 50m for Each Portal Source)					Remarks
							NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	
							(g/mile-veh)	(g/mile-veh)	(µg/mile-veh)	(g/mile-veh)	(g/mile-veh)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	(g/s) / %	
Proposed Tunnel E	193	E1-E14	306	14	1	558	0.2544	0.0214	0.0052	0.0048	-	4.730E-03	3.974E-04	9.670E-05	8.929E-05	-	2.4%	1.4%	1.5%	1.5%	-	2.4%	1.4%	1.5%	1.5%	-	
					2	381	0.2591	0.0241	0.0058	0.0054	-	3.292E-03	3.058E-04	7.386E-05	6.824E-05	-	1.6%	1.1%	1.1%	1.1%	-	1.6%	1.1%	1.1%	1.1%	-	
					3	268	0.2647	0.0268	0.0064	0.0060	-	2.366E-03	2.399E-04	5.761E-05	5.321E-05	-	1.2%	0.8%	0.9%	0.9%	-	1.2%	0.8%	0.9%	0.9%	-	
					4	211	0.2703	0.0297	0.0071	0.0065	-	1.897E-03	2.081E-04	4.974E-05	4.592E-05	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	
					5	202	0.2761	0.0325	0.0077	0.0071	-	1.860E-03	2.191E-04	5.216E-05	4.814E-05	-	0.9%	0.8%	0.8%	0.8%	-	0.9%	0.8%	0.8%	0.8%	-	
					6	251	0.2819	0.0354	0.0084	0.0078	-	2.360E-03	2.967E-04	7.038E-05	6.493E-05	-	1.2%	1.0%	1.1%	1.1%	-	1.2%	1.0%	1.1%	1.1%	-	
					7	631	0.2886	0.0385	0.0091	0.0084	-	6.065E-03	8.081E-04	1.912E-04	1.761E-04	-	3.0%	2.9%	2.9%	2.9%	-	3.0%	2.9%	2.9%	2.9%	-	
					8	1626	0.2972	0.0417	0.0098	0.0090	-	1.610E-02	2.260E-03	5.308E-04	4.894E-04	-	8.0%	8.0%	8.0%	8.0%	-	8.0%	8.0%	8.0%	8.0%	-	
					9	1934	0.2498	0.0364	0.0091	0.0084	-	1.610E-02	2.347E-03	5.852E-04	5.404E-04	-	8.0%	8.3%	8.8%	8.8%	-	8.0%	8.3%	8.8%	8.8%	-	
					10	1542	0.3121	0.0442	0.0104	0.0096	-	1.603E-02	2.273E-03	5.347E-04	4.933E-04	-	8.0%	8.0%	8.0%	8.0%	-	8.0%	8.0%	8.0%	8.0%	-	
					11	1254	0.3575	0.0507	0.0116	0.0107	-	1.493E-02	2.117E-03	4.846E-04	4.461E-04	-	7.5%	7.5%	7.3%	7.3%	-	7.5%	7.5%	7.3%	7.3%	-	
					12	1179	0.3388	0.0498	0.0117	0.0107	-	1.331E-02	1.956E-03	4.582E-04	4.219E-04	-	6.7%	6.9%	6.9%	6.9%	-	6.7%	6.9%	6.9%	6.9%	-	
					13	720	0.4060	0.0687	0.0158	0.0145	-	9.743E-03	1.648E-03	3.787E-04	3.484E-04	-	4.9%	5.8%	5.7%	5.7%	-	4.9%	5.8%	5.7%	5.7%	-	
					14	728	0.4197	0.0726	0.0165	0.0152	-	1.018E-02	1.761E-03	4.003E-04	3.683E-04	-	5.1%	6.2%	6.0%	6.0%	-	5.1%	6.2%	6.0%	6.0%	-	
					15	767	0.4344	0.0780	0.0180	0.0166	-	1.110E-02	1.994E-03	4.598E-04	4.230E-04	-	5.5%	7.0%	6.9%	6.9%	-	5.5%	7.0%	6.9%	6.9%	-	
					16	825	0.3992	0.0686	0.0156	0.0144	-	1.098E-02	1.885E-03	4.292E-04	3.949E-04	-	5.5%	6.7%	6.4%	6.4%	-	5.5%	6.7%	6.4%	6.4%	-	
					17	857	0.3788	0.0622	0.0138	0.0127	-	1.081E-02	1.776E-03	3.942E-04	3.627E-04	-	5.4%	6.3%	5.9%	5.9%	-	5.4%	6.3%	5.9%	5.9%	-	
					18	972	0.3263	0.0511	0.0117	0.0107	-	1.056E-02	1.653E-03	3.779E-04	3.475E-04	-	5.3%	5.8%	5.7%	5.7%	-	5.3%	5.8%	5.7%	5.7%	-	
					19	1114	0.2387	0.0326	0.0082	0.0076	-	8.858E-03	1.210E-03	3.054E-04	2.813E-04	-	4.4%	4.3%	4.6%	4.6%	-	4.4%	4.3%	4.6%	4.6%	-	
					20	908	0.2112	0.0252	0.0066	0.0061	-	6.388E-03	7.632E-04	1.984E-04	1.830E-04	-	3.2%	2.7%	3.0%	3.0%	-	3.2%	2.7%	3.0%	3.0%	-	
					21	669	0.2765	0.0319	0.0078	0.0072	-	6.167E-03	7.117E-04	1.745E-04	1.610E-04	-	3.1%	2.5%	2.6%	2.6%	-	3.1%	2.5%	2.6%	2.6%	-	
					22	651	0.2739	0.0272	0.0066	0.0061	-	5.939E-03	5.908E-04	1.424E-04	1.315E-04	-	3.0%	2.1%	2.1%	2.1%	-	3.0%	2.1%	2.1%	2.1%	-	
					23	652	0.2647	0.0216	0.0052	0.0048	-	5.747E-03	4.696E-04	1.135E-04	1.048E-04	-	2.9%	1.7%	1.7%	1.7%	-	2.9%	1.7%	1.7%	1.7%	-	
					24	596	0.2735	0.0252	0.0060	0.0056	-	4.613E-03	4.247E-04	1.015E-04	9.373E-05	-	2.3%	1.5%	1.5%	1.5%	-	2.3%	1.5%	1.5%	1.5%	-	
					Daily	19407.73	-	-	-	-	-	2.001E-01	2.831E-02	8.661E-03	6.137E-03	-	1.906E-02	2.697E-03	6.344E-04	5.845E-04	-	9.530E-03	1.348E-03	3.172E-04	2.922E-04	-	
Proposed Tunnel F	193	F1-F26	311	26	1	33	0.4173	0.0565	0.0118	0.0109	-	4.632E-04	6.268E-05	1.310E-05	1.211E-05	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	
					2	23	0.4371	0.0629	0.0130	0.0120	-	3.380E-04	4.861E-05	1.007E-05	9.307E-06	-	0.6%	0.6%	0.6%	0.6%	-	0.6%	0.6%	0.6%	0.6%	-	
					3	17	0.4497	0.0681	0.0141	0.0129	-	2.494E-04	3.776E-05	7.808E-06	7.162E-06	-	0.5%	0.4%	0.4%	0.4%	-	0.5%	0.4%	0.4%	0.4%	-	
					4	13	0.4683	0.0741	0.0152	0.0140	-	2.079E-04	3.290E-05	6.764E-06	6.205E-06	-	0.4%	0.4%	0.4%	0.4%	-	0.4%	0.4%	0.4%	0.4%	-	
					5	13	0.4864	0.0800	0.0164	0.0150	-	2.114E-04	3.476E-05	7.113E-06	6.527E-06	-	0.4%	0.4%	0.4%	0.4%	-	0.4%	0.4%	0.4%	0.4%	-	
					6	17	0.5042	0.0858	0.0175	0.0160	-	2.775E-04	4.721E-05	9.620E-06	8.829E-06	-	0.5%	0.5%	0.5%	0.5%	-	0.5%	0.5%	0.5%	0.5%	-	
					7	42	0.5296	0.0928	0.0188	0.0173	-	7.457E-04	1.307E-04	2.643E-05	2.437E-05	-	1.4%	1.5%	1.5%	1.5%	-	1.4%	1.5%	1.5%	1.5%	-	
					8	111	0.5645	0.1018	0.0204	0.0188	-	2.088E-03	3.764E-04	7.531E-05	6.945E-05	-	4.0%	4.4%	4.3%	4.3%	-	4.0%	4.4%	4.3%	4.3%	-	
					9	130	0.5212	0.0965	0.0198	0.0182	-	2.260E-03	4.184E-04	8.594E-05	7.890E-05	-	4.3%	4.8%	4.9%	4.9%	-	4.3%	4.8%	4.9%	4.9%	-	
					10	118	0.6453	0.1200	0.0237	0.0218	-	2.541E-03	4.724E-04	9.317E-05	8.590E-05	-	4.9%	5.5%	5.3%	5.3%	-	4.9%	5.5%	5.3%	5.3%	-	
					11	104	0.7258	0.1362	0.0266	0.0245	-	2.519E-03	4.729E-04	9.222E-05	8.498E-05	-	4.8%	5.5%	5.2%	5.2%	-	4.8%	5.5%	5.2%	5.2%	-	
					12	97	0.7126	0.1364	0.0270	0.0249	-	2.298E-03	4.397E-04	8.698E-05	8.017E-05	-	4.4%	5.1%	4.9%	4.9%	-	4.4%	5.1%	4.9%	4.9%	-	
					13	194	0.5820	0.1047	0.0210	0.0193	-	3.754E-03	6.755E-04	1.354E-04	1.247E-04	-	7.2%	7.8%	7.7%	7.7%	-	7.2%	7.8%	7.7%	7.7%	-	
					14	197	0.6126	0.1119	0.0221	0.0204	-	4.017E-03	7.341E-04	1.448E-04	1.336E-04	-	7.7%	8.5%	8.2%	8.2%	-	7.7%	8.5%	8.2%	8.2%	-	
					15	209	0.6366	0.1202	0.0239	0.0221	-	4.423E-03	8.353E-04	1.662E-04	1.533E-04	-	8.5%	9.7%	9.4%	9.4%	-	8.5%	9.7%	9.4%	9.4%	-	
					16	222	0.5836	0.1059	0.0210	0.0194	-	4.317E-03	7.834E-04	1.552E-04	1.432E-04	-	8.3%	9.1%	8.8%	8.8%	-	8.3%	9.1%	8.8%	8.8%	-	
					17	230	0.5518	0.0958	0.0186	0.0172	-	4.220E-03	7.328E-04	1.425E-04	1.315E-04	-	8.1%	8.5%	8.1%	8.1%	-	8.1%	8.5%	8.1%	8.1%	-	
					18	256	0.4817	0.0806	0.0162	0.0149	-	4.106E-03	6.874E-04	1.382E-04	1.270E-04	-	7.9%	7.9%	7.8%	7.8%	-	7.9%	7.9%	7.8%	7.8%	-	
					19	284	0.3443	0.0518	0.0117	0.0107	-	3.263E-03	4.914E-04	1.108E-04	1.017E-04	-	6.3%	5.7%	6.3%	6.3%	-	6.3%	5.7%	6.3%	6.3%	-	
					20	230	0.2967	0.0394	0.0092	0.0086	-	2.273E-03	3.021E-04	7.081E-05	6.583E-05	-	4.4%	3.5%	4.0%	4.1%	-	4.4%	3.5%	4.0%	4.1%	-	
					21	170	0.3735	0.0485	0.0107	0.0098	-	2.121E-03	2.755E-04	6.067E-05	5.565E-05	-	4.1%	3.2%	3.4%	3.4%	-	4.1%	3.2%	3.4%	3.4%	-	
					22	165	0.3636	0.0412	0.0090	0.0083	-	1.997E-03	2.261E-04	4.967E-05	4.554E-05	-	3.8%	2.6%	2.8%	2.8%	-	3.8%	2.6%	2.8%	2.8%	-	
					23	164	0.3438	0.0324	0.0073	0.0067	-	1.875E-03	1.766E-04	3.978E-05	3.644E-05	-	3.6%	2.0%	2.3%	2.2%	-	3.6%	2.0%	2.3%	2.2%	-	
					24	128	0.3534	0.0371	0.0081	0.0075	-	1.503E-03	1.578E-04	3.460E-05	3.210E-05	-	2.9%	1.8%	2.0%	2.0%	-	2.9%	1.8%	2.0%	2.0%	-	
					Daily	3166.467	-	-	-	-	-	5.207E-02	8.652E-03	1.763E-03	1.624E-03	-	2.670E-03	4.437E-04	9.042E-05	8.330E-05	-	1.335E-03	2.219E-04	4.521E-05	4.165E-05	-	

Calculation of Portal Emissions (With Project (Without Direct Noise Remedies) Scenario – Year 2028)

Portal Emissions (Volume Source)

Road Name	Source Name	X	Y	Daily Emission Rate (QS) (g/s) ^[1]					TSP	HS	SY	SZ	total NO	total NO ₂	total RSP	total FSP	total TSP	
				NO	NO ₂	RSP	FSP	TSP										
Existing Tsing Sha Highway (WB) (Existing Tunnel X1+X2)	X1	836094.7	825973.3	1.786E-01	2.980E-02	6.922E-03	6.366E-03	-	12.75	9.12	2.56							
	X2	836087.6	825958.2	1.786E-01	2.980E-02	6.922E-03	6.366E-03	-	12.75	9.12	2.56							
	X3	836080.4	825943.1	1.786E-01	2.980E-02	6.922E-03	6.366E-03	-	12.75	9.12	2.56							
	X4	836074.4	825927.6	8.928E-02	1.490E-02	3.461E-03	3.183E-03	-	12.75	9.12	2.56							
	X5	836068.6	825911.9	8.928E-02	1.490E-02	3.461E-03	3.183E-03	-	12.75	9.12	2.56							
	X6	836062.9	825896.3	8.928E-02	1.490E-02	3.461E-03	3.183E-03	-	12.75	9.12	2.56		8.035E-01	1.341E-01	3.115E-02	2.864E-02	-	
Existing Tsing Sha Highway (WB) (Existing Tunnel Y)	Y1	836120.1	828109.7	1.092E-02	1.596E-03	4.261E-04	3.922E-04	-	13.50	5.12	3.26							
	Y2	836116.9	828100.2	1.092E-02	1.596E-03	4.261E-04	3.922E-04	-	13.50	5.12	3.26							
	Y3	836113.8	828090.8	1.092E-02	1.596E-03	4.261E-04	3.922E-04	-	13.50	5.12	3.26							
	Y4	836110.6	828081.2	1.092E-02	1.596E-03	4.261E-04	3.922E-04	-	13.50	5.12	3.26							
	Y5	836107.4	828071.8	1.092E-02	1.596E-03	4.261E-04	3.922E-04	-	13.50	5.12	3.26							
	Y6	836104.1	828062.3	5.458E-03	7.979E-04	2.131E-04	1.961E-04	-	13.50	5.12	3.26							
	Y7	836100.6	828052.9	5.458E-03	7.979E-04	2.131E-04	1.961E-04	-	13.50	5.12	3.26							
	Y8	836097.1	828043.5	5.458E-03	7.979E-04	2.131E-04	1.961E-04	-	13.50	5.12	3.26							
	Y9	836093.6	828034.2	5.458E-03	7.979E-04	2.131E-04	1.961E-04	-	13.50	5.12	3.26							
	Y10	836090.1	828024.8	5.458E-03	7.979E-04	2.131E-04	1.961E-04	-	13.50	5.12	3.26		8.187E-02	1.197E-02	3.196E-03	2.942E-03	-	
	Existing Tsing Sha Highway (WB) (Existing Tunnel Z)	Z1	836213.1	826342.4	1.366E-01	2.210E-02	5.385E-03	4.960E-03	-	13.00	8.60	2.79						
Z2		836200.7	826328.7	1.366E-01	2.210E-02	5.385E-03	4.960E-03	-	13.00	8.60	2.79							
Z3		836189.4	826313.7	1.366E-01	2.210E-02	5.385E-03	4.960E-03	-	13.00	8.60	2.79							
Z4		836179.3	826297.8	6.829E-02	1.105E-02	2.693E-03	2.480E-03	-	13.00	8.60	2.79							
Z5		836170.6	826281.2	6.829E-02	1.105E-02	2.693E-03	2.480E-03	-	13.00	8.60	2.79							
Z6		836163.4	826264.2	6.829E-02	1.105E-02	2.693E-03	2.480E-03	-	13.00	8.60	2.79		6.146E-01	9.943E-02	2.423E-02	2.232E-02	-	
Proposed T4 (EB) - Underpass (Proposed Tunnel A)	A1	837453.6	826130.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.79							
	A2	837458.7	826125.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.79							
	A3	837463.8	826120.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.79							
	A4	837468.8	826115.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.79							
	A5	837473.9	826110.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.79							
	A6	837479.0	826105.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.79							
	A7	837484.1	826100.3	1.331E-02	2.020E-03	4.681E-04	4.310E-04	-	0.00	3.40	2.79							
	A8	837489.2	826095.3	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.79							
	A9	837494.3	826090.3	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.79							
	A10	837499.4	826085.2	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.79							
	A11	837504.5	826080.2	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.79							
	A12	837509.6	826075.2	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.79							
	A13	837514.8	826070.3	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.79							
	A14	837520.0	826065.4	6.656E-03	1.010E-03	2.341E-04	2.155E-04	-	0.00	3.40	2.79		1.398E-01	2.121E-02	4.915E-03	4.526E-03	-	
Proposed T4 (EB) (Proposed Tunnel B)	B1	837776.3	826035.1	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88							
	B2	837782.9	826030.0	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88							
	B3	837789.4	826024.9	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88							
	B4	837796.0	826019.8	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88							
	B5	837802.5	826014.7	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88							
	B6	837809.1	826009.6	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88							
	B7	837815.8	826004.5	2.562E-02	3.888E-03	9.009E-04	8.294E-04	-	13.10	3.40	2.88							
	B8	837822.4	826000.4	1.281E-02	1.944E-03	4.504E-04	4.147E-04	-	13.10	3.40	2.88							
	B9	837829.1	826005.4	1.281E-02	1.944E-03	4.504E-04	4.147E-04	-	13.10	3.40	2.88							
	B10	837835.8	826000.0	1.281E-02	1.944E-03	4.504E-04	4.147E-04	-	13.10	3.40	2.88							
	B11	837842.5	826005.4	1.281E-02	1.944E-03	4.504E-04	4.147E-04	-	13.10	3.40	2.88							
	B12	837849.2	826010.8	1.281E-02	1.944E-03	4.504E-04	4.147E-04	-	13.10	3.40	2.88							
	B13	837856.0	826016.2	1.281E-02	1.944E-03	4.504E-04	4.147E-04	-	13.10	3.40	2.88							
	B14	837862.8	826021.6	1.281E-02	1.944E-03	4.504E-04	4.147E-04	-	13.10	3.40	2.88		2.690E-01	4.082E-02	9.459E-03	8.709E-03	-	
Proposed T4 (WB) - Underpass (Proposed Tunnel D)	D1	837589.3	826033.2	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	0.00	3.40	2.88							
	D2	837583.6	826037.6	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	0.00	3.40	2.88							
	D3	837578.0	826042.2	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	0.00	3.40	2.88							
	D4	837572.5	826047.0	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	0.00	3.40	2.88							
	D5	837567.2	826052.0	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	0.00	3.40	2.88							
	D6	837562.1	826057.1	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	0.00	3.40	2.88							
	D7	837557.1	826062.4	2.706E-02	3.930E-03	9.187E-04	8.455E-04	-	0.00	3.40	2.88							
	D8	837552.2	826067.7	1.353E-02	1.965E-03	4.593E-04	4.227E-04	-	0.00	3.40	2.88							
	D9	837547.4	826073.1	1.353E-02	1.965E-03	4.593E-04	4.227E-04	-	0.00	3.40	2.88							
	D10	837542.6	826078.6	1.353E-02	1.965E-03	4.593E-04	4.227E-04	-	0.00	3.40	2.88							
	D11	837537.9	826084.1	1.353E-02	1.965E-03	4.593E-04	4.227E-04	-	0.00	3.40	2.88							
	D12	837533.2	826089.7	1.353E-02	1.965E-03	4.593E-04	4.227E-04	-	0.00	3.40	2.88							
	D13	837528.5	826095.2	1.353E-02	1.965E-03	4.593E-04	4.227E-04	-	0.00	3.40	2.88							
	D14	837523.8	826100.7	1.353E-02	1.965E-03	4.593E-04	4.227E-04	-	0.00	3.40	2.88		2.841E-01	4.126E-02	9.646E-03	8.877E-03	-	
Proposed T4 (WB) - Underpass (Proposed Tunnel E)	E1	837377.6	826232.0	1.906E-02	2.697E-03	6.344E-04	5.845E-04	-	0.00	3.40	2.88							
	E2	837372.6	826237.1	1.906E-02	2.697E-03	6.344E-04	5.845E-04	-	0.00	3.40	2.88							
	E3	837367.8	826242.4	1.906E-02	2.697E-03	6.344E-04	5.845E-04	-	0.00	3.40	2.88							
	E4	837363.0	826247.7	1.906E-02	2.697E-03	6.344E-04	5.845E-04	-	0.00	3.40	2.88							
	E5	837358.3	826253.0	1.906E-02	2.697E-03	6												

Calculation of Portal Emissions (With Project (Without Direct Noise Remedies) Scenario – Year 2028)

Hourly Profile for Portals

Hour	Portal X Existing Tsing Sha Highway (WB)					Portal Y Existing Tsing Sha Highway (WB)					Portal Z Existing Tsing Sha Highway (WB)					Portal A Proposed T4 (EB)				
	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP
Hour 1	1.8%	1.1%	1.4%	1.4%	-	2.0%	1.3%	1.4%	1.4%	-	1.8%	1.1%	1.4%	1.4%	-	1.3%	0.9%	0.9%	0.9%	-
Hour 2	1.3%	0.9%	1.1%	1.1%	-	1.4%	1.0%	1.1%	1.1%	-	1.3%	0.9%	1.0%	1.0%	-	0.9%	0.7%	0.7%	0.7%	-
Hour 3	0.9%	0.7%	0.8%	0.8%	-	1.0%	0.8%	0.8%	0.8%	-	0.9%	0.7%	0.8%	0.8%	-	0.7%	0.5%	0.5%	0.5%	-
Hour 4	0.7%	0.6%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-	0.5%	0.5%	0.5%	0.5%	-
Hour 5	0.7%	0.6%	0.7%	0.7%	-	0.8%	0.7%	0.7%	0.7%	-	0.8%	0.6%	0.7%	0.7%	-	0.5%	0.5%	0.5%	0.5%	-
Hour 6	1.0%	0.8%	1.0%	1.0%	-	1.0%	0.9%	0.9%	0.9%	-	1.0%	0.9%	0.9%	0.9%	-	0.7%	0.6%	0.7%	0.6%	-
Hour 7	2.5%	2.3%	2.6%	2.6%	-	2.7%	2.5%	2.5%	2.5%	-	2.6%	2.3%	2.5%	2.5%	-	1.8%	1.8%	1.8%	1.8%	-
Hour 8	7.9%	7.6%	7.6%	7.6%	-	7.2%	7.1%	7.0%	7.0%	-	6.9%	6.6%	6.9%	6.9%	-	4.8%	4.9%	4.9%	4.9%	-
Hour 9	9.5%	9.4%	9.5%	9.5%	-	7.4%	7.5%	7.7%	7.8%	-	7.6%	7.5%	7.9%	7.9%	-	4.9%	5.2%	5.5%	5.5%	-
Hour 10	9.3%	9.3%	9.0%	9.0%	-	7.6%	7.7%	7.5%	7.5%	-	7.8%	7.8%	7.9%	7.9%	-	5.2%	5.5%	5.5%	5.5%	-
Hour 11	8.4%	8.5%	8.2%	8.2%	-	7.2%	7.4%	7.0%	7.0%	-	7.4%	7.5%	7.4%	7.4%	-	5.0%	5.3%	5.2%	5.2%	-
Hour 12	7.3%	7.5%	7.5%	7.6%	-	6.5%	6.9%	6.6%	6.6%	-	6.7%	6.9%	7.0%	7.0%	-	4.5%	4.9%	4.9%	4.9%	-
Hour 13	5.1%	5.8%	5.7%	5.7%	-	5.3%	6.2%	5.9%	5.9%	-	5.6%	6.4%	6.1%	6.1%	-	6.7%	7.6%	7.5%	7.5%	-
Hour 14	5.4%	6.2%	6.0%	6.0%	-	5.5%	6.6%	6.2%	6.2%	-	5.9%	6.9%	6.5%	6.5%	-	7.1%	8.2%	8.0%	8.0%	-
Hour 15	6.1%	7.1%	6.9%	6.9%	-	6.1%	7.5%	7.0%	7.0%	-	6.6%	7.8%	7.4%	7.4%	-	7.7%	9.3%	9.2%	9.2%	-
Hour 16	5.8%	6.6%	6.4%	6.4%	-	6.0%	7.0%	6.6%	6.5%	-	6.4%	7.3%	6.9%	6.9%	-	7.6%	8.7%	8.5%	8.5%	-
Hour 17	5.6%	6.2%	5.8%	5.8%	-	5.9%	6.6%	6.2%	6.2%	-	6.2%	6.9%	6.3%	6.3%	-	7.5%	8.3%	7.6%	7.6%	-
Hour 18	5.3%	5.7%	5.4%	5.4%	-	5.8%	6.2%	6.0%	6.0%	-	5.9%	6.3%	5.9%	5.9%	-	7.3%	7.7%	7.5%	7.5%	-
Hour 19	4.0%	3.9%	4.0%	4.0%	-	4.7%	4.4%	5.0%	5.0%	-	4.5%	4.4%	4.5%	4.5%	-	6.0%	5.5%	5.9%	6.0%	-
Hour 20	2.7%	2.4%	2.5%	2.5%	-	3.4%	2.8%	3.4%	3.4%	-	3.1%	2.7%	2.9%	2.9%	-	4.3%	3.5%	3.8%	3.9%	-
Hour 21	2.6%	2.3%	2.4%	2.4%	-	3.2%	2.7%	3.1%	3.1%	-	3.0%	2.6%	2.7%	2.7%	-	4.1%	3.3%	3.4%	3.4%	-
Hour 22	2.3%	1.8%	1.9%	1.9%	-	3.1%	2.2%	2.7%	2.7%	-	2.7%	2.1%	2.2%	2.2%	-	4.0%	2.7%	2.8%	2.8%	-
Hour 23	2.1%	1.4%	1.5%	1.5%	-	2.8%	1.8%	2.2%	2.2%	-	2.5%	1.6%	1.8%	1.8%	-	3.8%	2.1%	2.2%	2.2%	-
Hour 24	1.7%	1.3%	1.4%	1.4%	-	2.3%	1.6%	1.9%	1.9%	-	2.0%	1.5%	1.6%	1.6%	-	3.1%	1.9%	2.0%	2.0%	-

Hour	Portal B Proposed T4 (EB)					Portal D Proposed T4 (WB)					Portal E Proposed T4 (WB)					Portal F Proposed T4 (WB)				
	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP	NO	NO ₂	RSP	FSP	TSP
Hour 1	1.3%	0.9%	0.9%	0.9%	-	2.1%	1.3%	1.3%	1.3%	-	2.4%	1.4%	1.5%	1.5%	-	0.9%	0.7%	0.7%	0.7%	-
Hour 2	0.9%	0.7%	0.7%	0.7%	-	1.5%	1.0%	1.0%	1.0%	-	1.6%	1.1%	1.1%	1.1%	-	0.8%	0.6%	0.6%	0.6%	-
Hour 3	0.7%	0.5%	0.5%	0.5%	-	1.1%	0.8%	0.8%	0.8%	-	1.2%	0.8%	0.9%	0.9%	-	0.5%	0.4%	0.4%	0.4%	-
Hour 4	0.5%	0.5%	0.5%	0.5%	-	0.9%	0.7%	0.7%	0.7%	-	0.9%	0.7%	0.7%	0.7%	-	0.4%	0.4%	0.4%	0.4%	-
Hour 5	0.5%	0.5%	0.5%	0.5%	-	0.8%	0.7%	0.7%	0.7%	-	0.9%	0.8%	0.8%	0.8%	-	0.4%	0.4%	0.4%	0.4%	-
Hour 6	0.7%	0.6%	0.7%	0.6%	-	1.1%	1.0%	1.0%	1.0%	-	1.2%	1.0%	1.1%	1.1%	-	0.5%	0.5%	0.5%	0.5%	-
Hour 7	1.8%	1.8%	1.8%	1.8%	-	2.8%	2.6%	2.6%	2.6%	-	3.0%	2.9%	2.9%	2.9%	-	1.4%	1.5%	1.5%	1.5%	-
Hour 8	4.8%	4.9%	4.9%	4.9%	-	7.4%	7.3%	7.3%	7.3%	-	8.0%	8.0%	8.0%	8.0%	-	4.0%	4.4%	4.3%	4.3%	-
Hour 9	4.9%	5.2%	5.5%	5.5%	-	7.4%	7.7%	8.2%	8.1%	-	8.0%	8.3%	8.8%	8.8%	-	4.3%	4.8%	4.9%	4.9%	-
Hour 10	5.2%	5.5%	5.5%	5.5%	-	7.5%	7.6%	7.6%	7.6%	-	8.0%	8.0%	8.0%	8.0%	-	4.9%	5.5%	5.3%	5.3%	-
Hour 11	5.0%	5.3%	5.2%	5.2%	-	7.0%	7.1%	6.9%	6.9%	-	7.5%	7.5%	7.3%	7.3%	-	4.8%	5.5%	5.2%	5.2%	-
Hour 12	4.5%	4.9%	4.9%	4.9%	-	6.3%	6.6%	6.5%	6.5%	-	6.7%	6.9%	6.9%	6.9%	-	4.4%	5.1%	4.9%	4.9%	-
Hour 13	6.7%	7.6%	7.5%	7.5%	-	5.2%	6.2%	6.1%	6.1%	-	4.9%	5.8%	5.7%	5.7%	-	7.2%	7.8%	7.7%	7.7%	-
Hour 14	7.1%	8.2%	8.0%	8.0%	-	5.5%	6.6%	6.4%	6.4%	-	5.1%	6.2%	6.0%	6.0%	-	7.7%	8.5%	8.2%	8.2%	-
Hour 15	7.7%	9.3%	9.2%	9.2%	-	6.0%	7.5%	7.4%	7.4%	-	5.5%	7.0%	6.9%	6.9%	-	8.5%	9.7%	9.4%	9.4%	-
Hour 16	7.6%	8.7%	8.5%	8.5%	-	5.9%	7.1%	6.9%	6.9%	-	5.5%	6.7%	6.4%	6.4%	-	8.3%	9.1%	8.8%	8.8%	-
Hour 17	7.5%	8.3%	7.8%	7.8%	-	5.8%	6.7%	6.3%	6.3%	-	5.4%	6.3%	5.9%	5.9%	-	8.1%	8.5%	8.1%	8.1%	-
Hour 18	7.3%	7.7%	7.5%	7.5%	-	5.7%	6.2%	6.0%	6.0%	-	5.3%	5.8%	5.7%	5.7%	-	7.9%	7.9%	7.6%	7.6%	-
Hour 19	6.0%	5.5%	5.9%	6.0%	-	4.7%	4.5%	4.8%	4.8%	-	4.4%	4.3%	4.6%	4.6%	-	6.3%	5.7%	6.3%	6.3%	-
Hour 20	4.3%	3.5%	3.8%	3.9%	-	3.4%	2.9%	3.1%	3.1%	-	3.2%	2.7%	3.0%	3.0%	-	4.4%	3.5%	4.0%	4.1%	-
Hour 21	4.1%	3.3%	3.4%	3.4%	-	3.3%	2.7%	2.8%	2.8%	-	3.1%	2.5%	2.6%	2.6%	-	4.1%	3.2%	3.4%	3.4%	-
Hour 22	4.0%	2.7%	2.8%	2.8%	-	3.1%	2.2%	2.3%	2.3%	-	3.0%	2.1%	2.1%	2.1%	-	3.8%	2.6%	2.8%	2.8%	-
Hour 23	3.8%	2.1%	2.2%	2.2%	-	3.0%	1.7%	1.8%	1.8%	-	2.9%	1.7%	1.7%	1.7%	-	3.6%	2.0%	2.3%	2.2%	-
Hour 24	3.1%	1.9%	2.0%	2.0%	-	2.4%	1.6%	1.6%	1.6%	-	2.3%	1.5%	1.5%	1.5%	-	2.9%	1.8%	2.0%	2.0%	-

Existing Noise Enclosure

Portal Z

Tunnel Z (Link 184)

Legend

Existing Noise Enclosure

Existing Noise Barrier with Cantilever

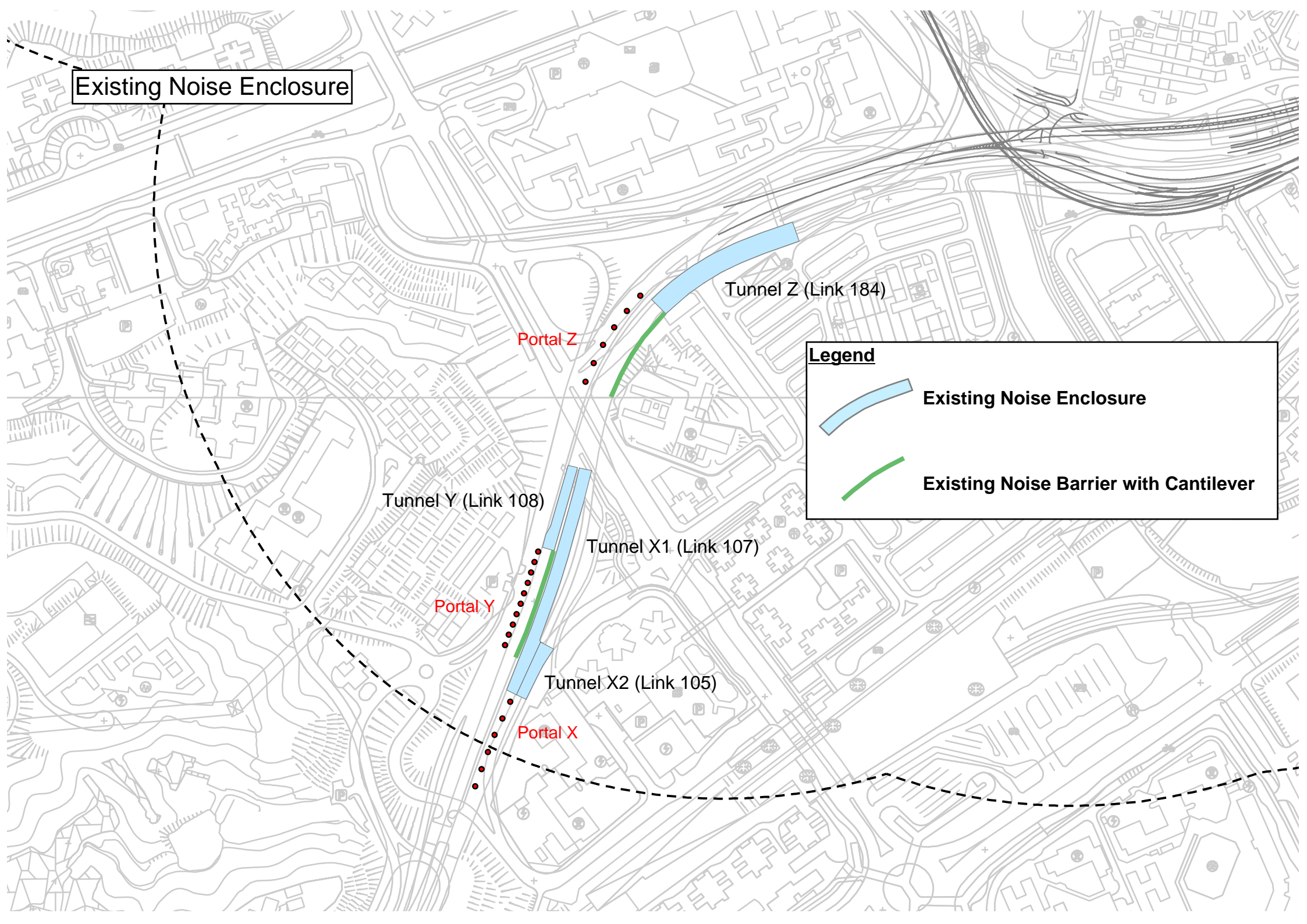
Tunnel Y (Link 108)

Tunnel X1 (Link 107)



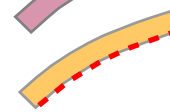

Portal Y

Tunnel X2 (Link 105)

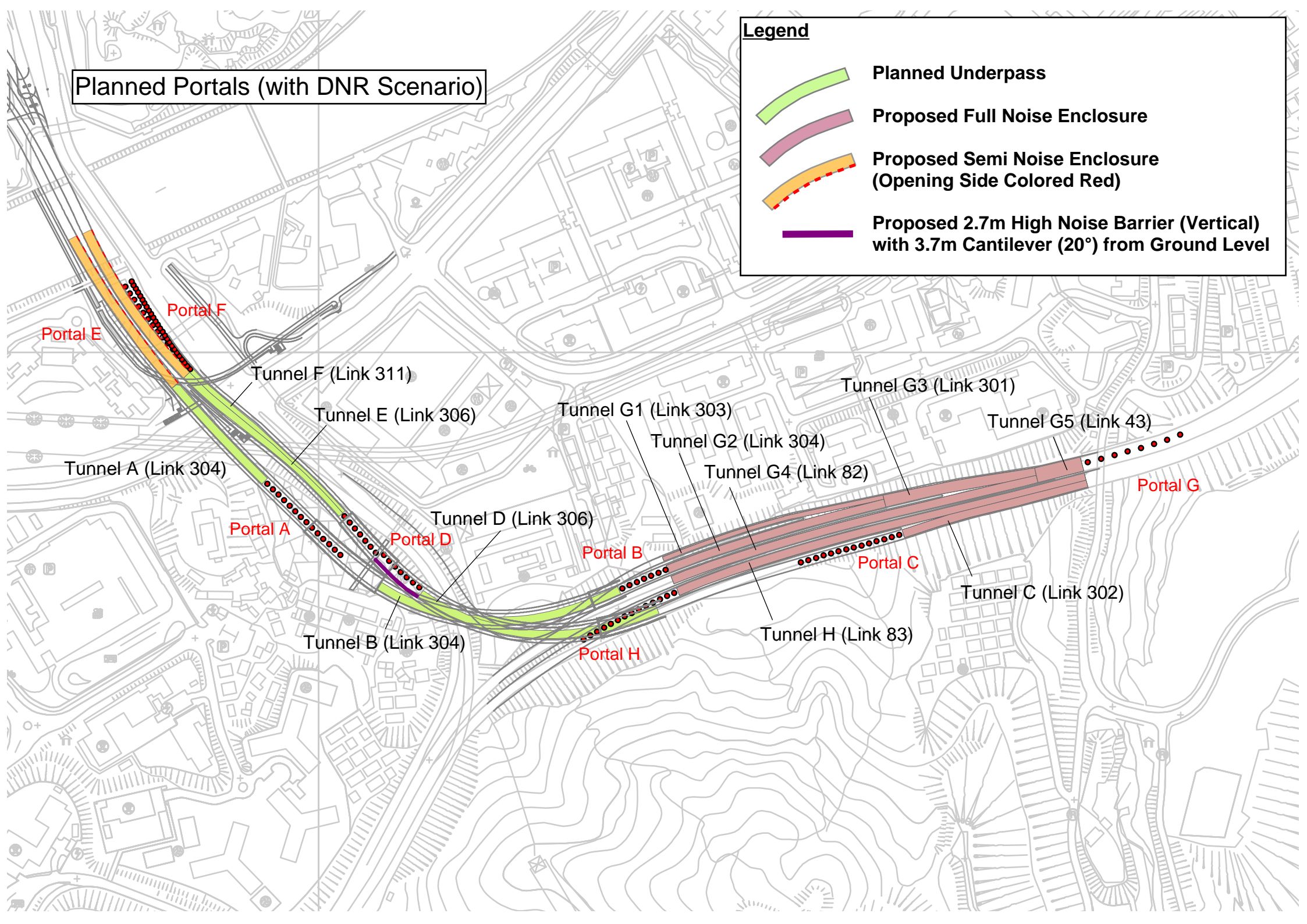
Portal X



Legend

-  **Planned Underpass**
-  **Proposed Full Noise Enclosure**
-  **Proposed Semi Noise Enclosure (Opening Side Colored Red)**
-  **Proposed 2.7m High Noise Barrier (Vertical) with 3.7m Cantilever (20°) from Ground Level**

Planned Portals (with DNR Scenario)



Planned Portals (without DNR Scenario)

Legend



Planned Underpass

Portal E

Portal F

Tunnel F (Link 311)

Tunnel E (Link 306)

Tunnel A (Link 304)

Portal A

Tunnel D (Link 306)

Portal D

Portal B

Tunnel B (Link 304)

