Appendix 3.5 – Detailed Calculation of Emissions from Portals, Underpass Top Openings, Ventilation Building and Ventilation Exhausts

Calculation of Portal Emission and Emissions of Underpass Top Openings, Ventilation Buildings and Ventilation Exhausts

Description	Percentage from Portal	Length (m)	Source Name	Source ID	No. of Portal Sources	No. of Non-Portal Sources	Area (m^2)	Hour	Q (veh/hr)	Total Emission Factor NO (g/mile-veh)	Total Emission Factor NO_2 (g/mile-veh)	Total Emission Factor RSP (g/mile-veh)	Total Emission Rate NO (g/s)	Total Emission Rate NO_2 (g/s)	Total Emission Rate RSP (g/s)	Emission Rate (from Portal Sources) NO (g/s)	Emission Rate (from Portal Sources) NO_2 (g/s)	Emission Rate (from Portal Sources) RSP (g/s)	Emission rate (from Non-portal Sources) NO (g/s or $g/m^2/s$)	Emission rate (from Non-portal Sources) NO_2 (g/s or $g/m^2/s$)	Emission rate (from Non-portal Sources) RSP (g/s or $g/m^2/s$)	Daily Emission Rate / Diurnal Porfile (from 1st 50m for Each Portal Source) NO (g/s) / %	Daily Emission Rate / Diurnal Porfile (from 1st 50m for Each Portal Source) NO_2 (g/s) / %	Daily Emission Rate / Diurnal Porfile (from 1st 50m for Each Portal Source) RSP (g/s) / %	Daily Emission Rate / Diurnal Porfile (from 2nd 50m for Each Portal Source) NO (g/s) / %	Daily Emission Rate / Diurnal Porfile (from 2nd 50m for Each Portal Source) NO_2 (g/s) / %	Daily Emission Rate / Diurnal Porfile (from 2nd 50m for Each Portal Source) RSP (g/s) / %	Daily Emission Rate / Diurnal Porfile (Each Non-Portal Sources) NO (g/s or $g/m^2/s$)	Daily Emission Rate / Diurnal Porfile (Each Non-Portal Sources) NO_2 (g/s or $g/m^2/s$)	Daily Emission Rate / Diurnal Porfile (Each Non-Portal Sources) RSP (g/s or $g/m^2/s$)	Emission Calculation Formula (Reference made to the supporting documents for the approved WKCD VEP (EP-453/2013/B))
Tunnel Section A	-	73	-	73	-	-	-	1	229	0.5650	0.0471	0.0142	1.629E-03	1.357E-04	4.098E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								2	165	0.6184	0.0544	0.0167	1.289E-03	1.133E-04	3.471E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								3	123	0.6619	0.0603	0.0188	1.027E-03	9.353E-05	2.922E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								4	95	0.7086	0.0668	0.0210	8.459E-04	7.976E-05	2.503E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								5	87	0.7356	0.0737	0.0225	8.046E-04	8.061E-05	2.456E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								6	100	0.7381	0.0801	0.0230	9.321E-04	1.012E-04	2.901E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								7	168	0.7524	0.0884	0.0239	1.589E-03	1.867E-04	5.052E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								8	339	0.7676	0.0960	0.0248	3.275E-03	4.098E-04	1.058E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								9	484	0.6061	0.0724	0.0202	3.699E-03	4.422E-04	1.235E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								10	456	0.5795	0.0659	0.0172	3.327E-03	3.782E-04	9.881E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								11	433	0.6072	0.0716	0.0170	3.316E-03	3.908E-04	9.300E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								12	442	0.6289	0.0767	0.0177	3.501E-03	4.271E-04	9.868E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								13	454	0.5918	0.0710	0.0164	3.389E-03	4.064E-04	9.391E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								14	467	0.6297	0.0794	0.0179	3.703E-03	4.669E-04	1.051E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								15	527	0.6202	0.0806	0.0173	4.121E-03	5.354E-04	1.149E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								16	566	0.5749	0.0746	0.0162	4.098E-03	5.319E-04	1.152E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								17	596	0.5692	0.0718	0.0162	4.274E-03	5.392E-04	1.218E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								18	645	0.5251	0.0630	0.0150	4.265E-03	5.121E-04	1.222E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								19	757	0.4772	0.0549	0.0141	4.550E-03	5.236E-04	1.347E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								20	610	0.4009	0.0382	0.0115	3.082E-03	2.937E-04	8.872E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								21	445	0.4658	0.0365	0.0109	2.614E-03	2.047E-04	6.092E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								22	423	0.4822	0.0366	0.0108	2.569E-03	1.951E-04	5.743E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								23	409	0.4837	0.0335	0.0104	2.490E-03	1.727E-04	5.332E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								24	326	0.5222	0.0406	0.0123	2.143E-03	1.666E-04	5.035E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								Daily	-	-	-	-	**6.653E-02**	**7.387E-03**	**1.873E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tunnel Section B	-	272	-	73	-	-	-	1	229	0.5650	0.0471	0.0142	6.069E-03	5.057E-04	1.527E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								2	165	0.6184	0.0544	0.0167	4.802E-03	4.222E-04	1.293E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								3	123	0.6619	0.0603	0.0188	3.827E-03	3.485E-04	1.089E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								4	95	0.7086	0.0668	0.0210	3.152E-03	2.972E-04	9.327E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								5	87	0.7356	0.0737	0.0225	2.998E-03	3.004E-04	9.150E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								6	100	0.7381	0.0801	0.0230	3.473E-03	3.770E-04	1.081E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								7	168	0.7524	0.0884	0.0239	5.921E-03	6.957E-04	1.883E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								8	339	0.7676	0.0960	0.0248	1.220E-02	1.527E-03	3.942E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								9	484	0.6061	0.0724	0.0202	1.378E-02	1.647E-03	4.602E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								10	456	0.5795	0.0659	0.0172	1.240E-02	1.409E-03	3.682E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								11	433	0.6072	0.0716	0.0170	1.236E-02	1.456E-03	3.465E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								12	442	0.6289	0.0767	0.0177	1.304E-02	1.591E-03	3.677E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								13	454	0.5918	0.0710	0.0164	1.263E-02	1.514E-03	3.499E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								14	467	0.6297	0.0794	0.0179	1.380E-02	1.740E-03	3.917E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								15	527	0.6202	0.0806	0.0173	1.535E-02	1.995E-03	4.282E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								16	566	0.5749	0.0746	0.0162	1.527E-02	1.982E-03	4.294E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								17	596	0.5692	0.0718	0.0162	1.593E-02	2.009E-03	4.540E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								18	645	0.5251	0.0630	0.0150	1.589E-02	1.908E-03	4.554E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								19	757	0.4772	0.0549	0.0141	1.695E-02	1.951E-03	5.020E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								20	610	0.4009	0.0382	0.0115	1.148E-02	1.094E-03	3.306E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								21	445	0.4658	0.0365	0.0109	9.739E-03	7.627E-04	2.270E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								22	423	0.4822	0.0366	0.0108	9.573E-03	7.270E-04	2.140E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								23	409	0.4837	0.0335	0.0104	9.279E-03	6.434E-04	1.987E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								24	326	0.5222	0.0406	0.0123	7.985E-03	6.209E-04	1.876E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								Daily	-	-	-	-	**2.479E-01**	**2.752E-02**	**6.977E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tunnel Section C	-	110	-	73	-	-	-	1	229	0.5650	0.0471	0.0142	2.454E-03	2.045E-04	6.175E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								2	165	0.6184	0.0544	0.0167	1.942E-03	1.708E-04	5.231E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								3	123	0.6619	0.0603	0.0188	1.548E-03	1.409E-04	4.402E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								4	95	0.7086	0.0668	0.0210	1.275E-03	1.202E-04	3.772E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								5	87	0.7356	0.0737	0.0225	1.212E-03	1.215E-04	3.700E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								6	100	0.7381	0.0801	0.0230	1.405E-03	1.524E-04	4.371E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								7	168	0.7524	0.0884	0.0239	2.394E-03	2.813E-04	7.613E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								8	339	0.7676	0.0960	0.0248	4.936E-03	6.175E-04	1.594E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								9	484	0.6061	0.0724	0.0202	5.574E-03	6.663E-04	1.861E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								10	456	0.5795	0.0659	0.0172	5.014E-03	5.699E-04	1.489E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								11	433	0.6072	0.0716	0.0170	4.997E-03	5.888E-04	1.401E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								12	442	0.6289	0.0767	0.0177	5.275E-03	6.435E-04	1.487E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								13	454	0.5918	0.0710	0.0164	5.107E-03	6.123E-04	1.415E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								14	467	0.6297	0.0794	0.0179	5.580E-03	7.036E-04	1.584E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								15	527	0.6202	0.0806	0.0173	6.209E-03	8.068E-04	1.732E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								16	566	0.5749	0.0746	0.0162	6.175E-03	8.016E-04	1.736E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								17	596	0.5692	0.0718	0.0162	6.441E-03	8.125E-04	1.836E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								18	645	0.5251	0.0630	0.0150	6.427E-03	7.716E-04	1.842E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								19	757	0.4772	0.0549	0.0141	6.857E-03	7.890E-04	2.030E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								20	610	0.4009	0.0382	0.0115	4.643E-03	4.426E-04	1.337E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								21	445	0.4658	0.0365	0.0109	3.939E-03	3.084E-04	9.179E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								22	423	0.4822	0.0366	0.0108	3.872E-03	2.940E-04	8.654E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								23	409	0.4837	0.0335	0.0104	3.753E-03	2.602E-04	8.034E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								24	326	0.5222	0.0406	0.0123	3.229E-03	2.511E-04	7.587E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								Daily	-	-	-	-	**1.003E-01**	**1.113E-02**	**2.822E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tunnel Section D	-	176	-	73	-	-	-	1	229	0.5650	0.0471	0.0142	3.927E-03	3.272E-04	9.881E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								2	165	0.6184	0.0544	0.0167	3.107E-03	2.732E-04	8.370E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								3	123	0.6619	0.0603	0.0188	2.476E-03	2.255E-04	7.044E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								4	95	0.7086	0.0668	0.0210	2.040E-03	1.923E-04	6.035E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								5	87	0.7356	0.0737	0.0225	1.940E-03	1.944E-04	5.921E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								6	100	0.7381	0.0801	0.0230	2.247E-03	2.439E-04	6.993E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								7	168	0.7524	0.0884	0.0239	3.831E-03	4.501E-04	1.218E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								8	339	0.7676	0.0960	0.0248	7.897E-03	9.880E-04	2.551E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								9	484	0.6061	0.0724	0.0202	8.918E-03	1.066E-03	2.978E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								10	456	0.5795	0.0659	0.0172	8.022E-03	9.119E-04	2.382E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								11	433	0.6072	0.0716	0.0170	7.995E-03	9.421E-04	2.242E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								12	442	0.6289	0.0767	0.0177	8.440E-03	1.030E-03	2.379E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								13	454	0.5918	0.0710	0.0164	8.171E-03	9.797E-04	2.264E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								14	467	0.6297	0.0794	0.0179	8.928E-03	1.126E-03	2.535E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								15	527	0.6202	0.0806	0.0173	9.935E-03	1.291E-03	2.771E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								16	566	0.5749	0.0746	0.0162	9.879E-03	1.282E-03	2.778E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								17	596	0.5692	0.0718	0.0162	1.031E-02	1.300E-03	2.938E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								18	645	0.5251	0.0630	0.0150	1.028E-02	1.235E-03	2.947E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								19	757	0.4772	0.0549	0.0141	1.097E-02	1.262E-03	3.248E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								20	610	0.4009	0.0382	0.0115	7.429E-03	7.081E-04	2.139E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								21	445	0.4658	0.0365	0.0109	6.302E-03	4.935E-04	1.469E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								22	423	0.4822	0.0366	0.0108	6.194E-03	4.704E-04	1.385E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								23	409	0.4837	0.0335	0.0104	6.004E-03	4.163E-04	1.286E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								24	326	0.5222	0.0406	0.0123	5.166E-03	4.018E-04	1.214E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								Daily	-	-	-	-	**1.604E-01**	**1.781E-02**	**4.515E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Calculation of Portal Emission and Emissions of Underpass Top Openings, Ventilation Buildings and Ventilation Exhausts

Description	Percentage from Portal	Length (m)	Source Name	Source ID	No. of Portal Sources	No. of Non-Portal Sources	Area (m^2)	Hour	Q (veh/hr)	Total Emission Factor			Total Emission Rate			Emission Rate (from Portal Sources)			Emission rate (from Non-portal Sources)			Daily Emission Rate / Diurnal Porfile (from 1st 50m for Each Portal Source)			Daily Emission Rate / Diurnal Porfile (from 2nd 50m for Each Portal Source)			Daily Emission Rate / Diurnal Porfile (Each Non-Portal Sources)			Emission Calculation Formula (Reference made to the supporting documents for the approved WKCD VEP (EP-453/2013/B))
										NO (g/mile-veh)	NO_2 (g/mile-veh)	RSP (g/mile-veh)	NO (g/s)	NO_2 (g/s)	RSP (g/s)	NO (g/s)	NO_2 (g/s)	RSP (g/s)	NO (g/s or $g/m^2/s$)	NO_2 (g/s or $g/m^2/s$)	RSP (g/s or $g/m^2/s$)	NO (g/s) / %	NO_2 (g/s) / %	RSP (g/s) / %	NO (g/s) / %	NO_2 (g/s) / %	RSP (g/s) / %	NO (g/s or $g/m^2/s$)	NO_2 (g/s or $g/m^2/s$)	RSP (g/s or $g/m^2/s$)	
Tunnel Section E	-	155	-	72	-	-	-	1	283	0.5219	0.0426	0.0118	3.947E-03	3.220E-04	8.927E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								2	209	0.5532	0.0483	0.0132	3.088E-03	2.694E-04	7.378E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								3	159	0.5822	0.0535	0.0145	2.473E-03	2.271E-04	6.174E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								4	125	0.6141	0.0594	0.0158	2.053E-03	1.986E-04	5.291E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								5	118	0.6334	0.0661	0.0169	1.992E-03	2.079E-04	5.302E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								6	140	0.6387	0.0730	0.0175	2.391E-03	2.731E-04	6.564E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								7	242	0.6562	0.0819	0.0187	4.245E-03	5.300E-04	1.209E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								8	506	0.6968	0.0934	0.0204	9.437E-03	1.265E-03	2.762E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								9	754	0.5430	0.0705	0.0165	1.096E-02	1.422E-03	3.329E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								10	674	0.5215	0.0619	0.0139	9.405E-03	1.116E-03	2.513E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								11	610	0.5558	0.0663	0.0142	9.077E-03	1.083E-03	2.313E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								12	595	0.5825	0.0714	0.0152	9.275E-03	1.137E-03	2.419E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								13	590	0.5507	0.0652	0.0142	8.690E-03	1.029E-03	2.242E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								14	578	0.5686	0.0701	0.0152	8.792E-03	1.084E-03	2.346E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								15	628	0.5745	0.0722	0.0153	9.653E-03	1.213E-03	2.568E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								16	652	0.5348	0.0668	0.0145	9.334E-03	1.166E-03	2.536E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								17	668	0.5282	0.0640	0.0147	9.437E-03	1.143E-03	2.622E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								18	703	0.4936	0.0566	0.0140	9.281E-03	1.064E-03	2.627E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								19	810	0.4615	0.0512	0.0137	1.000E-02	1.109E-03	2.962E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								20	672	0.3921	0.0361	0.0112	7.053E-03	6.502E-04	2.020E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								21	502	0.4464	0.0335	0.0100	6.001E-03	4.502E-04	1.343E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								22	489	0.4589	0.0335	0.0097	6.003E-03	4.382E-04	1.263E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								23	484	0.4552	0.0302	0.0089	5.896E-03	3.913E-04	1.157E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								24	394	0.4837	0.0363	0.0103	5.099E-03	3.829E-04	1.087E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								Daily	-	-	-	-	**1.636E-01**	**1.817E-02**	**4.328E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tunnel Section F	-	172	-	72	-	-	-	1	283	0.5219	0.0426	0.0118	4.379E-03	3.573E-04	9.906E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								2	209	0.5532	0.0483	0.0132	3.427E-03	2.990E-04	8.187E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								3	159	0.5822	0.0535	0.0145	2.744E-03	2.520E-04	6.851E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								4	125	0.6141	0.0594	0.0158	2.279E-03	2.204E-04	5.871E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								5	118	0.6334	0.0661	0.0169	2.210E-03	2.307E-04	5.883E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								6	140	0.6387	0.0730	0.0175	2.653E-03	3.031E-04	7.284E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								7	242	0.6562	0.0819	0.0187	4.711E-03	5.882E-04	1.342E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								8	506	0.6968	0.0934	0.0204	1.047E-02	1.403E-03	3.065E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								9	754	0.5430	0.0705	0.0165	1.216E-02	1.578E-03	3.694E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								10	674	0.5215	0.0619	0.0139	1.044E-02	1.238E-03	2.788E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								11	610	0.5558	0.0663	0.0142	1.007E-02	1.202E-03	2.567E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								12	595	0.5825	0.0714	0.0152	1.029E-02	1.262E-03	2.684E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								13	590	0.5507	0.0652	0.0142	9.643E-03	1.141E-03	2.488E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								14	578	0.5686	0.0701	0.0152	9.757E-03	1.202E-03	2.604E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								15	628	0.5745	0.0722	0.0153	1.071E-02	1.346E-03	2.850E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								16	652	0.5348	0.0668	0.0145	1.036E-02	1.294E-03	2.814E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								17	668	0.5282	0.0640	0.0147	1.047E-02	1.268E-03	2.910E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								18	703	0.4936	0.0566	0.0140	1.030E-02	1.181E-03	2.915E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								19	810	0.4615	0.0512	0.0137	1.110E-02	1.231E-03	3.287E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								20	672	0.3921	0.0361	0.0112	7.827E-03	7.215E-04	2.242E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								21	502	0.4464	0.0335	0.0100	6.659E-03	4.996E-04	1.490E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								22	489	0.4589	0.0335	0.0097	6.661E-03	4.863E-04	1.402E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								23	484	0.4552	0.0302	0.0089	6.543E-03	4.343E-04	1.283E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								24	394	0.4837	0.0363	0.0103	5.658E-03	4.249E-04	1.206E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								Daily	-	-	-	-	**1.815E-01**	**2.016E-02**	**4.803E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tunnel Section J	-	194	-	116	-	-	-	1	301	0.5967	0.0465	0.0161	6.017E-03	4.692E-04	1.623E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								2	225	0.6465	0.0526	0.0184	4.864E-03	3.960E-04	1.386E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								3	173	0.6846	0.0574	0.0204	3.959E-03	3.320E-04	1.178E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								4	137	0.7236	0.0627	0.0221	3.322E-03	2.878E-04	1.016E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								5	129	0.7381	0.0679	0.0230	3.196E-03	2.939E-04	9.951E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								6	153	0.7249	0.0723	0.0227	3.725E-03	3.714E-04	1.166E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								7	265	0.7255	0.0788	0.0230	6.427E-03	6.984E-04	2.035E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								8	553	0.7400	0.0865	0.0235	1.370E-02	1.602E-03	4.357E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								9	831	0.5754	0.0646	0.0191	1.601E-02	1.797E-03	5.306E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								10	723	0.5399	0.0539	0.0159	1.307E-02	1.305E-03	3.849E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								11	645	0.5598	0.0574	0.0155	1.210E-02	1.240E-03	3.354E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								12	628	0.5964	0.0652	0.0169	1.255E-02	1.371E-03	3.564E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								13	621	0.5679	0.0610	0.0159	1.182E-02	1.269E-03	3.305E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								14	602	0.5995	0.0676	0.0174	1.209E-02	1.364E-03	3.500E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								15	650	0.6040	0.0711	0.0172	1.314E-02	1.546E-03	3.753E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								16	670	0.5693	0.0674	0.0166	1.277E-02	1.512E-03	3.718E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								17	682	0.5742	0.0666	0.0172	1.312E-02	1.522E-03	3.925E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								18	712	0.5481	0.0608	0.0168	1.307E-02	1.450E-03	3.998E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								19	810	0.5152	0.0559	0.0164	1.397E-02	1.517E-03	4.437E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								20	678	0.4501	0.0409	0.0141	1.022E-02	9.279E-04	3.201E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								21	514	0.5077	0.0385	0.0134	8.730E-03	6.616E-04	2.296E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								22	504	0.5170	0.0379	0.0129	8.720E-03	6.396E-04	2.180E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								23	504	0.5158	0.0347	0.0124	8.711E-03	5.863E-04	2.089E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								24	415	0.5571	0.0411	0.0143	7.742E-03	5.712E-04	1.980E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								Daily	-	-	-	-	**2.330E-01**	**2.373E-02**	**6.821E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tunnel Section K	-	95	-	114	-	-	-	1	217	0.4058	0.0312	0.0061	1.445E-03	1.113E-04	2.173E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								2	161	0.4287	0.0360	0.0069	1.131E-03	9.494E-05	1.824E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								3	123	0.4528	0.0407	0.0077	9.134E-04	8.207E-05	1.553E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								4	97	0.4709	0.0451	0.0084	7.519E-04	7.202E-05	1.344E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								5	92	0.4919	0.0513	0.0096	7.444E-04	7.758E-05	1.455E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								6	111	0.5152	0.0587	0.0112	9.385E-04	1.070E-04	2.038E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								7	194	0.5345	0.0666	0.0128	1.702E-03	2.123E-04	4.084E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								8	412	0.5635	0.0752	0.0145	3.804E-03	5.080E-04	9.756E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								9	632	0.4274	0.0552	0.0117	4.427E-03	5.715E-04	1.215E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								10	543	0.3973	0.0435	0.0088	3.541E-03	3.881E-04	7.885E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								11	479	0.4187	0.0449	0.0086	3.289E-03	3.525E-04	6.792E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								12	460	0.4469	0.0510	0.0098	3.370E-03	3.845E-04	7.375E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								13	452	0.4203	0.0455	0.0089	3.116E-03	3.376E-04	6.604E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								14	429	0.4279	0.0483	0.0093	3.006E-03	3.394E-04	6.560E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								15	456	0.4281	0.0491	0.0094	3.203E-03	3.672E-04	7.069E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								16	469	0.3947	0.0454	0.0090	3.036E-03	3.491E-04	6.890E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								17	476	0.3901	0.0447	0.0090	3.046E-03	3.490E-04	7.030E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								18	496	0.3593	0.0397	0.0083	2.924E-03	3.231E-04	6.780E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								19	576	0.3500	0.0392	0.0089	3.307E-03	3.701E-04	8.392E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								20	490	0.2910	0.0270	0.0066	2.338E-03	2.168E-04	5.281E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								21	371	0.3503	0.0249	0.0054	2.129E-03	1.515E-04	3.253E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								22	367	0.3676	0.0252	0.0052	2.210E-03	1.517E-04	3.151E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								23	368	0.3642	0.0221	0.0045	2.198E-03	1.333E-04	2.718E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								24	301	0.3819	0.0266	0.0053	1.886E-03	1.315E-04	2.632E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								Daily	-	-	-	-	**5.846E-02**	**6.182E-03**	**1.248E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Calculation of Portal Emission and Emissions of Underpass Top Openings, Ventilation Buildings and Ventilation Exhausts

Description	Percentage from Portal	Length (m)	Source Name	Source ID	No. of Portal Sources	No. of Non-Portal Sources	Area (m^2)	Hour	Q (veh/hr)	Total Emission Factor NO (g/mile-veh)	Total Emission Factor NO_2 (g/mile-veh)	Total Emission Factor RSP (g/mile-veh)	Total Emission Rate NO (g/s)	Total Emission Rate NO_2 (g/s)	Total Emission Rate RSP (g/s)	Emission Rate (from Portal Sources) NO (g/s)	Emission Rate (from Portal Sources) NO_2 (g/s)	Emission Rate (from Portal Sources) RSP (g/s)	Emission rate (from Non-portal Sources) NO (g/s or $g/m^2/s$)	Emission rate (from Non-portal Sources) NO_2 (g/s or $g/m^2/s$)	Emission rate (from Non-portal Sources) RSP (g/s or $g/m^2/s$)	Daily Emission Rate / Diurnal Porfile (from 1st 50m for Each Portal Source) NO (g/s) / %	Daily Emission Rate / Diurnal Porfile (from 1st 50m for Each Portal Source) NO_2 (g/s) / %	Daily Emission Rate / Diurnal Porfile (from 1st 50m for Each Portal Source) RSP (g/s) / %	Daily Emission Rate / Diurnal Porfile (from 2nd 50m for Each Portal Source) NO (g/s) / %	Daily Emission Rate / Diurnal Porfile (from 2nd 50m for Each Portal Source) NO_2 (g/s) / %	Daily Emission Rate / Diurnal Porfile (from 2nd 50m for Each Portal Source) RSP (g/s) / %	Daily Emission Rate / Diurnal Porfile (Each Non-Portal Sources) NO (g/s or $g/m^2/s$)	Daily Emission Rate / Diurnal Porfile (Each Non-Portal Sources) NO_2 (g/s or $g/m^2/s$)	Daily Emission Rate / Diurnal Porfile (Each Non-Portal Sources) RSP (g/s or $g/m^2/s$)	Emission Calculation Formula (Reference made to the supporting documents for the approved WKCD VEP (EP-453/2013/B))
Tunnel Section L	-	95	-	112	-	-	-	1	273	0.4354	0.0372	0.0071	1.947E-03	1.662E-04	3.161E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								2	201	0.4552	0.0419	0.0078	1.501E-03	1.383E-04	2.578E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								3	153	0.4806	0.0470	0.0087	1.204E-03	1.178E-04	2.169E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								4	120	0.4990	0.0515	0.0095	9.835E-04	1.015E-04	1.866E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								5	113	0.5207	0.0578	0.0107	9.660E-04	1.073E-04	1.983E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								6	135	0.5378	0.0646	0.0121	1.192E-03	1.431E-04	2.682E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								7	234	0.5635	0.0732	0.0138	2.164E-03	2.812E-04	5.311E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								8	492	0.6081	0.0840	0.0159	4.901E-03	6.773E-04	1.284E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								9	742	0.4748	0.0633	0.0132	5.779E-03	7.702E-04	1.610E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								10	654	0.4481	0.0528	0.0104	4.805E-03	5.660E-04	1.111E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								11	589	0.4790	0.0565	0.0106	4.625E-03	5.457E-04	1.023E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								12	574	0.5101	0.0633	0.0118	4.799E-03	5.954E-04	1.107E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								13	570	0.4844	0.0581	0.0110	4.527E-03	5.432E-04	1.028E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								14	554	0.5050	0.0640	0.0119	4.589E-03	5.817E-04	1.080E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								15	602	0.5109	0.0661	0.0122	5.040E-03	6.518E-04	1.200E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								16	625	0.4753	0.0618	0.0116	4.868E-03	6.328E-04	1.186E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								17	638	0.4714	0.0606	0.0115	4.932E-03	6.336E-04	1.206E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								18	669	0.4320	0.0535	0.0105	4.740E-03	5.873E-04	1.156E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								19	770	0.4044	0.0489	0.0106	5.108E-03	6.173E-04	1.335E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								20	641	0.3248	0.0327	0.0077	3.416E-03	3.441E-04	8.081E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								21	480	0.3805	0.0301	0.0063	2.997E-03	2.371E-04	4.938E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								22	470	0.3918	0.0298	0.0060	3.018E-03	2.293E-04	4.617E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								23	467	0.3871	0.0263	0.0052	2.964E-03	2.012E-04	3.989E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								24	380	0.4136	0.0323	0.0062	2.579E-03	2.011E-04	3.889E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								Daily	-		-	-	**8.364E-02**	**9.670E-03**	**1.885E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tunnel Section M	-	56	-	84	-	-	-	1	646	0.4107	0.0309	0.0061	2.563E-03	1.925E-04	3.790E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								2	476	0.4277	0.0349	0.0067	1.968E-03	1.605E-04	3.087E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								3	362	0.4511	0.0394	0.0075	1.578E-03	1.377E-04	2.611E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								4	285	0.4684	0.0435	0.0082	1.290E-03	1.198E-04	2.266E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								5	269	0.4884	0.0494	0.0094	1.268E-03	1.284E-04	2.437E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								6	322	0.5104	0.0567	0.0108	1.587E-03	1.763E-04	3.369E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								7	560	0.5358	0.0654	0.0126	2.898E-03	3.538E-04	6.841E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								8	1181	0.5808	0.0763	0.0148	6.630E-03	8.715E-04	1.686E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								9	1812	0.4532	0.0576	0.0125	7.939E-03	1.009E-03	2.190E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								10	1558	0.4082	0.0427	0.0090	6.147E-03	6.429E-04	1.350E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								11	1377	0.4294	0.0437	0.0087	5.717E-03	5.821E-04	1.154E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								12	1331	0.4627	0.0510	0.0100	5.951E-03	6.565E-04	1.287E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								13	1319	0.4356	0.0456	0.0091	5.554E-03	5.808E-04	1.162E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								14	1254	0.4354	0.0473	0.0094	5.276E-03	5.737E-04	1.139E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								15	1343	0.4425	0.0490	0.0096	5.743E-03	6.358E-04	1.251E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								16	1391	0.4085	0.0455	0.0092	5.493E-03	6.124E-04	1.239E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								17	1425	0.4061	0.0455	0.0094	5.595E-03	6.262E-04	1.291E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								18	1498	0.3752	0.0406	0.0088	5.433E-03	5.884E-04	1.268E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								19	1759	0.3699	0.0411	0.0095	6.289E-03	6.986E-04	1.615E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								20	1491	0.3077	0.0283	0.0071	4.435E-03	4.083E-04	1.022E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								21	1123	0.3606	0.0252	0.0056	3.915E-03	2.740E-04	6.029E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								22	1106	0.3787	0.0256	0.0054	4.049E-03	2.735E-04	5.804E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								23	1106	0.3750	0.0223	0.0047	4.009E-03	2.379E-04	4.979E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								24	900	0.3920	0.0268	0.0054	3.411E-03	2.330E-04	4.674E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								Daily	-	-	-	-	**1.047E-01**	**1.077E-02**	**2.224E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tunnel Section N	-	56	-	77	-	-	-	1	600	0.4177	0.0326	0.0064	2.422E-03	1.893E-04	3.685E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								2	446	0.4345	0.0366	0.0070	1.875E-03	1.580E-04	3.013E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								3	342	0.4572	0.0410	0.0077	1.513E-03	1.355E-04	2.552E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								4	272	0.4734	0.0448	0.0084	1.243E-03	1.177E-04	2.213E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								5	258	0.4921	0.0504	0.0095	1.227E-03	1.256E-04	2.377E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								6	311	0.5125	0.0572	0.0109	1.540E-03	1.719E-04	3.280E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								7	544	0.5356	0.0654	0.0126	2.816E-03	3.437E-04	6.645E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								8	1153	0.5781	0.0757	0.0147	6.444E-03	8.434E-04	1.635E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								9	1781	0.4486	0.0565	0.0123	7.722E-03	9.735E-04	2.125E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								10	1518	0.4001	0.0415	0.0087	5.871E-03	6.090E-04	1.278E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								11	1334	0.4321	0.0444	0.0088	5.570E-03	5.721E-04	1.130E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								12	1280	0.4628	0.0519	0.0101	5.725E-03	6.424E-04	1.254E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								13	1258	0.4399	0.0474	0.0094	5.348E-03	5.767E-04	1.143E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								14	1189	0.4531	0.0516	0.0100	5.209E-03	5.931E-04	1.154E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								15	1265	0.4593	0.0538	0.0104	5.616E-03	6.578E-04	1.266E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								16	1296	0.4351	0.0517	0.0101	5.450E-03	6.479E-04	1.266E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								17	1308	0.4326	0.0516	0.0102	5.470E-03	6.522E-04	1.295E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								18	1353	0.4008	0.0464	0.0096	5.240E-03	6.072E-04	1.250E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								19	1546	0.3868	0.0449	0.0100	5.782E-03	6.711E-04	1.498E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								20	1317	0.3131	0.0301	0.0073	3.987E-03	3.833E-04	9.329E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								21	1002	0.3690	0.0273	0.0059	3.575E-03	2.643E-04	5.672E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								22	996	0.3858	0.0274	0.0057	3.716E-03	2.635E-04	5.491E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								23	1006	0.3811	0.0238	0.0049	3.705E-03	2.313E-04	4.761E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								24	828	0.3989	0.0285	0.0056	3.192E-03	2.282E-04	4.519E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								Daily	-	-	-	-	**1.003E-01**	**1.066E-02**	**2.165E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tunnel Section O	-	52	-	111	-	-	-	1	357	0.6752	0.0499	0.0206	2.161E-03	1.598E-04	6.578E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								2	263	0.7315	0.0567	0.0235	1.729E-03	1.340E-04	5.566E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								3	201	0.7946	0.0639	0.0265	1.430E-03	1.150E-04	4.775E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								4	158	0.8465	0.0708	0.0290	1.200E-03	1.004E-04	4.105E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								5	148	0.8652	0.0776	0.0299	1.147E-03	1.028E-04	3.968E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								6	174	0.8472	0.0835	0.0292	1.320E-03	1.301E-04	4.553E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								7	297	0.8469	0.0919	0.0292	2.256E-03	2.448E-04	7.782E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								8	615	0.8635	0.1019	0.0296	4.767E-03	5.625E-04	1.636E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								9	899	0.6797	0.0779	0.0239	5.485E-03	6.286E-04	1.931E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								10	810	0.6446	0.0691	0.0207	4.685E-03	5.024E-04	1.505E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								11	735	0.6596	0.0716	0.0201	4.352E-03	4.726E-04	1.326E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								12	721	0.6801	0.0751	0.0209	4.398E-03	4.858E-04	1.353E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								13	717	0.6358	0.0678	0.0193	4.090E-03	4.358E-04	1.240E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								14	706	0.6628	0.0723	0.0207	4.197E-03	4.578E-04	1.309E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								15	768	0.6390	0.0714	0.0195	4.404E-03	4.920E-04	1.342E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								16	801	0.5925	0.0652	0.0184	4.262E-03	4.686E-04	1.320E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								17	831	0.5956	0.0628	0.0190	4.445E-03	4.685E-04	1.419E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								18	887	0.5778	0.0571	0.0190	4.600E-03	4.545E-04	1.511E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								19	1042	0.5355	0.0523	0.0181	5.011E-03	4.896E-04	1.693E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								20	866	0.4845	0.0399	0.0164	3.764E-03	3.098E-04	1.273E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								21	645	0.5569	0.0388	0.0163	3.226E-03	2.246E-04	9.434E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								22	623	0.5673	0.0388	0.0159	3.172E-03	2.167E-04	8.874E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								23	614	0.5709	0.0362	0.0155	3.146E-03	1.996E-04	8.563E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								24	498	0.6227	0.0434	0.0180	2.781E-03	1.938E-04	8.034E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								Daily	-	-	-	-	**8.203E-02**	**8.050E-03**	**2.608E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Calculation of Portal Emission and Emissions of Underpass Top Openings, Ventilation Buildings and Ventilation Exhausts

Description	Percentage from Portal	Length (m)	Source Name	Source ID	No. of Portal Sources	No. of Non-Portal Sources	Area (m^2)	Hour	Q (veh/hr)	Total Emission Factor			Total Emission Rate			Emission Rate (from Portal Sources)			Emission rate (from Non-portal Sources)			Daily Emission Rate / Diurnal Porfile (from 1st 50m for Each Portal Source)			Daily Emission Rate / Diurnal Porfile (from 2nd 50m for Each Portal Source)			Daily Emission Rate / Diurnal Porfile (Each Non-Portal Sources)			Emission Calculation Formula (Reference made to the supporting documents for the approved WKCD VEP (EP-453/2013/B))
										NO (g/mile-veh)	NO_2 (g/mile-veh)	RSP (g/mile-veh)	NO (g/s)	NO_2 (g/s)	RSP (g/s)	NO (g/s)	NO_2 (g/s)	RSP (g/s)	NO (g/s or $g/m^2/s$)	NO_2 (g/s or $g/m^2/s$)	RSP (g/s or $g/m^2/s$)	NO (g/s) / %	NO_2 (g/s) / %	RSP (g/s) / %	NO (g/s) / %	NO_2 (g/s) / %	RSP (g/s) / %	NO (g/s or $g/m^2/s$)	NO_2 (g/s or $g/m^2/s$)	RSP (g/s or $g/m^2/s$)	
Tunnel Section P	-	52	-	110	-	-	-	1	396	0.5508	0.0413	0.0136	1.956E-03	1.468E-04	4.821E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								2	294	0.5873	0.0464	0.0154	1.548E-03	1.224E-04	4.047E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								3	225	0.6305	0.0520	0.0172	1.271E-03	1.048E-04	3.475E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								4	178	0.6586	0.0566	0.0187	1.051E-03	9.025E-05	2.980E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								5	167	0.6756	0.0622	0.0197	1.015E-03	9.347E-05	2.954E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								6	199	0.6699	0.0674	0.0198	1.197E-03	1.204E-04	3.534E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								7	344	0.6775	0.0748	0.0204	2.091E-03	2.310E-04	6.308E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								8	721	0.7092	0.0848	0.0217	4.589E-03	5.487E-04	1.403E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								9	1089	0.5521	0.0637	0.0176	5.397E-03	6.227E-04	1.723E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								10	944	0.5109	0.0512	0.0144	4.328E-03	4.339E-04	1.216E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								11	839	0.5345	0.0538	0.0141	4.023E-03	4.049E-04	1.058E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								12	814	0.5681	0.0608	0.0154	4.148E-03	4.443E-04	1.124E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								13	805	0.5359	0.0555	0.0142	3.874E-03	4.010E-04	1.028E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								14	774	0.5484	0.0589	0.0150	3.808E-03	4.086E-04	1.043E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								15	831	0.5490	0.0609	0.0149	4.096E-03	4.541E-04	1.110E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								16	859	0.5118	0.0569	0.0142	3.947E-03	4.386E-04	1.096E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								17	881	0.5156	0.0564	0.0147	4.076E-03	4.459E-04	1.165E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								18	926	0.4892	0.0512	0.0143	4.064E-03	4.253E-04	1.192E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								19	1076	0.4686	0.0492	0.0143	4.524E-03	4.754E-04	1.378E-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								20	907	0.4090	0.0360	0.0122	3.329E-03	2.931E-04	9.946E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								21	685	0.4670	0.0336	0.0112	2.870E-03	2.062E-04	6.867E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								22	671	0.4795	0.0334	0.0108	2.890E-03	2.015E-04	6.535E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								23	671	0.4787	0.0304	0.0103	2.883E-03	1.830E-04	6.183E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								24	549	0.5154	0.0362	0.0119	2.538E-03	1.783E-04	5.861E-05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
								Daily	-	-	-	-	**7.551E-02**	**7.475E-03**	**2.089E-03**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Opening B	0%	-	B	-	-	1	320	1	-	-	-	-	6.577E-03	5.481E-04	1.655E-04	-	-	-	2.055E-05	1.713E-06	5.172E-07	-	-	-	-	-	-	2.4%	1.8%	2.2%	2/3 x (0.9 x Tunnel Section A + 1 x Tunnel Section B) + 1/3 x (30.935 / 50) x (0.9 x Tunnel Section A + 1 x Tunnel Section B)
								2	-	-	-	-	5.204E-03	4.576E-04	1.402E-04	-	-	-	1.626E-05	1.430E-06	4.381E-07	-	-	-	-	-	-	1.9%	1.5%	1.9%	
								3	-	-	-	-	4.147E-03	3.777E-04	1.180E-04	-	-	-	1.296E-05	1.180E-06	3.687E-07	-	-	-	-	-	-	1.5%	1.3%	1.6%	
								4	-	-	-	-	3.416E-03	3.221E-04	1.011E-04	-	-	-	1.067E-05	1.007E-06	3.159E-07	-	-	-	-	-	-	1.3%	1.1%	1.3%	
								5	-	-	-	-	3.249E-03	3.255E-04	9.916E-05	-	-	-	1.015E-05	1.017E-06	3.099E-07	-	-	-	-	-	-	1.2%	1.1%	1.3%	
								6	-	-	-	-	3.764E-03	4.085E-04	1.171E-04	-	-	-	1.176E-05	1.277E-06	3.660E-07	-	-	-	-	-	-	1.4%	1.4%	1.5%	
								7	-	-	-	-	6.417E-03	7.539E-04	2.040E-04	-	-	-	2.005E-05	2.356E-06	6.376E-07	-	-	-	-	-	-	2.4%	2.5%	2.7%	
								8	-	-	-	-	1.323E-02	1.655E-03	4.272E-04	-	-	-	4.132E-05	5.171E-06	1.335E-06	-	-	-	-	-	-	4.9%	5.5%	5.7%	
								9	-	-	-	-	1.494E-02	1.785E-03	4.987E-04	-	-	-	4.668E-05	5.580E-06	1.559E-06	-	-	-	-	-	-	5.6%	6.0%	6.6%	
								10	-	-	-	-	1.344E-02	1.527E-03	3.990E-04	-	-	-	4.199E-05	4.773E-06	1.247E-06	-	-	-	-	-	-	5.0%	5.1%	5.3%	
								11	-	-	-	-	1.339E-02	1.578E-03	3.755E-04	-	-	-	4.184E-05	4.931E-06	1.174E-06	-	-	-	-	-	-	5.0%	5.3%	5.0%	
								12	-	-	-	-	1.414E-02	1.724E-03	3.985E-04	-	-	-	4.418E-05	5.389E-06	1.245E-06	-	-	-	-	-	-	5.3%	5.8%	5.3%	
								13	-	-	-	-	1.369E-02	1.641E-03	3.792E-04	-	-	-	4.277E-05	5.128E-06	1.185E-06	-	-	-	-	-	-	5.1%	5.5%	5.0%	
								14	-	-	-	-	1.495E-02	1.886E-03	4.245E-04	-	-	-	4.673E-05	5.892E-06	1.327E-06	-	-	-	-	-	-	5.6%	6.3%	5.6%	
								15	-	-	-	-	1.664E-02	2.162E-03	4.641E-04	-	-	-	5.200E-05	6.756E-06	1.450E-06	-	-	-	-	-	-	6.2%	7.2%	6.1%	
								16	-	-	-	-	1.655E-02	2.148E-03	4.653E-04	-	-	-	5.171E-05	6.713E-06	1.454E-06	-	-	-	-	-	-	6.2%	7.2%	6.2%	
								17	-	-	-	-	1.726E-02	2.177E-03	4.920E-04	-	-	-	5.394E-05	6.804E-06	1.538E-06	-	-	-	-	-	-	6.4%	7.3%	6.5%	
								18	-	-	-	-	1.722E-02	2.068E-03	4.936E-04	-	-	-	5.382E-05	6.462E-06	1.542E-06	-	-	-	-	-	-	6.4%	6.9%	6.5%	
								19	-	-	-	-	1.837E-02	2.114E-03	5.441E-04	-	-	-	5.742E-05	6.607E-06	1.700E-06	-	-	-	-	-	-	6.8%	7.1%	7.2%	
								20	-	-	-	-	1.244E-02	1.186E-03	3.583E-04	-	-	-	3.889E-05	3.706E-06	1.120E-06	-	-	-	-	-	-	4.6%	4.0%	4.7%	
								21	-	-	-	-	1.055E-02	8.266E-04	2.460E-04	-	-	-	3.298E-05	2.583E-06	7.687E-07	-	-	-	-	-	-	3.9%	2.8%	3.3%	
								22	-	-	-	-	1.037E-02	7.879E-04	2.319E-04	-	-	-	3.242E-05	2.462E-06	7.247E-07	-	-	-	-	-	-	3.9%	2.6%	3.1%	
								23	-	-	-	-	1.006E-02	6.972E-04	2.153E-04	-	-	-	3.143E-05	2.179E-06	6.728E-07	-	-	-	-	-	-	3.7%	2.3%	2.8%	
								24	-	-	-	-	8.653E-03	6.729E-04	2.033E-04	-	-	-	2.704E-05	2.103E-06	6.353E-07	-	-	-	-	-	-	3.2%	2.3%	2.7%	
								Daily	-	-	-	-	**2.687E-01**	**2.983E-02**	**7.562E-03**	-	-	-	**8.396E-04**	**9.322E-05**	**2.363E-05**	-	-	-	-	-	-	**1.455E-03**	**1.615E-04**	**4.094E-05**	
Opening CE	0%	-	CE	-	-	1	644	1	-	-	-	-	7.359E-04	6.063E-05	1.751E-05	-	-	-	1.144E-06	9.423E-08	2.721E-08	-	-	-	-	-	-	2.4%	1.8%	2.1%	0.1 x Tunnel Section C + 0.1 x (1/3 x (19.065 / 50) x (0.9 x Tunnel Section A + 1 x Tunnel Section B)) + 0.1 x Tunnel Section E [Note 1] [Note 3]
								2	-	-	-	-	5.788E-04	5.068E-05	1.465E-05	-	-	-	8.994E-07	7.875E-08	2.277E-08	-	-	-	-	-	-	1.9%	1.5%	1.8%	
								3	-	-	-	-	4.624E-04	4.230E-05	1.229E-05	-	-	-	7.186E-07	6.573E-08	1.911E-08	-	-	-	-	-	-	1.5%	1.3%	1.5%	
								4	-	-	-	-	3.826E-04	3.657E-05	1.053E-05	-	-	-	5.945E-07	5.682E-08	1.637E-08	-	-	-	-	-	-	1.3%	1.1%	1.3%	
								5	-	-	-	-	3.677E-04	3.768E-05	1.045E-05	-	-	-	5.715E-07	5.855E-08	1.623E-08	-	-	-	-	-	-	1.2%	1.1%	1.3%	
								6	-	-	-	-	4.344E-04	4.851E-05	1.264E-05	-	-	-	6.750E-07	7.538E-08	1.964E-08	-	-	-	-	-	-	1.4%	1.4%	1.5%	
								7	-	-	-	-	7.574E-04	9.211E-05	2.268E-05	-	-	-	1.177E-06	1.431E-07	3.524E-08	-	-	-	-	-	-	2.5%	2.7%	2.7%	
								8	-	-	-	-	1.630E-03	2.123E-04	4.979E-05	-	-	-	2.533E-06	3.299E-07	7.737E-08	-	-	-	-	-	-	5.4%	6.3%	6.0%	
								9	-	-	-	-	1.871E-03	2.349E-04	5.916E-05	-	-	-	2.907E-06	3.650E-07	9.194E-08	-	-	-	-	-	-	6.2%	7.0%	7.2%	
								10	-	-	-	-	1.638E-03	1.908E-04	4.583E-05	-	-	-	2.545E-06	2.966E-07	7.121E-08	-	-	-	-	-	-	5.4%	5.7%	5.6%	
								11	-	-	-	-	1.602E-03	1.901E-04	4.261E-05	-	-	-	2.490E-06	2.955E-07	6.622E-08	-	-	-	-	-	-	5.3%	5.7%	5.2%	
								12	-	-	-	-	1.661E-03	2.032E-04	4.486E-05	-	-	-	2.581E-06	3.157E-07	6.972E-08	-	-	-	-	-	-	5.5%	6.0%	5.4%	
								13	-	-	-	-	1.579E-03	1.880E-04	4.210E-05	-	-	-	2.454E-06	2.921E-07	6.542E-08	-	-	-	-	-	-	5.2%	5.6%	5.1%	
								14	-	-	-	-	1.655E-03	2.062E-04	4.549E-05	-	-	-	2.572E-06	3.204E-07	7.069E-08	-	-	-	-	-	-	5.5%	6.1%	5.5%	
								15	-	-	-	-	1.828E-03	2.335E-04	4.976E-05	-	-	-	2.841E-06	3.628E-07	7.733E-08	-	-	-	-	-	-	6.0%	6.9%	6.0%	
								16	-	-	-	-	1.792E-03	2.280E-04	4.950E-05	-	-	-	2.784E-06	3.543E-07	7.692E-08	-	-	-	-	-	-	5.9%	6.8%	6.0%	
								17	-	-	-	-	1.839E-03	2.273E-04	5.175E-05	-	-	-	2.858E-06	3.532E-07	8.041E-08	-	-	-	-	-	-	6.1%	6.8%	6.3%	
								18	-	-	-	-	1.822E-03	2.137E-04	5.187E-05	-	-	-	2.831E-06	3.321E-07	8.061E-08	-	-	-	-	-	-	6.0%	6.4%	6.3%	
								19	-	-	-	-	1.954E-03	2.206E-04	5.785E-05	-	-	-	3.036E-06	3.428E-07	8.989E-08	-	-	-	-	-	-	6.4%	6.6%	7.0%	
								20	-	-	-	-	1.351E-03	1.265E-04	3.879E-05	-	-	-	2.099E-06	1.967E-07	6.028E-08	-	-	-	-	-	-	4.5%	3.8%	4.7%	
								21	-	-	-	-	1.148E-03	8.790E-05	2.619E-05	-	-	-	1.783E-06	1.366E-07	4.070E-08	-	-	-	-	-	-	3.8%	2.6%	3.2%	
								22	-	-	-	-	1.138E-03	8.469E-05	2.466E-05	-	-	-	1.769E-06	1.316E-07	3.832E-08	-	-	-	-	-	-	3.8%	2.5%	3.0%	
								23	-	-	-	-	1.111E-03	7.531E-05	2.273E-05	-	-	-	1.727E-06	1.170E-07	3.533E-08	-	-	-	-	-	-	3.7%	2.2%	2.8%	
								24	-	-	-	-	9.588E-04	7.320E-05	2.141E-05	-	-	-	1.490E-06	1.138E-07	3.328E-08	-	-	-	-	-	-	3.2%	2.2%	2.6%	
								Daily	-	-	-	-	**3.030E-02**	**3.365E-03**	**8.251E-04**	-	-	-	**4.708E-05**	**5.229E-06**	**1.282E-06**	-	-	-	-	-	-	**4.708E-05**	**5.229E-06**	**1.282E-06**	
Portal D	100%	-	D1-D14	-	14	-	-	1	-	-	-	-	6.998E-03	5.831E-04	1.761E-04	6.998E-03	5.831E-04	1.761E-04	-	-	-	2.4%	1.8%	2.2%	2.4%	1.8%	2.2%	-	-	-	0.9 x Tunnel Section C + 0.9 x (1/3 x (19.065 / 50 x (0.9 x Tunnel Section A + 1 x Tunnel Section B))) + 1 x Tunnel Section D
								2	-	-	-	-	5.537E-03	4.868E-04	1.491E-04	5.537E-03	4.868E-04	1.491E-04	-	-	-	1.9%	1.5%	1.9%	1.9%	1.5%	1.9%	-	-	-	
								3	-	-	-	-	4.412E-03	4.018E-04	1.255E-04	4.412E-03	4.018E-04	1.255E-04	-	-	-	1.5%	1.3%	1.6%	1.5%	1.3%	1.6%	-	-	-	
								4	-	-	-	-	3.634E-03	3.427E-04	1.075E-04	3.634E-03	3.427E-04	1.075E-04	-	-	-	1.3%	1.1%	1.3%	1.3%	1.1%	1.3%	-	-	-	
								5	-	-	-	-	3.457E-03	3.463E-04	1.055E-04	3.457E-03	3.463E-04	1.055E-04	-	-	-	1.2%	1.1%	1.3%	1.2%	1.1%	1.3%	-	-	-	
								6	-	-	-	-	4.005E-03	4.347E-04	1.246E-04	4.005E-03	4.347E-04	1.246E-04	-	-	-	1.4%	1.4%	1.5%	1.4%	1.4%	1.5%	-	-	-	
								7	-	-	-	-	6.827E-03	8.021E-04	2.171E-04	6.827E-03	8.021E-04	2.171E-04	-	-	-	2.4%	2.5%	2.7%	2.4%	2.5%	2.7%	-	-	-	
								8	-	-	-	-	1.407E-02	1.761E-03	4.546E-04	1.407E-02	1.761E-03	4.546E-04	-	-	-	4.9%	5.5%	5.7%	4.9%	5.5%	5.7%	-	-	-	
								9	-	-	-	-	1.589E-02	1.900E-03	5.306E-04	1.589E-02	1.900E-03	5.306E-04	-	-	-	5.6%	6.0%	6.6%	5.6%	6.0%	6.6%	-	-	-	
								10	-	-	-	-	1.429E-02	1.625E-03	4.245E-04	1.429E-02	1.625E-03	4.245E-04	-	-	-	5.0%	5.1%	5.3%	5.0%	5.1%	5.3%	-	-	-	
								11	-	-	-	-	1.425E-02	1.679E-03	3.996E-04	1.425E-02	1.679E-03	3.996E-04	-	-	-	5.0%	5.3%	5.0%	5.0%	5.3%	5.0%	-	-	-	
								12	-	-	-	-	1.504E-02	1.835E-03	4.239E-04	1.504E-02	1.835E-03	4.239E-04	-	-	-	5.3%	5.8%	5.3%	5.3%	5.8%	5.3%	-	-	-	
								13	-	-	-	-	1.456E-02	1.746E-03	4.035E-04	1.456E-02	1.746E-03	4.035E-04	-	-	-	5.1%	5.5%	5.0%	5.1%	5.5%	5.0%	-	-	-	
								14	-	-	-	-	1.591E-02	2.006E-03	4.517E-04	1.591E-02	2.006E-03	4.517E-04	-	-	-	5.6%	6.3%	5.6%	5.6%	6.3%	5.6%	-	-	-	
								15	-	-	-	-	1.770E-02	2.300E-03	4.938E-04	1.770E-02	2.300E-03	4.938E-04	-	-	-	6.2%	7.2%	6.1%	6.2%	7.2%	6.1%	-	-	-	
								16	-	-	-	-	1.761E-02	2.285E-03	4.951E-04	1.761E-02	2.285E-03	4.951E-04	-	-	-	6.2%	7.2%	6.2%	6.2%	7.2%	6.2%	-	-	-	
								17	-	-	-	-	1.836E-02	2.316E-03	5.235E-04	1.836E-02	2.316E-03	5.235E-04	-	-	-	6.4%	7.3%	6.5%	6.4%	7.3%	6.5%	-	-	-	
								18	-	-	-	-	1.832E-02	2.200E-03	5.251E-04	1.832E-02	2.200E-03	5.251E-04	-	-	-	6.4%	6.9%	6.5%	6.4%	6.9%	6.5%	-	-	-	
								19	-	-	-	-	1.955E-02	2.250E-03	5.789E-04	1.955E-02	2.250E-03	5.789E-04	-	-	-	6.8%	7.1%	7.2%	6.8%	7.1%	7.2%	-	-	-	
								20	-	-	-	-	1.324E-02	1.262E-03	3.812E-04	1.324E-02	1.262E-03	3.812E-04	-	-	-	4.6%	4.0%	4.7%	4.6%	4.0%	4.7%	-	-	-	
								21	-	-	-	-	1.123E-02	8.794E-04	2.617E-04	1.123E-02	8.794E-04	2.617E-04	-	-	-	3.9%	2.8%	3.3%	3.9%	2.8%	3.3%	-	-	-	
								22	-	-	-	-	1.104E-02	8.383E-04	2.467E-04	1.104E-02	8.383E-04	2.467E-04	-	-	-	3.9%	2.6%	3.1%	3.9%	2.6%	3.1%	-	-	-	
								23	-	-	-	-	1.070E-02	7.418E-04	2.291E-04	1.070E-02	7.418E-04	2.291E-04	-	-	-	3.7%	2.3%	2.8%	3.7%	2.3%	2.8%	-	-	-	
								24	-	-	-	-	9.207E-03	7.159E-04	2.163E-04	9.207E-03	7.159E-04	2.163E-04	-	-	-	3.2%	2.3%	2.7%	3.2%	2.3%	2.7%	-	-	-	
								Daily	-	-	-	-	**2.858E-01**	**3.174E-02**	**8.045E-03**	**2.858E-01**	**3.174E-02**	**8.045E-03**	-	-	-	**2.722E-02**	**3.023E-03**	**7.662E-04**	**1.361E-02**	**1.511E-03**	**3.831E-04**	-	-	-	

Calculation of Portal Emission and Emissions of Underpass Top Openings, Ventilation Buildings and Ventilation Exhausts

Description	Percentage from Portal	Length (m)	Source Name	Source ID	No. of Portal Sources	No. of Non-Portal Sources	Area (m^2)	Hour	Q (veh/hr)	Total Emission Factor			Total Emission Rate			Emission Rate (from Portal Sources)			Emission rate (from Non-portal Sources)			Daily Emission Rate / Diurnal Porfile (from 1st 50m for Each Portal Source)			Daily Emission Rate / Diurnal Porfile (from 2nd 50m for Each Portal Source)			Daily Emission Rate / Diurnal Porfile (Each Non-Portal Sources)			Emission Calculation Formula (Reference made to the supporting documents for the approved WKCD VEP (EP-453/2013/B))
										NO (g/mile-veh)	NO_2 (g/mile-veh)	RSP (g/mile-veh)	NO (g/s)	NO_2 (g/s)	RSP (g/s)	NO (g/s)	NO_2 (g/s)	RSP (g/s)	NO (g/s or $g/m^2/s$)	NO_2 (g/s or $g/m^2/s$)	RSP (g/s or $g/m^2/s$)	NO (g/s) / %	NO_2 (g/s) / %	RSP (g/s) / %	NO (g/s) / %	NO_2 (g/s) / %	RSP (g/s) / %	NO (g/s or $g/m^2/s$)	NO_2 (g/s or $g/m^2/s$)	RSP (g/s or $g/m^2/s$)	
Opening F	0%	-	F	-	-	1	270	1	-	-	-	-	7.931E-04	6.471E-05	1.794E-05	-	-	-	2.938E-06	2.397E-07	6.644E-08	-	-	-	-	-	-	2.4%	1.8%	2.1%	0.1 x 0.9 x Tunnel Section E + 0.1 x Tunnel Section F
								2	-	-	-	-	6.206E-04	5.414E-05	1.483E-05	-	-	-	2.299E-06	2.005E-07	5.491E-08	-	-	-	-	-	-	1.9%	1.5%	1.7%	
								3	-	-	-	-	4.969E-04	4.563E-05	1.241E-05	-	-	-	1.841E-06	1.690E-07	4.596E-08	-	-	-	-	-	-	1.5%	1.2%	1.4%	
								4	-	-	-	-	4.127E-04	3.991E-05	1.063E-05	-	-	-	1.528E-06	1.478E-07	3.938E-08	-	-	-	-	-	-	1.3%	1.1%	1.2%	
								5	-	-	-	-	4.003E-04	4.178E-05	1.065E-05	-	-	-	1.483E-06	1.548E-07	3.946E-08	-	-	-	-	-	-	1.2%	1.1%	1.2%	
								6	-	-	-	-	4.805E-04	5.489E-05	1.319E-05	-	-	-	1.780E-06	2.033E-07	4.886E-08	-	-	-	-	-	-	1.5%	1.5%	1.5%	
								7	-	-	-	-	8.532E-04	1.065E-04	2.430E-05	-	-	-	3.160E-06	3.945E-07	9.000E-08	-	-	-	-	-	-	2.6%	2.9%	2.8%	
								8	-	-	-	-	1.897E-03	2.542E-04	5.551E-05	-	-	-	7.024E-06	9.414E-07	2.056E-07	-	-	-	-	-	-	5.8%	7.0%	6.4%	
								9	-	-	-	-	2.203E-03	2.859E-04	6.690E-05	-	-	-	8.158E-06	1.059E-06	2.478E-07	-	-	-	-	-	-	6.7%	7.8%	7.7%	
								10	-	-	-	-	1.890E-03	2.243E-04	5.049E-05	-	-	-	7.001E-06	8.307E-07	1.870E-07	-	-	-	-	-	-	5.7%	6.1%	5.8%	
								11	-	-	-	-	1.824E-03	2.176E-04	4.649E-05	-	-	-	6.756E-06	8.060E-07	1.722E-07	-	-	-	-	-	-	5.5%	6.0%	5.3%	
								12	-	-	-	-	1.864E-03	2.285E-04	4.862E-05	-	-	-	6.904E-06	8.464E-07	1.801E-07	-	-	-	-	-	-	5.7%	6.3%	5.6%	
								13	-	-	-	-	1.746E-03	2.067E-04	4.507E-05	-	-	-	6.468E-06	7.656E-07	1.669E-07	-	-	-	-	-	-	5.3%	5.7%	5.2%	
								14	-	-	-	-	1.767E-03	2.178E-04	4.716E-05	-	-	-	6.544E-06	8.066E-07	1.747E-07	-	-	-	-	-	-	5.4%	6.0%	5.4%	
								15	-	-	-	-	1.940E-03	2.438E-04	5.161E-05	-	-	-	7.185E-06	9.030E-07	1.912E-07	-	-	-	-	-	-	5.9%	6.7%	5.9%	
								16	-	-	-	-	1.876E-03	2.343E-04	5.096E-05	-	-	-	6.947E-06	8.677E-07	1.887E-07	-	-	-	-	-	-	5.7%	6.4%	5.9%	
								17	-	-	-	-	1.897E-03	2.297E-04	5.270E-05	-	-	-	7.024E-06	8.508E-07	1.952E-07	-	-	-	-	-	-	5.8%	6.3%	6.1%	
								18	-	-	-	-	1.865E-03	2.139E-04	5.279E-05	-	-	-	6.908E-06	7.922E-07	1.955E-07	-	-	-	-	-	-	5.7%	5.9%	6.1%	
								19	-	-	-	-	2.010E-03	2.229E-04	5.953E-05	-	-	-	7.446E-06	8.255E-07	2.205E-07	-	-	-	-	-	-	6.1%	6.1%	6.8%	
								20	-	-	-	-	1.418E-03	1.307E-04	4.060E-05	-	-	-	5.250E-06	4.840E-07	1.504E-07	-	-	-	-	-	-	4.3%	3.6%	4.7%	
								21	-	-	-	-	1.206E-03	9.048E-05	2.698E-05	-	-	-	4.466E-06	3.351E-07	9.994E-08	-	-	-	-	-	-	3.7%	2.5%	3.1%	
								22	-	-	-	-	1.206E-03	8.806E-05	2.538E-05	-	-	-	4.468E-06	3.262E-07	9.401E-08	-	-	-	-	-	-	3.7%	2.4%	2.9%	
								23	-	-	-	-	1.185E-03	7.865E-05	2.324E-05	-	-	-	4.389E-06	2.913E-07	8.608E-08	-	-	-	-	-	-	3.6%	2.2%	2.7%	
								24	-	-	-	-	1.025E-03	7.695E-05	2.184E-05	-	-	-	3.795E-06	2.850E-07	8.088E-08	-	-	-	-	-	-	3.1%	2.1%	2.5%	
								Daily	-	-	-	-	**3.288E-02**	**3.652E-03**	**8.698E-04**	-	-	-	**1.218E-04**	**1.353E-05**	**3.222E-06**	-	-	-	-	-	-	**1.218E-04**	**1.353E-05**	**3.222E-06**	
Opening JKO1	0%	-	JKO1	-	-	1	1543	1	-	-	-	-	1.041E-03	8.043E-05	2.676E-05	-	-	-	6.746E-07	5.214E-08	1.735E-08	-	-	-	-	-	-	2.6%	1.9%	2.3%	0.1 x Tunnel Section J + 0.1 x Tunnel Section K + 0.1 x Tunnel Section O + 0.9 x 0.9 x 0.1 x 0.11 x Tunnel Section E + 0.9 x 0.1 x 0.11 x Tunnel Section F
								2	-	-	-	-	8.339E-04	6.785E-05	2.272E-05	-	-	-	5.406E-07	4.398E-08	1.473E-08	-	-	-	-	-	-	2.1%	1.6%	2.0%	
								3	-	-	-	-	6.794E-04	5.742E-05	1.933E-05	-	-	-	4.404E-07	3.722E-08	1.253E-08	-	-	-	-	-	-	1.7%	1.4%	1.7%	
								4	-	-	-	-	5.682E-04	4.997E-05	1.666E-05	-	-	-	3.683E-07	3.239E-08	1.080E-08	-	-	-	-	-	-	1.4%	1.2%	1.4%	
								5	-	-	-	-	5.483E-04	5.157E-05	1.643E-05	-	-	-	3.554E-07	3.343E-08	1.065E-08	-	-	-	-	-	-	1.4%	1.2%	1.4%	
								6	-	-	-	-	6.459E-04	6.628E-05	1.956E-05	-	-	-	4.187E-07	4.296E-08	1.268E-08	-	-	-	-	-	-	1.6%	1.6%	1.7%	
								7	-	-	-	-	1.123E-03	1.261E-04	3.462E-05	-	-	-	7.279E-07	8.174E-08	2.244E-08	-	-	-	-	-	-	2.8%	3.0%	3.0%	
								8	-	-	-	-	2.415E-03	2.924E-04	7.518E-05	-	-	-	1.566E-06	1.896E-07	4.874E-08	-	-	-	-	-	-	5.9%	7.0%	6.5%	
								9	-	-	-	-	2.810E-03	3.280E-04	9.114E-05	-	-	-	1.821E-06	2.126E-07	5.908E-08	-	-	-	-	-	-	6.9%	7.9%	7.9%	
								10	-	-	-	-	2.316E-03	2.417E-04	6.642E-05	-	-	-	1.501E-06	1.567E-07	4.306E-08	-	-	-	-	-	-	5.7%	5.8%	5.8%	
								11	-	-	-	-	2.154E-03	2.281E-04	5.819E-05	-	-	-	1.396E-06	1.478E-07	3.772E-08	-	-	-	-	-	-	5.3%	5.5%	5.0%	
								12	-	-	-	-	2.216E-03	2.467E-04	6.135E-05	-	-	-	1.436E-06	1.599E-07	3.977E-08	-	-	-	-	-	-	5.5%	5.9%	5.3%	
								13	-	-	-	-	2.075E-03	2.247E-04	5.651E-05	-	-	-	1.345E-06	1.456E-07	3.663E-08	-	-	-	-	-	-	5.1%	5.4%	4.9%	
								14	-	-	-	-	2.104E-03	2.377E-04	5.932E-05	-	-	-	1.364E-06	1.541E-07	3.845E-08	-	-	-	-	-	-	5.2%	5.7%	5.1%	
								15	-	-	-	-	2.267E-03	2.647E-04	6.312E-05	-	-	-	1.469E-06	1.716E-07	4.091E-08	-	-	-	-	-	-	5.6%	6.4%	5.5%	
								16	-	-	-	-	2.192E-03	2.562E-04	6.232E-05	-	-	-	1.421E-06	1.661E-07	4.039E-08	-	-	-	-	-	-	5.4%	6.2%	5.4%	
								17	-	-	-	-	2.249E-03	2.567E-04	6.569E-05	-	-	-	1.458E-06	1.664E-07	4.258E-08	-	-	-	-	-	-	5.5%	6.2%	5.7%	
								18	-	-	-	-	2.244E-03	2.439E-04	6.709E-05	-	-	-	1.455E-06	1.581E-07	4.349E-08	-	-	-	-	-	-	5.5%	5.9%	5.8%	
								19	-	-	-	-	2.428E-03	2.597E-04	7.558E-05	-	-	-	1.574E-06	1.683E-07	4.899E-08	-	-	-	-	-	-	6.0%	6.2%	6.6%	
								20	-	-	-	-	1.773E-03	1.584E-04	5.404E-05	-	-	-	1.149E-06	1.027E-07	3.503E-08	-	-	-	-	-	-	4.4%	3.8%	4.7%	
								21	-	-	-	-	1.528E-03	1.127E-04	3.832E-05	-	-	-	9.904E-07	7.307E-08	2.484E-08	-	-	-	-	-	-	3.8%	2.7%	3.3%	
								22	-	-	-	-	1.530E-03	1.095E-04	3.634E-05	-	-	-	9.915E-07	7.099E-08	2.356E-08	-	-	-	-	-	-	3.8%	2.6%	3.1%	
								23	-	-	-	-	1.523E-03	9.971E-05	3.447E-05	-	-	-	9.871E-07	6.463E-08	2.234E-08	-	-	-	-	-	-	3.8%	2.4%	3.0%	
								24	-	-	-	-	1.342E-03	9.727E-05	3.263E-05	-	-	-	8.702E-07	6.306E-08	2.118E-08	-	-	-	-	-	-	3.3%	2.3%	2.8%	
								Daily	-	-	-	-	**4.061E-02**	**4.158E-03**	**1.154E-03**	-	-	-	**2.632E-05**	**2.695E-06**	**7.479E-07**	-	-	-	-	-	-	**2.632E-05**	**2.695E-06**	**7.479E-07**	
Portal L	100%	-	L1-L14	-	14	-	-	1	-	-	-	-	3.474E-03	2.807E-04	7.676E-05	3.474E-03	2.807E-04	7.676E-05	-	-	-	2.4%	1.8%	2.1%	2.4%	1.8%	2.1%	-	-	-	1 x Tunnel Section L + 0.9 x 0.07 x Tunnel Section J + 0.9 x 0.59 x Tunnel Section O
								2	-	-	-	-	2.725E-03	2.344E-04	6.407E-05	2.725E-03	2.344E-04	6.407E-05	-	-	-	1.9%	1.5%	1.7%	1.9%	1.5%	1.7%	-	-	-	
								3	-	-	-	-	2.213E-03	1.998E-04	5.447E-05	2.213E-03	1.998E-04	5.447E-05	-	-	-	1.6%	1.3%	1.5%	1.6%	1.3%	1.5%	-	-	-	
								4	-	-	-	-	1.830E-03	1.729E-04	4.686E-05	1.830E-03	1.729E-04	4.686E-05	-	-	-	1.3%	1.1%	1.3%	1.3%	1.1%	1.3%	-	-	-	
								5	-	-	-	-	1.776E-03	1.804E-04	4.717E-05	1.776E-03	1.804E-04	4.717E-05	-	-	-	1.3%	1.2%	1.3%	1.3%	1.2%	1.3%	-	-	-	
								6	-	-	-	-	2.127E-03	2.355E-04	5.835E-05	2.127E-03	2.355E-04	5.835E-05	-	-	-	1.5%	1.5%	1.6%	1.5%	1.5%	1.6%	-	-	-	
								7	-	-	-	-	3.766E-03	4.552E-04	1.073E-04	3.766E-03	4.552E-04	1.073E-04	-	-	-	2.7%	2.9%	2.9%	2.7%	2.9%	2.9%	-	-	-	
								8	-	-	-	-	8.296E-03	1.077E-03	2.427E-04	8.296E-03	1.077E-03	2.427E-04	-	-	-	5.8%	7.0%	6.6%	5.8%	7.0%	6.6%	-	-	-	
								9	-	-	-	-	9.700E-03	1.217E-03	2.969E-04	9.700E-03	1.217E-03	2.969E-04	-	-	-	6.8%	7.9%	8.0%	6.8%	7.9%	8.0%	-	-	-	
								10	-	-	-	-	8.116E-03	9.150E-04	2.153E-04	8.116E-03	9.150E-04	2.153E-04	-	-	-	5.7%	5.9%	5.8%	5.7%	5.9%	5.8%	-	-	-	
								11	-	-	-	-	7.698E-03	8.748E-04	1.938E-04	7.698E-03	8.748E-04	1.938E-04	-	-	-	5.4%	5.7%	5.2%	5.4%	5.7%	5.2%	-	-	-	
								12	-	-	-	-	7.925E-03	9.397E-04	2.050E-04	7.925E-03	9.397E-04	2.050E-04	-	-	-	5.6%	6.1%	5.5%	5.6%	6.1%	5.5%	-	-	-	
								13	-	-	-	-	7.443E-03	8.545E-04	1.895E-04	7.443E-03	8.545E-04	1.895E-04	-	-	-	5.2%	5.5%	5.1%	5.2%	5.5%	5.1%	-	-	-	
								14	-	-	-	-	7.580E-03	9.107E-04	1.996E-04	7.580E-03	9.107E-04	1.996E-04	-	-	-	5.3%	5.9%	5.4%	5.3%	5.9%	5.4%	-	-	-	
								15	-	-	-	-	8.206E-03	1.011E-03	2.149E-04	8.206E-03	1.011E-03	2.149E-04	-	-	-	5.8%	6.5%	5.8%	5.8%	6.5%	5.8%	-	-	-	
								16	-	-	-	-	7.935E-03	9.769E-04	2.121E-04	7.935E-03	9.769E-04	2.121E-04	-	-	-	5.6%	6.3%	5.7%	5.6%	6.3%	5.7%	-	-	-	
								17	-	-	-	-	8.119E-03	9.782E-04	2.207E-04	8.119E-03	9.782E-04	2.207E-04	-	-	-	5.7%	6.3%	6.0%	5.7%	6.3%	6.0%	-	-	-	
								18	-	-	-	-	8.006E-03	9.200E-04	2.210E-04	8.006E-03	9.200E-04	2.210E-04	-	-	-	5.6%	6.0%	6.0%	5.6%	6.0%	6.0%	-	-	-	
								19	-	-	-	-	8.649E-03	9.728E-04	2.513E-04	8.649E-03	9.728E-04	2.513E-04	-	-	-	6.1%	6.3%	6.8%	6.1%	6.3%	6.8%	-	-	-	
								20	-	-	-	-	6.059E-03	5.671E-04	1.686E-04	6.059E-03	5.671E-04	1.686E-04	-	-	-	4.3%	3.7%	4.6%	4.3%	3.7%	4.6%	-	-	-	
								21	-	-	-	-	5.261E-03	3.980E-04	1.139E-04	5.261E-03	3.980E-04	1.139E-04	-	-	-	3.7%	2.6%	3.1%	3.7%	2.6%	3.1%	-	-	-	
								22	-	-	-	-	5.252E-03	3.847E-04	1.070E-04	5.252E-03	3.847E-04	1.070E-04	-	-	-	3.7%	2.5%	2.9%	3.7%	2.5%	2.9%	-	-	-	
								23	-	-	-	-	5.183E-03	3.441E-04	9.852E-05	5.183E-03	3.441E-04	9.852E-05	-	-	-	3.7%	2.2%	2.7%	3.7%	2.2%	2.7%	-	-	-	
								24	-	-	-	-	4.544E-03	3.400E-04	9.402E-05	4.544E-03	3.400E-04	9.402E-05	-	-	-	3.2%	2.2%	2.5%	3.2%	2.2%	2.5%	-	-	-	
								Daily	-	-	-	-	**1.419E-01**	**1.544E-02**	**3.700E-03**	**1.419E-01**	**1.544E-02**	**3.700E-03**	-	-	-	**1.351E-02**	**1.470E-03**	**3.524E-04**	**6.756E-03**	**7.352E-04**	**1.762E-04**	-	-	-	
Portal M	100%	-	M1-M8	-	8	-	-	1	-	-	-	-	2.492E-03	1.909E-04	3.738E-05	2.492E-03	1.909E-04	3.738E-05	-	-	-	2.4%	1.8%	1.7%	2.4%	1.8%	1.7%	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
								2	-	-	-	-	1.921E-03	1.593E-04	3.050E-05	1.921E-03	1.593E-04	3.050E-05	-	-	-	1.9%	1.5%	1.4%	1.9%	1.5%	1.4%	-	-	-	
								3	-	-	-	-	1.545E-03	1.366E-04	2.582E-05	1.545E-03	1.366E-04	2.582E-05	-	-	-	1.5%	1.3%	1.2%	1.5%	1.3%	1.2%	-	-	-	
								4	-	-	-	-	1.267E-03	1.187E-04	2.240E-05	1.267E-03	1.187E-04	2.240E-05	-	-	-	1.2%	1.1%	1.0%	1.2%	1.1%	1.0%	-	-	-	
								5	-	-	-	-	1.248E-03	1.270E-04	2.407E-05	1.248E-03	1.270E-04	2.407E-05	-	-	-	1.2%	1.2%	1.1%	1.2%	1.2%	1.1%	-	-	-	
								6	-	-	-	-	1.563E-03	1.741E-04	3.324E-05	1.563E-03	1.741E-04	3.324E-05	-	-	-	1.5%	1.6%	1.5%	1.5%	1.6%	1.5%	-	-	-	
								7	-	-	-	-	2.857E-03	3.487E-04	6.743E-05	2.857E-03	3.487E-04	6.743E-05	-	-	-	2.8%	3.3%	3.1%	2.8%	3.3%	3.1%	-	-	-	
								8	-	-	-	-	6.537E-03	8.574E-04	1.660E-04	6.537E-03	8.574E-04	1.660E-04	-	-	-	6.4%	8.0%	7.6%	6.4%	8.0%	7.6%	-	-	-	
								9	-	-	-	-	7.831E-03	9.915E-04	2.157E-04	7.831E-03	9.915E-04	2.157E-04	-	-	-	7.6%	9.3%	9.8%	7.6%	9.3%	9.8%	-	-	-	
								10	-	-	-	-	6.009E-03	6.259E-04	1.314E-04	6.009E-03	6.259E-04	1.314E-04	-	-	-	5.9%	5.8%	6.0%	5.9%	5.8%	6.0%	-	-	-	
								11	-	-	-	-	5.644E-03	5.771E-04	1.142E-04	5.644E-03	5.771E-04	1.142E-04	-	-	-	5.5%	5.4%	5.2%	5.5%	5.4%	5.2%	-	-	-	
								12	-	-	-	-	5.838E-03	6.495E-04	1.270E-04	5.838E-03	6.495E-04	1.270E-04	-	-	-	5.7%	6.1%	5.8%	5.7%	6.1%	5.8%	-	-	-	
								13	-	-	-	-	5.451E-03	5.787E-04	1.153E-04	5.451E-03	5.787E-04	1.153E-04	-	-	-	5.3%	5.4%	5.3%	5.3%	5.4%	5.3%	-	-	-	
								14	-	-	-	-	5.243E-03	5.834E-04	1.146E-04	5.243E-03	5.834E-04	1.146E-04	-	-	-	5.1%	5.4%	5.2%	5.1%	5.4%	5.2%	-	-	-	
								15	-	-	-	-	5.680E-03	6.468E-04	1.258E-04	5.680E-03	6.468E-04	1.258E-04	-	-	-	5.5%	6.0%	5.7%	5.5%	6.0%	5.7%	-	-	-	
								16	-	-	-	-	5.472E-03	6.301E-04	1.253E-04	5.472E-03	6.301E-04	1.253E-04	-	-	-	5.3%	5.9%	5.7%	5.3%	5.9%	5.7%	-	-	-	
								17	-	-	-	-	5.533E-03	6.392E-04	1.293E-04	5.533E-03	6.392E-04	1.293E-04	-	-	-	5.4%	6.0%	5.9%	5.4%	6.0%	5.9%	-	-	-	
								18	-	-	-	-	5.337E-03	5.978E-04	1.259E-04	5.337E-03	5.978E-04	1.259E-04	-	-	-	5.2%	5.6%	5.7%	5.2%	5.6%	5.7%	-	-	-	
								19	-	-	-	-	6.035E-03	6.849E-04	1.557E-04	6.035E-03	6.849E-04	1.557E-04	-	-	-	5.9%	6.4%	7.1%	5.9%	6.4%	7.1%	-	-	-	
								20	-	-	-	-	4.211E-03	3.958E-04	9.776E-05	4.211E-03	3.958E-04	9.776E-05	-	-	-	4.1%	3.7%	4.5%	4.1%	3.7%	4.5%	-	-	-	
								21	-	-	-	-	3.745E-03	2.692E-04	5.851E-05	3.745E-03	2.692E-04	5.851E-05	-	-	-	3.7%	2.5%	2.7%	3.7%	2.5%	2.7%	-	-	-	
								22	-	-	-	-	3.882E-03	2.685E-04	5.648E-05	3.882E-03	2.685E-04	5.648E-05	-	-	-	3.8%	2.5%	2.6%	3.8%	2.5%	2.6%	-	-	-	
								23	-	-	-	-	3.857E-03	2.346E-04	4.870E-05	3.857E-03	2.346E-04	4.870E-05	-	-	-	3.8%	2.2%	2.2%	3.8%	2.2%	2.2%	-	-	-	
								24	-	-	-	-	3.302E-03	2.306E-04	4.597E-05	3.302E-03	2.306E-04	4.597E-05	-	-	-	3.2%	2.2%	2.1%	3.2%	2.2%	2.1%	-	-	-	
								Daily	-	-	-	-	**1.025E-01**	**1.072E-02**	**2.195E-03**	**1.025E-01**	**1.072E-02**	**2.195E-03**	-	-	-	**1.708E-02**	**1.786E-03**	**3.658E-04**	**8.542E-03**	**8.930E-04**	**1.829E-04**	-	-	-	

Calculation of Portal Emission and Emissions of Underpass Top Openings, Ventilation Buildings and Ventilation Exhausts

Description	Percentage from Portal	Length (m)	Source Name	Source ID	No. of Portal Sources	No. of Non-Portal Sources	Area (m^2)	Hour	Q (veh/hr)	Total Emission Factor			Total Emission Rate			Emission Rate (from Portal Sources)			Emission rate (from Non-portal Sources)			Daily Emission Rate / Diurnal Porfile (from 1st 50m for Each Portal Source)			Daily Emission Rate / Diurnal Porfile (from 2nd 50m for Each Portal Source)			Daily Emission Rate / Diurnal Porfile (Each Non-Portal Sources)			Emission Calculation Formula (Reference made to the supporting documents for the approved WKCD VEP (EP-453/2013/B))
										NO (g/mile-veh)	NO_2 (g/mile-veh)	RSP (g/mile-veh)	NO (g/s)	NO_2 (g/s)	RSP (g/s)	NO (g/s)	NO_2 (g/s)	RSP (g/s)	NO (g/s or $g/m^2/s$)	NO_2 (g/s or $g/m^2/s$)	RSP (g/s or $g/m^2/s$)	NO (g/s) / %	NO_2 (g/s) / %	RSP (g/s) / %	NO (g/s) / %	NO_2 (g/s) / %	RSP (g/s) / %	NO (g/s or $g/m^2/s$)	NO_2 (g/s or $g/m^2/s$)	RSP (g/s or $g/m^2/s$)	
Portal N	100%	-	N1-N8	-	8	-	-	1	-	-	-	-	2.492E-03	1.909E-04	3.738E-05	2.492E-03	1.909E-04	3.738E-05	-	-	-	2.4%	1.8%	1.7%	2.4%	1.8%	1.7%	-	-	-	0.5 x (Tunnel Section M + Tunnel Section N)
								2	-	-	-	-	1.921E-03	1.593E-04	3.050E-05	1.921E-03	1.593E-04	3.050E-05	-	-	-	1.9%	1.5%	1.4%	1.9%	1.5%	1.4%	-	-	-	
								3	-	-	-	-	1.545E-03	1.366E-04	2.582E-05	1.545E-03	1.366E-04	2.582E-05	-	-	-	1.5%	1.3%	1.2%	1.5%	1.3%	1.2%	-	-	-	
								4	-	-	-	-	1.267E-03	1.187E-04	2.240E-05	1.267E-03	1.187E-04	2.240E-05	-	-	-	1.2%	1.1%	1.0%	1.2%	1.1%	1.0%	-	-	-	
								5	-	-	-	-	1.248E-03	1.270E-04	2.407E-05	1.248E-03	1.270E-04	2.407E-05	-	-	-	1.2%	1.2%	1.1%	1.2%	1.2%	1.1%	-	-	-	
								6	-	-	-	-	1.563E-03	1.741E-04	3.324E-05	1.563E-03	1.741E-04	3.324E-05	-	-	-	1.5%	1.6%	1.5%	1.5%	1.6%	1.5%	-	-	-	
								7	-	-	-	-	2.857E-03	3.487E-04	6.743E-05	2.857E-03	3.487E-04	6.743E-05	-	-	-	2.8%	3.3%	3.1%	2.8%	3.3%	3.1%	-	-	-	
								8	-	-	-	-	6.537E-03	8.574E-04	1.660E-04	6.537E-03	8.574E-04	1.660E-04	-	-	-	6.4%	8.0%	7.6%	6.4%	8.0%	7.6%	-	-	-	
								9	-	-	-	-	7.831E-03	9.915E-04	2.157E-04	7.831E-03	9.915E-04	2.157E-04	-	-	-	7.6%	9.3%	9.8%	7.6%	9.3%	9.8%	-	-	-	
								10	-	-	-	-	6.009E-03	6.259E-04	1.314E-04	6.009E-03	6.259E-04	1.314E-04	-	-	-	5.9%	5.8%	6.0%	5.9%	5.8%	6.0%	-	-	-	
								11	-	-	-	-	5.644E-03	5.771E-04	1.142E-04	5.644E-03	5.771E-04	1.142E-04	-	-	-	5.5%	5.4%	5.2%	5.5%	5.4%	5.2%	-	-	-	
								12	-	-	-	-	5.838E-03	6.495E-04	1.270E-04	5.838E-03	6.495E-04	1.270E-04	-	-	-	5.7%	6.1%	5.8%	5.7%	6.1%	5.8%	-	-	-	
								13	-	-	-	-	5.451E-03	5.787E-04	1.153E-04	5.451E-03	5.787E-04	1.153E-04	-	-	-	5.3%	5.4%	5.3%	5.3%	5.4%	5.3%	-	-	-	
								14	-	-	-	-	5.243E-03	5.834E-04	1.146E-04	5.243E-03	5.834E-04	1.146E-04	-	-	-	5.1%	5.4%	5.2%	5.1%	5.4%	5.2%	-	-	-	
								15	-	-	-	-	5.680E-03	6.468E-04	1.258E-04	5.680E-03	6.468E-04	1.258E-04	-	-	-	5.5%	6.0%	5.7%	5.5%	6.0%	5.7%	-	-	-	
								16	-	-	-	-	5.472E-03	6.301E-04	1.253E-04	5.472E-03	6.301E-04	1.253E-04	-	-	-	5.3%	5.9%	5.7%	5.3%	5.9%	5.7%	-	-	-	
								17	-	-	-	-	5.533E-03	6.392E-04	1.293E-04	5.533E-03	6.392E-04	1.293E-04	-	-	-	5.4%	6.0%	5.9%	5.4%	6.0%	5.9%	-	-	-	
								18	-	-	-	-	5.337E-03	5.978E-04	1.259E-04	5.337E-03	5.978E-04	1.259E-04	-	-	-	5.2%	5.6%	5.7%	5.2%	5.6%	5.7%	-	-	-	
								19	-	-	-	-	6.035E-03	6.849E-04	1.557E-04	6.035E-03	6.849E-04	1.557E-04	-	-	-	5.9%	6.4%	7.1%	5.9%	6.4%	7.1%	-	-	-	
								20	-	-	-	-	4.211E-03	3.958E-04	9.776E-05	4.211E-03	3.958E-04	9.776E-05	-	-	-	4.1%	3.7%	4.5%	4.1%	3.7%	4.5%	-	-	-	
								21	-	-	-	-	3.745E-03	2.692E-04	5.851E-05	3.745E-03	2.692E-04	5.851E-05	-	-	-	3.7%	2.5%	2.7%	3.7%	2.5%	2.7%	-	-	-	
								22	-	-	-	-	3.882E-03	2.685E-04	5.648E-05	3.882E-03	2.685E-04	5.648E-05	-	-	-	3.8%	2.5%	2.6%	3.8%	2.5%	2.6%	-	-	-	
								23	-	-	-	-	3.857E-03	2.346E-04	4.870E-05	3.857E-03	2.346E-04	4.870E-05	-	-	-	3.8%	2.2%	2.2%	3.8%	2.2%	2.2%	-	-	-	
								24	-	-	-	-	3.302E-03	2.306E-04	4.597E-05	3.302E-03	2.306E-04	4.597E-05	-	-	-	3.2%	2.2%	2.1%	3.2%	2.2%	2.1%	-	-	-	
								Daily	**-**	**-**	**-**	**-**	**1.025E-01**	**1.072E-02**	**2.195E-03**	**1.025E-01**	**1.072E-02**	**2.195E-03**	**-**	**-**	**-**	**1.708E-02**	**1.786E-03**	**3.658E-04**	**8.542E-03**	**8.930E-04**	**1.829E-04**	**-**	**-**	**-**	
Portal P	100%	-	P1-P10	-	10	-	-	1	-	-	-	-	8.195E-03	6.351E-04	2.043E-04	8.195E-03	6.351E-04	2.043E-04	-	-	-	2.6%	1.9%	2.3%	2.6%	1.9%	2.3%	-	-	-	1 x Tunnel Section P + 0.9 x 0.88 x Tunnel Section J + 0.9 x 0.59 x Tunnel Section K + 0.9 x 0.9 x 0.9 x 0.11 x Tunnel Section E + 0.9 x 0.9 x 0.11 x Tunnel Section F
								2	-	-	-	-	6.554E-03	5.346E-04	1.731E-04	6.554E-03	5.346E-04	1.731E-04	-	-	-	2.0%	1.6%	1.9%	2.0%	1.6%	1.9%	-	-	-	
								3	-	-	-	-	5.334E-03	4.520E-04	1.473E-04	5.334E-03	4.520E-04	1.473E-04	-	-	-	1.7%	1.4%	1.6%	1.7%	1.4%	1.6%	-	-	-	
								4	-	-	-	-	4.448E-03	3.920E-04	1.269E-04	4.448E-03	3.920E-04	1.269E-04	-	-	-	1.4%	1.2%	1.4%	1.4%	1.2%	1.4%	-	-	-	
								5	-	-	-	-	4.298E-03	4.047E-04	1.256E-04	4.298E-03	4.047E-04	1.256E-04	-	-	-	1.3%	1.2%	1.4%	1.3%	1.2%	1.4%	-	-	-	
								6	-	-	-	-	5.073E-03	5.202E-04	1.503E-04	5.073E-03	5.202E-04	1.503E-04	-	-	-	1.6%	1.6%	1.7%	1.6%	1.6%	1.7%	-	-	-	
								7	-	-	-	-	8.846E-03	9.918E-04	2.676E-04	8.846E-03	9.918E-04	2.676E-04	-	-	-	2.8%	3.0%	3.0%	2.8%	3.0%	3.0%	-	-	-	
								8	-	-	-	-	1.915E-02	2.314E-03	5.866E-04	1.915E-02	2.314E-03	5.866E-04	-	-	-	6.0%	7.1%	6.6%	6.0%	7.1%	6.6%	-	-	-	
								9	-	-	-	-	2.239E-02	2.604E-03	7.167E-04	2.239E-02	2.604E-03	7.167E-04	-	-	-	7.0%	7.9%	8.0%	7.0%	7.9%	8.0%	-	-	-	
								10	-	-	-	-	1.824E-02	1.873E-03	5.133E-04	1.824E-02	1.873E-03	5.133E-04	-	-	-	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	-	-	-	
								11	-	-	-	-	1.697E-02	1.768E-03	4.489E-04	1.697E-02	1.768E-03	4.489E-04	-	-	-	5.3%	5.4%	5.0%	5.3%	5.4%	5.0%	-	-	-	
								12	-	-	-	-	1.753E-02	1.938E-03	4.772E-04	1.753E-02	1.938E-03	4.772E-04	-	-	-	5.5%	5.9%	5.3%	5.5%	5.9%	5.3%	-	-	-	
								13	-	-	-	-	1.644E-02	1.769E-03	4.398E-04	1.644E-02	1.769E-03	4.398E-04	-	-	-	5.1%	5.4%	4.9%	5.1%	5.4%	4.9%	-	-	-	
								14	-	-	-	-	1.655E-02	1.863E-03	4.584E-04	1.655E-02	1.863E-03	4.584E-04	-	-	-	5.2%	5.7%	5.1%	5.2%	5.7%	5.1%	-	-	-	
								15	-	-	-	-	1.793E-02	2.091E-03	4.917E-04	1.793E-02	2.091E-03	4.917E-04	-	-	-	5.6%	6.4%	5.5%	5.6%	6.4%	5.5%	-	-	-	
								16	-	-	-	-	1.734E-02	2.031E-03	4.861E-04	1.734E-02	2.031E-03	4.861E-04	-	-	-	5.4%	6.2%	5.4%	5.4%	6.2%	5.4%	-	-	-	
								17	-	-	-	-	1.777E-02	2.041E-03	5.117E-04	1.777E-02	2.041E-03	5.117E-04	-	-	-	5.5%	6.2%	5.7%	5.5%	6.2%	5.7%	-	-	-	
								18	-	-	-	-	1.763E-02	1.935E-03	5.188E-04	1.763E-02	1.935E-03	5.188E-04	-	-	-	5.5%	5.9%	5.8%	5.5%	5.9%	5.8%	-	-	-	
								19	-	-	-	-	1.914E-02	2.072E-03	5.868E-04	1.914E-02	2.072E-03	5.868E-04	-	-	-	6.0%	6.3%	6.6%	6.0%	6.3%	6.6%	-	-	-	
								20	-	-	-	-	1.393E-02	1.260E-03	4.172E-04	1.393E-02	1.260E-03	4.172E-04	-	-	-	4.3%	3.8%	4.7%	4.3%	3.8%	4.7%	-	-	-	
								21	-	-	-	-	1.199E-02	8.912E-04	2.918E-04	1.199E-02	8.912E-04	2.918E-04	-	-	-	3.7%	2.7%	3.3%	3.7%	2.7%	3.3%	-	-	-	
								22	-	-	-	-	1.204E-02	8.670E-04	2.774E-04	1.204E-02	8.670E-04	2.774E-04	-	-	-	3.8%	2.6%	3.1%	3.8%	2.6%	3.1%	-	-	-	
								23	-	-	-	-	1.201E-02	7.881E-04	2.624E-04	1.201E-02	7.881E-04	2.624E-04	-	-	-	3.7%	2.4%	2.9%	3.7%	2.4%	2.9%	-	-	-	
								24	-	-	-	-	1.058E-02	7.691E-04	2.489E-04	1.058E-02	7.691E-04	2.489E-04	-	-	-	3.3%	2.3%	2.8%	3.3%	2.3%	2.8%	-	-	-	
								Daily	**-**	**-**	**-**	**-**	**3.204E-01**	**3.280E-02**	**8.929E-03**	**3.204E-01**	**3.280E-02**	**8.929E-03**	**-**	**-**	**-**	**4.272E-02**	**4.374E-03**	**1.191E-03**	**2.136E-02**	**2.187E-03**	**5.953E-04**	**-**	**-**	**-**	
Internal Road B at B1 Level (Year 2027)	0%	361	V25-V31 V33	B1+B2		8	-	1	469	0.5674	0.0357	0.0082	1.659E-02	1.043E-03	2.394E-04	-	-	-	1.659E-02	1.043E-03	2.394E-04	-	-	-	-	-	-	2.7%	2.0%	1.8%	
								2	335	0.5756	0.0393	0.0086	1.203E-02	8.217E-04	1.797E-04	-	-	-	1.203E-02	8.217E-04	1.797E-04	-	-	-	-	-	-	2.0%	1.6%	1.4%	
								3	247	0.5925	0.0435	0.0091	9.136E-03	6.713E-04	1.404E-04	-	-	-	9.136E-03	6.713E-04	1.404E-04	-	-	-	-	-	-	1.5%	1.3%	1.1%	
								4	189	0.6110	0.0483	0.0098	7.199E-03	5.690E-04	1.150E-04	-	-	-	7.199E-03	5.690E-04	1.150E-04	-	-	-	-	-	-	1.2%	1.1%	0.9%	
								5	173	0.6280	0.0551	0.0110	6.768E-03	5.936E-04	1.180E-04	-	-	-	6.768E-03	5.936E-04	1.180E-04	-	-	-	-	-	-	1.1%	1.2%	0.9%	
								6	201	0.6368	0.0625	0.0124	7.980E-03	7.836E-04	1.553E-04	-	-	-	7.980E-03	7.836E-04	1.553E-04	-	-	-	-	-	-	1.3%	1.5%	1.2%	
								7	340	0.6660	0.0743	0.0146	1.411E-02	1.574E-03	3.103E-04	-	-	-	1.411E-02	1.574E-03	3.103E-04	-	-	-	-	-	-	2.3%	3.1%	2.4%	
								8	698	0.7392	0.0919	0.0178	3.217E-02	3.999E-03	7.749E-04	-	-	-	3.217E-02	3.999E-03	7.749E-04	-	-	-	-	-	-	5.3%	7.8%	6.0%	
								9	1060	0.5713	0.0699	0.0163	3.772E-02	4.616E-03	1.074E-03	-	-	-	3.772E-02	4.616E-03	1.074E-03	-	-	-	-	-	-	6.2%	9.0%	8.3%	
								10	924	0.4955	0.0403	0.0110	2.852E-02	2.320E-03	6.323E-04	-	-	-	2.852E-02	2.320E-03	6.323E-04	-	-	-	-	-	-	4.7%	4.5%	4.9%	
								11	836	0.5111	0.0372	0.0097	2.664E-02	1.941E-03	5.066E-04	-	-	-	2.664E-02	1.941E-03	5.066E-04	-	-	-	-	-	-	4.4%	3.8%	3.9%	
								12	838	0.5657	0.0505	0.0118	2.955E-02	2.636E-03	6.184E-04	-	-	-	2.955E-02	2.636E-03	6.184E-04	-	-	-	-	-	-	4.9%	5.1%	4.8%	
								13	868	0.5354	0.0436	0.0108	2.897E-02	2.360E-03	5.862E-04	-	-	-	2.897E-02	2.360E-03	5.862E-04	-	-	-	-	-	-	4.8%	4.6%	4.5%	
								14	842	0.5205	0.0417	0.0107	2.729E-02	2.187E-03	5.594E-04	-	-	-	2.729E-02	2.187E-03	5.594E-04	-	-	-	-	-	-	4.5%	4.2%	4.3%	
								15	929	0.5159	0.0419	0.0107	2.987E-02	2.427E-03	6.222E-04	-	-	-	2.987E-02	2.427E-03	6.222E-04	-	-	-	-	-	-	4.9%	4.7%	4.8%	
								16	1005	0.4869	0.0409	0.0112	3.048E-02	2.559E-03	7.034E-04	-	-	-	3.048E-02	2.559E-03	7.034E-04	-	-	-	-	-	-	5.0%	5.0%	5.4%	
								17	1079	0.4968	0.0450	0.0120	3.340E-02	3.027E-03	8.059E-04	-	-	-	3.340E-02	3.027E-03	8.059E-04	-	-	-	-	-	-	5.5%	5.9%	6.2%	
								18	1187	0.4724	0.0428	0.0122	3.494E-02	3.163E-03	8.992E-04	-	-	-	3.494E-02	3.163E-03	8.992E-04	-	-	-	-	-	-	5.8%	6.1%	6.9%	
								19	1481	0.5061	0.0538	0.0146	4.671E-02	4.970E-03	1.347E-03	-	-	-	4.671E-02	4.970E-03	1.347E-03	-	-	-	-	-	-	7.7%	9.7%	10.4%	
								20	1239	0.4326	0.0372	0.0117	3.339E-02	2.870E-03	9.045E-04	-	-	-	3.339E-02	2.870E-03	9.045E-04	-	-	-	-	-	-	5.5%	5.6%	7.0%	
								21	910	0.5165	0.0313	0.0086	2.929E-02	1.777E-03	4.898E-04	-	-	-	2.929E-02	1.777E-03	4.898E-04	-	-	-	-	-	-	4.8%	3.5%	3.8%	
								22	875	0.5497	0.0323	0.0084	2.998E-02	1.763E-03	4.555E-04	-	-	-	2.998E-02	1.763E-03	4.555E-04	-	-	-	-	-	-	5.0%	3.4%	3.5%	
								23	854	0.5500	0.0276	0.0074	2.928E-02	1.470E-03	3.932E-04	-	-	-	2.928E-02	1.470E-03	3.932E-04	-	-	-	-	-	-	4.8%	2.9%	3.0%	
								24	674	0.5565	0.0318	0.0078	2.339E-02	1.338E-03	3.298E-04	-	-	-	2.339E-02	1.338E-03	3.298E-04	-	-	-	-	-	-	3.9%	2.6%	2.5%	
								Daily	**-**	**-**	**-**	**-**	**6.054E-01**	**5.148E-02**	**1.296E-02**	**-**	**-**	**-**	**6.054E-01**	**5.148E-02**	**1.296E-02**	**-**	**-**	**-**	**-**	**-**	**-**	**7.567E-02**	**6.434E-03**	**1.620E-03**	

Calculation of Portal Emission and Emissions of Underpass Top Openings, Ventilation Buildings and Ventilation Exhausts

Description	Percentage from Portal	Length (m)	Source Name	Source ID	No. of Portal Sources	No. of Non-Portal Sources	Area (m^2)	Hour	Q (veh/hr)	Total Emission Factor			Total Emission Rate			Emission Rate (from Portal Sources)			Emission rate (from Non-portal Sources)			Daily Emission Rate / Diurnal Porfile (from 1st 50m for Each Portal Source)			Daily Emission Rate / Diurnal Porfile (from 2nd 50m for Each Portal Source)			Daily Emission Rate / Diurnal Porfile (Each Non-Portal Sources)			Emission Calculation Formula (Reference made to the supporting documents for the approved WKCD VEP (EP-453/2013/B))
										NO (g/mile-veh)	NO_2 (g/mile-veh)	RSP (g/mile-veh)	NO (g/s)	NO_2 (g/s)	RSP (g/s)	NO (g/s)	NO_2 (g/s)	RSP (g/s)	NO (g/s or $g/m^2/s$)	NO_2 (g/s or $g/m^2/s$)	RSP (g/s or $g/m^2/s$)	NO (g/s) / %	NO_2 (g/s) / %	RSP (g/s) / %	NO (g/s) / %	NO_2 (g/s) / %	RSP (g/s) / %	NO (g/s or $g/m^2/s$)	NO_2 (g/s or $g/m^2/s$)	RSP (g/s or $g/m^2/s$)	
Internal Road C at B1 Level	0%	502	V32 V34-V38	C1+C2	-	6	-	1	277	0.5676	0.0383	0.0090	1.365E-02	9.198E-04	2.173E-04	-	-	-	1.365E-02	9.198E-04	2.173E-04	-	-	-	-	-	-	2.8%	2.1%	1.9%	
								2	193	0.5880	0.0432	0.0098	9.826E-03	7.218E-04	1.633E-04	-	-	-	9.826E-03	7.218E-04	1.633E-04	-	-	-	-	-	-	2.0%	1.7%	1.5%	
								3	138	0.5984	0.0471	0.0102	7.158E-03	5.633E-04	1.220E-04	-	-	-	7.158E-03	5.633E-04	1.220E-04	-	-	-	-	-	-	1.5%	1.3%	1.1%	
								4	102	0.6148	0.0518	0.0109	5.444E-03	4.587E-04	9.647E-05	-	-	-	5.444E-03	4.587E-04	9.647E-05	-	-	-	-	-	-	1.1%	1.1%	0.9%	
								5	90	0.6402	0.0595	0.0124	5.013E-03	4.663E-04	9.689E-05	-	-	-	5.013E-03	4.663E-04	9.689E-05	-	-	-	-	-	-	1.0%	1.1%	0.9%	
								6	101	0.6594	0.0681	0.0141	5.793E-03	5.984E-04	1.241E-04	-	-	-	5.793E-03	5.984E-04	1.241E-04	-	-	-	-	-	-	1.2%	1.4%	1.1%	
								7	165	0.7171	0.0834	0.0173	1.025E-02	1.193E-03	2.470E-04	-	-	-	1.025E-02	1.193E-03	2.470E-04	-	-	-	-	-	-	2.1%	2.7%	2.2%	
								8	325	0.7775	0.0988	0.0203	2.191E-02	2.785E-03	5.716E-04	-	-	-	2.191E-02	2.785E-03	5.716E-04	-	-	-	-	-	-	4.4%	6.4%	5.1%	
								9	472	0.5859	0.0722	0.0174	2.397E-02	2.952E-03	7.114E-04	-	-	-	2.397E-02	2.952E-03	7.114E-04	-	-	-	-	-	-	4.9%	6.8%	6.3%	
								10	437	0.4820	0.0410	0.0111	1.826E-02	1.554E-03	4.221E-04	-	-	-	1.826E-02	1.554E-03	4.221E-04	-	-	-	-	-	-	3.7%	3.6%	3.8%	
								11	418	0.5033	0.0389	0.0102	1.825E-02	1.410E-03	3.701E-04	-	-	-	1.825E-02	1.410E-03	3.701E-04	-	-	-	-	-	-	3.7%	3.2%	3.3%	
								12	441	0.5720	0.0537	0.0129	2.186E-02	2.051E-03	4.935E-04	-	-	-	2.186E-02	2.051E-03	4.935E-04	-	-	-	-	-	-	4.4%	4.7%	4.4%	
								13	478	0.5354	0.0461	0.0116	2.219E-02	1.912E-03	4.820E-04	-	-	-	2.219E-02	1.912E-03	4.820E-04	-	-	-	-	-	-	4.5%	4.4%	4.3%	
								14	484	0.5202	0.0441	0.0114	2.180E-02	1.848E-03	4.775E-04	-	-	-	2.180E-02	1.848E-03	4.775E-04	-	-	-	-	-	-	4.4%	4.3%	4.3%	
								15	556	0.5224	0.0450	0.0117	2.515E-02	2.164E-03	5.630E-04	-	-	-	2.515E-02	2.164E-03	5.630E-04	-	-	-	-	-	-	5.1%	5.0%	5.0%	
								16	623	0.4805	0.0424	0.0116	2.593E-02	2.287E-03	6.282E-04	-	-	-	2.593E-02	2.287E-03	6.282E-04	-	-	-	-	-	-	5.3%	5.3%	5.6%	
								17	692	0.5033	0.0477	0.0128	3.017E-02	2.861E-03	7.665E-04	-	-	-	3.017E-02	2.861E-03	7.665E-04	-	-	-	-	-	-	6.1%	6.6%	6.8%	
								18	786	0.4787	0.0451	0.0128	3.259E-02	3.071E-03	8.724E-04	-	-	-	3.259E-02	3.071E-03	8.724E-04	-	-	-	-	-	-	6.6%	7.1%	7.8%	
								19	1010	0.5262	0.0571	0.0158	4.604E-02	4.996E-03	1.382E-03	-	-	-	4.604E-02	4.996E-03	1.382E-03	-	-	-	-	-	-	9.4%	11.5%	12.3%	
								20	827	0.4385	0.0392	0.0123	3.142E-02	2.808E-03	8.799E-04	-	-	-	3.142E-02	2.808E-03	8.799E-04	-	-	-	-	-	-	6.4%	6.5%	7.8%	
								21	594	0.5084	0.0329	0.0092	2.618E-02	1.693E-03	4.729E-04	-	-	-	2.618E-02	1.693E-03	4.729E-04	-	-	-	-	-	-	5.3%	3.9%	4.2%	
								22	559	0.5379	0.0337	0.0089	2.603E-02	1.632E-03	4.312E-04	-	-	-	2.603E-02	1.632E-03	4.312E-04	-	-	-	-	-	-	5.3%	3.8%	3.8%	
								23	532	0.5241	0.0279	0.0075	2.417E-02	1.286E-03	3.478E-04	-	-	-	2.417E-02	1.286E-03	3.478E-04	-	-	-	-	-	-	4.9%	3.0%	3.1%	
								24	410	0.5436	0.0331	0.0083	1.929E-02	1.177E-03	2.949E-04	-	-	-	1.929E-02	1.177E-03	2.949E-04	-	-	-	-	-	-	3.9%	2.7%	2.6%	
								Daily	-	-	-	-	**4.924E-01**	**4.341E-02**	**1.123E-02**	-	-	-	**4.924E-01**	**4.341E-02**	**1.123E-02**	-	-	-	-	-	-	**8.206E-02**	**7.235E-03**	**1.872E-03**	

Notes:
[1] For short top openings (i.e. Openings CE, F and JKO1), it was assumed that 10% of the tunnel emissions would be released through the short top opening and the remaining 90% of emissions through the tunnel to the portal, as the worst scenario accoridng to the approved *WKCD EIA Report* (AEIAR-178/2013).
[2] For the other longer top opening (i.e. Opening B), 2/3 of the total tunnel emissions would be dispersed within the first 50m and the 1/3 of the total tunnel emissions within the second 50m according to the *Permanent International Association of Road Congress Report*. As Opening B is only 80.935m long, the 1/3 emission for the second portion (80.935m-50m=30.935m long) would be distributed on a pro-rata basis (i.e. 1/3*30.935/50).
[3] Flow ratios of the road links involved in Opening JKO1 as provided by traffic consultant are as below.

From Tunnel ID (Road ID)	To Tunnel ID (Road ID)	%
J (116)	P (110)	88%
	L (112)	7%
72	K (114)	11%
	118	89%
K (114)	P (110)	59%
O (111)	L (112)	59%

Calculation of Portal Emissions from Western Harbour Crossing

Scenario 1 - 30% from Portal and 70% from Ventilation Building

Description	Percentage from Portal	Length (m)	Portal ID	Source ID	No. of Portal Sources	No. of Non-Portal Sources	Hour	Q (veh/hr)	Total Emission Factor NO (g/mile-veh)	Total Emission Factor NO_2 (g/mile-veh)	Total Emission Factor RSP (g/mile-veh)	Total Emission Rate NO (g/s)	Total Emission Rate NO_2 (g/s)	Total Emission Rate RSP (g/s)	Emission Rate (from Portal Sources) NO (g/s)	Emission Rate (from Portal Sources) NO_2 (g/s)	Emission Rate (from Portal Sources) RSP (g/s)	Emission rate (from Non-portal) NO (g/s or g/m²/s)	Emission rate (from Non-portal) NO_2 (g/s or g/m²/s)	Emission rate (from Non-portal) RSP (g/s or g/m²/s)	Daily Emission Rate / Diurnal Porfile NO (g/s) / %	Daily Emission Rate / Diurnal Porfile NO_2 (g/s) / %	Daily Emission Rate / Diurnal Porfile RSP (g/s) / %	Daily Emission Rate / Diurnal Porfile NO (g/s) / %	Daily Emission Rate / Diurnal Porfile NO_2 (g/s) / %	Daily Emission Rate / Diurnal Porfile RSP (g/s) / %	Daily Emission Rate / Diurnal Porfile NO (g/s or g/m²/s)	Daily Emission Rate / Diurnal Porfile NO_2 (g/s or g/m²/s)	Daily Emission Rate / Diurnal Porfile RSP (g/s or g/m²/s)
Tunnel Section W - West Kowloon Highway (WKH)	30%	1970	Portal : W1-W16 VB: WHCVB	98	8	1	1	1272	0.7459	0.0641	0.0225	3.227E-01	2.775E-02	9.751E-03	9.682E-02	8.326E-03	2.925E-03	2.259E-01	1.943E-02	6.826E-03	2.4%	1.9%	2.4%	2.4%	1.9%	2.4%	2.4%	1.9%	2.4%
							2	921	0.7846	0.0699	0.0248	2.457E-01	2.188E-02	7.753E-03	7.372E-02	6.564E-03	2.326E-03	1.720E-01	1.532E-02	5.427E-03	1.9%	1.5%	1.9%	1.9%	1.5%	1.9%	1.9%	1.5%	1.9%
							3	685	0.8273	0.0753	0.0269	1.927E-01	1.754E-02	6.275E-03	5.780E-02	5.261E-03	1.882E-03	1.349E-01	1.227E-02	4.392E-03	1.5%	1.2%	1.5%	1.5%	1.2%	1.5%	1.5%	1.2%	1.5%
							4	524	0.8690	0.0810	0.0288	1.549E-01	1.444E-02	5.139E-03	4.648E-02	4.333E-03	1.542E-03	1.085E-01	1.011E-02	3.597E-03	1.2%	1.0%	1.3%	1.2%	1.0%	1.3%	1.2%	1.0%	1.3%
							5	474	0.8657	0.0847	0.0290	1.396E-01	1.366E-02	4.675E-03	4.187E-02	4.097E-03	1.403E-03	9.770E-02	9.561E-03	3.273E-03	1.1%	0.9%	1.1%	1.1%	0.9%	1.1%	1.1%	0.9%	1.1%
							6	535	0.8526	0.0894	0.0284	1.552E-01	1.627E-02	5.173E-03	4.656E-02	4.882E-03	1.552E-03	1.086E-01	1.139E-02	3.621E-03	1.2%	1.1%	1.3%	1.2%	1.1%	1.3%	1.2%	1.1%	1.3%
							7	874	0.8411	0.0944	0.0280	2.499E-01	2.804E-02	8.333E-03	7.497E-02	8.412E-03	2.500E-03	1.749E-01	1.963E-02	5.833E-03	1.9%	1.9%	2.0%	1.9%	1.9%	2.0%	1.9%	1.9%	2.0%
							8	1720	0.8850	0.1049	0.0292	5.177E-01	6.133E-02	1.709E-02	1.553E-01	1.840E-02	5.126E-03	3.624E-01	4.293E-02	1.196E-02	3.9%	4.2%	4.2%	3.9%	4.2%	4.2%	3.9%	4.2%	4.2%
							9	2400	0.6867	0.0767	0.0234	5.603E-01	6.260E-02	1.910E-02	1.681E-01	1.878E-02	5.731E-03	3.922E-01	4.382E-02	1.337E-02	4.3%	4.3%	4.7%	4.3%	4.3%	4.7%	4.3%	4.3%	4.7%
							10	2294	0.6732	0.0721	0.0209	5.251E-01	5.622E-02	1.627E-02	1.575E-01	1.687E-02	4.882E-03	3.676E-01	3.936E-02	1.139E-02	4.0%	3.9%	4.0%	4.0%	3.9%	4.0%	4.0%	3.9%	4.0%
							11	2243	0.7245	0.0829	0.0214	5.526E-01	6.323E-02	1.636E-02	1.658E-01	1.897E-02	4.907E-03	3.869E-01	4.426E-02	1.145E-02	4.2%	4.4%	4.0%	4.2%	4.4%	4.0%	4.2%	4.4%	4.0%
							12	2357	0.7859	0.0944	0.0235	6.298E-01	7.569E-02	1.885E-02	1.889E-01	2.271E-02	5.654E-03	4.409E-01	5.298E-02	1.319E-02	4.8%	5.2%	4.6%	4.8%	5.2%	4.6%	4.8%	5.2%	4.6%
							13	2473	0.7604	0.0915	0.0227	6.395E-01	7.695E-02	1.910E-02	1.918E-01	2.308E-02	5.730E-03	4.476E-01	5.386E-02	1.337E-02	4.9%	5.3%	4.7%	4.9%	5.3%	4.7%	4.9%	5.3%	4.7%
							14	2607	0.8329	0.1054	0.0255	7.385E-01	9.348E-02	2.258E-02	2.215E-01	2.804E-02	6.773E-03	5.169E-01	6.544E-02	1.580E-02	5.6%	6.4%	5.5%	5.6%	6.4%	5.5%	5.6%	6.4%	5.5%
							15	3003	0.8448	0.1111	0.0253	8.627E-01	1.135E-01	2.586E-02	2.588E-01	3.405E-02	7.757E-03	6.039E-01	7.945E-02	1.810E-02	6.5%	7.8%	6.3%	6.5%	7.8%	6.3%	6.5%	7.8%	6.3%
							16	3244	0.8021	0.1052	0.0244	8.848E-01	1.160E-01	2.687E-02	2.654E-01	3.481E-02	8.062E-03	6.193E-01	8.123E-02	1.881E-02	6.7%	8.0%	6.6%	6.7%	8.0%	6.6%	6.7%	8.0%	6.6%
							17	3439	0.8183	0.1032	0.0255	9.568E-01	1.206E-01	2.985E-02	2.870E-01	3.619E-02	8.954E-03	6.698E-01	8.445E-02	2.089E-02	7.3%	8.3%	7.3%	7.3%	8.3%	7.3%	7.3%	8.3%	7.3%
							18	3731	0.7819	0.0928	0.0249	9.922E-01	1.178E-01	3.158E-02	2.976E-01	3.534E-02	9.473E-03	6.945E-01	8.246E-02	2.210E-02	7.5%	8.1%	7.7%	7.5%	8.1%	7.7%	7.5%	8.1%	7.7%
							19	4302	0.7338	0.0824	0.0243	1.074E+00	1.205E-01	3.554E-02	3.221E-01	3.615E-02	1.066E-02	7.515E-01	8.435E-02	2.488E-02	8.1%	8.3%	8.7%	8.1%	8.3%	8.7%	8.1%	8.3%	8.7%
							20	3416	0.6196	0.0583	0.0206	7.198E-01	6.770E-02	2.392E-02	2.159E-01	2.031E-02	7.177E-03	5.038E-01	4.739E-02	1.675E-02	5.5%	4.7%	5.9%	5.5%	4.7%	5.9%	5.5%	4.7%	5.9%
							21	2495	0.6805	0.0557	0.0200	5.774E-01	4.730E-02	1.696E-02	1.732E-01	1.419E-02	5.088E-03	4.042E-01	3.311E-02	1.187E-02	4.4%	3.3%	4.1%	4.4%	3.3%	4.1%	4.4%	3.3%	4.1%
							22	2347	0.6739	0.0540	0.0190	5.379E-01	4.312E-02	1.520E-02	1.614E-01	1.293E-02	4.559E-03	3.765E-01	3.018E-02	1.064E-02	4.1%	3.0%	3.7%	4.1%	3.0%	3.7%	4.1%	3.0%	3.7%
							23	2259	0.6721	0.0505	0.0185	5.164E-01	3.880E-02	1.418E-02	1.549E-01	1.164E-02	4.254E-03	3.614E-01	2.716E-02	9.927E-03	3.9%	2.7%	3.5%	3.9%	2.7%	3.5%	3.9%	2.7%	3.5%
							24	1806	0.7070	0.0578	0.0204	4.342E-01	3.552E-02	1.252E-02	1.303E-01	1.066E-02	3.757E-03	3.039E-01	2.486E-02	8.767E-03	3.3%	2.4%	3.1%	3.3%	2.4%	3.1%	3.3%	2.4%	3.1%
							Daily	**-**	**-**	**-**	**-**	**1.318E+01**	**1.450E+00**	**4.089E-01**	**3.954E+00**	**4.350E-01**	**1.227E-01**	**9.226E+00**	**1.015E+00**	**2.862E-01**	**6.590E-01**	**7.250E-02**	**2.045E-02**	**3.295E-01**	**3.625E-02**	**1.022E-02**	**9.226E+00**	**1.015E+00**	**2.862E-01**

Scenario 2 - 50% from Portal and 50% from Ventilation Building

Description	Percentage from Portal	Length (m)	Portal ID	Source ID	No. of Portal Sources	No. of Non-Portal Sources	Hour	Q (veh/hr)	Total Emission Factor NO (g/mile-veh)	Total Emission Factor NO_2 (g/mile-veh)	Total Emission Factor RSP (g/mile-veh)	Total Emission Rate NO (g/s)	Total Emission Rate NO_2 (g/s)	Total Emission Rate RSP (g/s)	Emission Rate (from Portal Sources) NO (g/s)	Emission Rate (from Portal Sources) NO_2 (g/s)	Emission Rate (from Portal Sources) RSP (g/s)	Emission rate (from Non-portal) NO (g/s or g/m²/s)	Emission rate (from Non-portal) NO_2 (g/s or g/m²/s)	Emission rate (from Non-portal) RSP (g/s or g/m²/s)	Daily Emission Rate / Diurnal Porfile NO (g/s) / %	Daily Emission Rate / Diurnal Porfile NO_2 (g/s) / %	Daily Emission Rate / Diurnal Porfile RSP (g/s) / %	Daily Emission Rate / Diurnal Porfile NO (g/s) / %	Daily Emission Rate / Diurnal Porfile NO_2 (g/s) / %	Daily Emission Rate / Diurnal Porfile RSP (g/s) / %	Daily Emission Rate / Diurnal Porfile NO (g/s or g/m²/s)	Daily Emission Rate / Diurnal Porfile NO_2 (g/s or g/m²/s)	Daily Emission Rate / Diurnal Porfile RSP (g/s or g/m²/s)
Tunnel Section W - West Kowloon Highway (WKH)	50%	1970	Portal : W1-W16 VB: WHCVB	98	8	1	1	1272	0.7459	0.0641	0.0225	3.227E-01	2.775E-02	9.751E-03	1.614E-01	1.388E-02	4.875E-03	1.614E-01	1.388E-02	4.875E-03	4.1%	3.2%	4.0%	4.1%	3.2%	4.0%	1.7%	1.4%	1.7%
							2	921	0.7846	0.0699	0.0248	2.457E-01	2.188E-02	7.753E-03	1.229E-01	1.094E-02	3.877E-03	1.229E-01	1.094E-02	3.877E-03	3.1%	2.5%	3.2%	3.1%	2.5%	3.2%	1.3%	1.1%	1.4%
							3	685	0.8273	0.0753	0.0269	1.927E-01	1.754E-02	6.275E-03	9.633E-02	8.768E-03	3.137E-03	9.633E-02	8.768E-03	3.137E-03	2.4%	2.0%	2.6%	2.4%	2.0%	2.6%	1.0%	0.9%	1.1%
							4	524	0.8690	0.0810	0.0288	1.549E-01	1.444E-02	5.139E-03	7.746E-02	7.221E-03	2.569E-03	7.746E-02	7.221E-03	2.569E-03	2.0%	1.7%	2.1%	2.0%	1.7%	2.1%	0.8%	0.7%	0.9%
							5	474	0.8657	0.0847	0.0290	1.396E-01	1.366E-02	4.675E-03	6.979E-02	6.829E-03	2.338E-03	6.979E-02	6.829E-03	2.338E-03	1.8%	1.6%	1.9%	1.8%	1.6%	1.9%	0.8%	0.7%	0.8%
							6	535	0.8526	0.0894	0.0284	1.552E-01	1.627E-02	5.173E-03	7.760E-02	8.136E-03	2.586E-03	7.760E-02	8.136E-03	2.586E-03	2.0%	1.9%	2.1%	2.0%	1.9%	2.1%	0.8%	0.8%	0.9%
							7	874	0.8411	0.0944	0.0280	2.499E-01	2.804E-02	8.333E-03	1.250E-01	1.402E-02	4.166E-03	1.250E-01	1.402E-02	4.166E-03	3.2%	3.2%	3.4%	3.2%	3.2%	3.4%	1.4%	1.4%	1.5%
							8	1720	0.8850	0.1049	0.0292	5.177E-01	6.133E-02	1.709E-02	2.588E-01	3.067E-02	8.543E-03	2.588E-01	3.067E-02	8.543E-03	6.5%	7.0%	7.0%	6.5%	7.0%	7.0%	2.8%	3.0%	3.0%
							9	2400	0.6867	0.0767	0.0234	5.603E-01	6.260E-02	1.910E-02	2.802E-01	3.130E-02	9.551E-03	2.802E-01	3.130E-02	9.551E-03	7.1%	7.2%	7.8%	7.1%	7.2%	7.8%	3.0%	3.1%	3.3%
							10	2294	0.6732	0.0721	0.0209	5.251E-01	5.622E-02	1.627E-02	2.626E-01	2.811E-02	8.137E-03	2.626E-01	2.811E-02	8.137E-03	6.6%	6.5%	6.6%	6.6%	6.5%	6.6%	2.8%	2.8%	2.8%
							11	2243	0.7245	0.0829	0.0214	5.526E-01	6.323E-02	1.636E-02	2.763E-01	3.162E-02	8.179E-03	2.763E-01	3.162E-02	8.179E-03	7.0%	7.3%	6.7%	7.0%	7.3%	6.7%	3.0%	3.1%	2.9%
							12	2357	0.7859	0.0944	0.0235	6.298E-01	7.569E-02	1.885E-02	3.149E-01	3.784E-02	9.423E-03	3.149E-01	3.784E-02	9.423E-03	8.0%	8.7%	7.7%	8.0%	8.7%	7.7%	3.4%	3.7%	3.3%
							13	2473	0.7604	0.0915	0.0227	6.395E-01	7.695E-02	1.910E-02	3.197E-01	3.847E-02	9.550E-03	3.197E-01	3.847E-02	9.550E-03	8.1%	8.8%	7.8%	8.1%	8.8%	7.8%	3.5%	3.8%	3.3%
							14	2607	0.8329	0.1054	0.0255	7.385E-01	9.348E-02	2.258E-02	3.692E-01	4.674E-02	1.129E-02	3.692E-01	4.674E-02	1.129E-02	9.3%	10.7%	9.2%	9.3%	10.7%	9.2%	4.0%	4.6%	3.9%
							15	3003	0.8448	0.1111	0.0253	8.627E-01	1.135E-01	2.586E-02	4.313E-01	5.675E-02	1.293E-02	4.313E-01	5.675E-02	1.293E-02	10.9%	13.0%	10.5%	10.9%	13.0%	10.5%	4.7%	5.6%	4.5%
							16	3244	0.8021	0.1052	0.0244	8.848E-01	1.160E-01	2.687E-02	4.424E-01	5.802E-02	1.344E-02	4.424E-01	5.802E-02	1.344E-02	11.2%	13.3%	11.0%	11.2%	13.3%	11.0%	4.8%	5.7%	4.7%
							17	3439	0.8183	0.1032	0.0255	9.568E-01	1.206E-01	2.985E-02	4.784E-01	6.032E-02	1.492E-02	4.784E-01	6.032E-02	1.492E-02	12.1%	13.9%	12.2%	12.1%	13.9%	12.2%	5.2%	5.9%	5.2%
							18	3731	0.7819	0.0928	0.0249	9.922E-01	1.178E-01	3.158E-02	4.961E-01	5.890E-02	1.579E-02	4.961E-01	5.890E-02	1.579E-02	12.5%	13.5%	12.9%	12.5%	13.5%	12.9%	5.4%	5.8%	5.5%
							19	4302	0.7338	0.0824	0.0243	1.074E+00	1.205E-01	3.554E-02	5.368E-01	6.025E-02	1.777E-02	5.368E-01	6.025E-02	1.777E-02	13.6%	13.9%	14.5%	13.6%	13.9%	14.5%	5.8%	5.9%	6.2%
							20	3416	0.6196	0.0583	0.0206	7.198E-01	6.770E-02	2.392E-02	3.599E-01	3.385E-02	1.196E-02	3.599E-01	3.385E-02	1.196E-02	9.1%	7.8%	9.8%	9.1%	7.8%	9.8%	3.9%	3.3%	4.2%
							21	2495	0.6805	0.0557	0.0200	5.774E-01	4.730E-02	1.696E-02	2.887E-01	2.365E-02	8.480E-03	2.887E-01	2.365E-02	8.480E-03	7.3%	5.4%	6.9%	7.3%	5.4%	6.9%	3.1%	2.3%	3.0%
							22	2347	0.6739	0.0540	0.0190	5.379E-01	4.312E-02	1.520E-02	2.689E-01	2.156E-02	7.598E-03	2.689E-01	2.156E-02	7.598E-03	6.8%	5.0%	6.2%	6.8%	5.0%	6.2%	2.9%	2.1%	2.7%
							23	2259	0.6721	0.0505	0.0185	5.164E-01	3.880E-02	1.418E-02	2.582E-01	1.940E-02	7.090E-03	2.582E-01	1.940E-02	7.090E-03	6.5%	4.5%	5.8%	6.5%	4.5%	5.8%	2.8%	1.9%	2.5%
							24	1806	0.7070	0.0578	0.0204	4.342E-01	3.552E-02	1.252E-02	2.171E-01	1.776E-02	6.262E-03	2.171E-01	1.776E-02	6.262E-03	5.5%	4.1%	5.1%	5.5%	4.1%	5.1%	2.4%	1.7%	2.2%
							Daily	**-**	**-**	**-**	**-**	**1.318E+01**	**1.450E+00**	**4.089E-01**	**6.590E+00**	**7.250E-01**	**2.045E-01**	**6.590E+00**	**7.250E-01**	**2.045E-01**	**1.098E+00**	**1.208E-01**	**3.408E-02**	**5.492E-01**	**6.042E-02**	**1.704E-02**	**6.590E+00**	**7.250E-01**	**2.045E-01**

Scenario 3 - 100% from Portal and 0% from Ventilation Building

Description	Percentage from Portal	Length (m)	Portal ID	Source ID	No. of Portal Sources	No. of Non-Portal Sources	Hour	Q (veh/hr)	Total Emission Factor NO (g/mile-veh)	Total Emission Factor NO_2 (g/mile-veh)	Total Emission Factor RSP (g/mile-veh)	Total Emission Rate NO (g/s)	Total Emission Rate NO_2 (g/s)	Total Emission Rate RSP (g/s)	Emission Rate (from Portal Sources) NO (g/s)	Emission Rate (from Portal Sources) NO_2 (g/s)	Emission Rate (from Portal Sources) RSP (g/s)	Emission rate (from Non-portal) NO (g/s or g/m²/s)	Emission rate (from Non-portal) NO_2 (g/s or g/m²/s)	Emission rate (from Non-portal) RSP (g/s or g/m²/s)	Daily Emission Rate / Diurnal Porfile NO (g/s) / %	Daily Emission Rate / Diurnal Porfile NO_2 (g/s) / %	Daily Emission Rate / Diurnal Porfile RSP (g/s) / %	Daily Emission Rate / Diurnal Porfile NO (g/s) / %	Daily Emission Rate / Diurnal Porfile NO_2 (g/s) / %	Daily Emission Rate / Diurnal Porfile RSP (g/s) / %	Daily Emission Rate / Diurnal Porfile NO (g/s or g/m²/s)	Daily Emission Rate / Diurnal Porfile NO_2 (g/s or g/m²/s)	Daily Emission Rate / Diurnal Porfile RSP (g/s or g/m²/s)
Tunnel Section W - West Kowloon Highway (WKH)	100%	1970	Portal : W1-W16 VB: WHCVB	98	8	1	1	1272	0.7459	0.0641	0.0225	3.227E-01	2.775E-02	9.751E-03	3.227E-01	2.775E-02	9.751E-03	-	-	-	8.2%	6.4%	7.9%	8.2%	6.4%	7.9%	-	-	-
							2	921	0.7846	0.0699	0.0248	2.457E-01	2.188E-02	7.753E-03	2.457E-01	2.188E-02	7.753E-03	-	-	-	6.2%	5.0%	6.3%	6.2%	5.0%	6.3%	-	-	-
							3	685	0.8273	0.0753	0.0269	1.927E-01	1.754E-02	6.275E-03	1.927E-01	1.754E-02	6.275E-03	-	-	-	4.9%	4.0%	5.1%	4.9%	4.0%	5.1%	-	-	-
							4	524	0.8690	0.0810	0.0288	1.549E-01	1.444E-02	5.139E-03	1.549E-01	1.444E-02	5.139E-03	-	-	-	3.9%	3.3%	4.2%	3.9%	3.3%	4.2%	-	-	-
							5	474	0.8657	0.0847	0.0290	1.396E-01	1.366E-02	4.675E-03	1.396E-01	1.366E-02	4.675E-03	-	-	-	3.5%	3.1%	3.8%	3.5%	3.1%	3.8%	-	-	-
							6	535	0.8526	0.0894	0.0284	1.552E-01	1.627E-02	5.173E-03	1.552E-01	1.627E-02	5.173E-03	-	-	-	3.9%	3.7%	4.2%	3.9%	3.7%	4.2%	-	-	-
							7	874	0.8411	0.0944	0.0280	2.499E-01	2.804E-02	8.333E-03	2.499E-01	2.804E-02	8.333E-03	-	-	-	6.3%	6.4%	6.8%	6.3%	6.4%	6.8%	-	-	-
							8	1720	0.8850	0.1049	0.0292	5.177E-01	6.133E-02	1.709E-02	5.177E-01	6.133E-02	1.709E-02	-	-	-	13.1%	14.1%	13.9%	13.1%	14.1%	13.9%	-	-	-
							9	2400	0.6867	0.0767	0.0234	5.603E-01	6.260E-02	1.910E-02	5.603E-01	6.260E-02	1.910E-02	-	-	-	14.2%	14.4%	15.6%	14.2%	14.4%	15.6%	-	-	-
							10	2294	0.6732	0.0721	0.0209	5.251E-01	5.622E-02	1.627E-02	5.251E-01	5.622E-02	1.627E-02	-	-	-	13.3%	12.9%	13.3%	13.3%	12.9%	13.3%	-	-	-
							11	2243	0.7245	0.0829	0.0214	5.526E-01	6.323E-02	1.636E-02	5.526E-01	6.323E-02	1.636E-02	-	-	-	14.0%	14.5%	13.3%	14.0%	14.5%	13.3%	-	-	-
							12	2357	0.7859	0.0944	0.0235	6.298E-01	7.569E-02	1.885E-02	6.298E-01	7.569E-02	1.885E-02	-	-	-	15.9%	17.4%	15.4%	15.9%	17.4%	15.4%	-	-	-
							13	2473	0.7604	0.0915	0.0227	6.395E-01	7.695E-02	1.910E-02	6.395E-01	7.695E-02	1.910E-02	-	-	-	16.2%	17.7%	15.6%	16.2%	17.7%	15.6%	-	-	-
							14	2607	0.8329	0.1054	0.0255	7.385E-01	9.348E-02	2.258E-02	7.385E-01	9.348E-02	2.258E-02	-	-	-	18.7%	21.5%	18.4%	18.7%	21.5%	18.4%	-	-	-
							15	3003	0.8448	0.1111	0.0253	8.627E-01	1.135E-01	2.586E-02	8.627E-01	1.135E-01	2.586E-02	-	-	-	21.8%	26.1%	21.1%	21.8%	26.1%	21.1%	-	-	-
							16	3244	0.8021	0.1052	0.0244	8.848E-01	1.160E-01	2.687E-02	8.848E-01	1.160E-01	2.687E-02	-	-	-	22.4%	26.7%	21.9%	22.4%	26.7%	21.9%	-	-	-
							17	3439	0.8183	0.1032	0.0255	9.568E-01	1.206E-01	2.985E-02	9.568E-01	1.206E-01	2.985E-02	-	-	-	24.2%	27.7%	24.3%	24.2%	27.7%	24.3%	-	-	-
							18	3731	0.7819	0.0928	0.0249	9.922E-01	1.178E-01	3.158E-02	9.922E-01	1.178E-01	3.158E-02	-	-	-	25.1%	27.1%	25.7%	25.1%	27.1%	25.7%	-	-	-
							19	4302	0.7338	0.0824	0.0243	1.074E+00	1.205E-01	3.554E-02	1.074E+00	1.205E-01	3.554E-02	-	-	-	27.2%	27.7%	29.0%	27.2%	27.7%	29.0%	-	-	-
							20	3416	0.6196	0.0583	0.0206	7.198E-01	6.770E-02	2.392E-02	7.198E-01	6.770E-02	2.392E-02	-	-	-	18.2%	15.6%	19.5%	18.2%	15.6%	19.5%	-	-	-
							21	2495	0.6805	0.0557	0.0200	5.774E-01	4.730E-02	1.696E-02	5.774E-01	4.730E-02	1.696E-02	-	-	-	14.6%	10.9%	13.8%	14.6%	10.9%	13.8%	-	-	-
							22	2347	0.6739	0.0540	0.0190	5.379E-01	4.312E-02	1.520E-02	5.379E-01	4.312E-02	1.520E-02	-	-	-	13.6%	9.9%	12.4%	13.6%	9.9%	12.4%	-	-	-
							23	2259	0.6721	0.0505	0.0185	5.164E-01	3.880E-02	1.418E-02	5.164E-01	3.880E-02	1.418E-02	-	-	-	13.1%	8.9%	11.6%	13.1%	8.9%	11.6%	-	-	-
							24	1806	0.7070	0.0578	0.0204	4.342E-01	3.552E-02	1.252E-02	4.342E-01	3.552E-02	1.252E-02	-	-	-	11.0%	8.2%	10.2%	11.0%	8.2%	10.2%	-	-	-
							Daily	**-**	**-**	**-**	**-**	**1.318E+01**	**1.450E+00**	**4.089E-01**	**1.318E+01**	**1.450E+00**	**4.089E-01**	**-**	**-**	**-**	**2.197E+00**	**2.417E-01**	**6.815E-02**	**1.098E+00**	**1.208E-01**	**3.408E-02**	**-**	**-**	**-**

Calculation of Portal Emission and Emissions of Underpass Top Openings, Ventilation Buildings and Ventilation Exhausts

Portal Emission (Volume Source)

Road ID	Source ID	X	Y	Daily Emission Factor (QS) (g/s) [1] NO	NO_2	RSP	HS	SY	SZ	total NO	total NO_2	total RSP
Underpass for Austin Road/Lin Cheung Road (Northbound)	D1	834915.8	818726.6	2.722E-02	3.023E-03	7.662E-04	2.85	3.26	2.65			
	D2	834915.5	818733.6	2.722E-02	3.023E-03	7.662E-04	2.85	3.26	2.65			
	D3	834915.3	818740.6	2.722E-02	3.023E-03	7.662E-04	2.85	3.26	2.65			
	D4	834915.0	818747.6	2.722E-02	3.023E-03	7.662E-04	2.85	3.26	2.65			
	D5	834914.8	818754.6	2.722E-02	3.023E-03	7.662E-04	2.85	3.26	2.65			
	D6	834914.5	818761.6	2.722E-02	3.023E-03	7.662E-04	2.85	3.26	2.65			
	D7	834914.3	818768.6	2.722E-02	3.023E-03	7.662E-04	2.85	3.26	2.65			
	D8	834914.0	818775.6	1.361E-02	1.511E-03	3.831E-04	2.85	3.26	2.65			
	D9	834913.7	818782.6	1.361E-02	1.511E-03	3.831E-04	2.85	3.26	2.65			
	D10	834913.5	818789.6	1.361E-02	1.511E-03	3.831E-04	2.85	3.26	2.65			
	D11	834913.2	818796.6	1.361E-02	1.511E-03	3.831E-04	2.85	3.26	2.65			
	D12	834913.0	818803.6	1.361E-02	1.511E-03	3.831E-04	2.85	3.26	2.65			
	D13	834912.7	818810.6	1.361E-02	1.511E-03	3.831E-04	2.85	3.26	2.65			
	D14	834912.5	818817.5	1.361E-02	1.511E-03	3.831E-04	2.85	3.26	2.65	2.858E-01	3.174E-02	8.045E-03
Underpass at Lin Cheung Road (Northbound)	L1	834915.8	818313.1	1.351E-02	1.470E-03	3.524E-04	2.85	3.26	2.65			
	L2	834915.8	818320.1	1.351E-02	1.470E-03	3.524E-04	2.85	3.26	2.65			
	L3	834915.8	818327.1	1.351E-02	1.470E-03	3.524E-04	2.85	3.26	2.65			
	L4	834915.8	818334.1	1.351E-02	1.470E-03	3.524E-04	2.85	3.26	2.65			
	L5	834915.8	818341.1	1.351E-02	1.470E-03	3.524E-04	2.85	3.26	2.65			
	L6	834915.8	818348.1	1.351E-02	1.470E-03	3.524E-04	2.85	3.26	2.65			
	L7	834915.8	818355.1	1.351E-02	1.470E-03	3.524E-04	2.85	3.26	2.65			
	L8	834915.8	818362.1	6.756E-03	7.352E-04	1.762E-04	2.85	3.26	2.65			
	L9	834915.8	818369.1	6.756E-03	7.352E-04	1.762E-04	2.85	3.26	2.65			
	L10	834915.8	818376.1	6.756E-03	7.352E-04	1.762E-04	2.85	3.26	2.65			
	L11	834915.8	818383.1	6.756E-03	7.352E-04	1.762E-04	2.85	3.26	2.65			
	L12	834915.8	818390.1	6.756E-03	7.352E-04	1.762E-04	2.85	3.26	2.65			
	L13	834915.8	818397.1	6.756E-03	7.352E-04	1.762E-04	2.85	3.26	2.65			
	L14	834915.8	818404.1	6.756E-03	7.352E-04	1.762E-04	2.85	3.26	2.65	1.419E-01	1.544E-02	3.700E-03
Landscape Deck at Lin Cheung Road (Southbound)	M1	834963.5	818538.4	1.708E-02	1.786E-03	3.658E-04	2.75	6.51	2.56			
	M2	834963.5	818524.4	1.708E-02	1.786E-03	3.658E-04	2.75	6.51	2.56			
	M3	834963.5	818510.4	1.708E-02	1.786E-03	3.658E-04	2.75	6.51	2.56			
	M4	834963.5	818496.4	1.708E-02	1.786E-03	3.658E-04	2.75	6.51	2.56			
	M5	834963.5	818482.4	8.542E-03	8.930E-04	1.829E-04	2.75	6.51	2.56			
	M6	834963.5	818468.4	8.542E-03	8.930E-04	1.829E-04	2.75	6.51	2.56			
	M7	834963.5	818454.4	8.542E-03	8.930E-04	1.829E-04	2.75	6.51	2.56			
	M8	834949.5	818440.4	8.542E-03	8.930E-04	1.829E-04	2.75	6.51	2.56	1.025E-01	1.072E-02	2.195E-03
Landscape Deck at Lin Cheung Road (Northbound)	N1	834913.6	818611.8	1.708E-02	1.786E-03	3.658E-04	2.75	6.51	2.56			
	N2	834913.6	818625.8	1.708E-02	1.786E-03	3.658E-04	2.75	6.51	2.56			
	N3	834913.6	818639.8	1.708E-02	1.786E-03	3.658E-04	2.75	6.51	2.56			
	N4	834913.7	818653.8	1.708E-02	1.786E-03	3.658E-04	2.75	6.51	2.56			
	N5	834913.7	818667.8	8.542E-03	8.930E-04	1.829E-04	2.75	6.51	2.56			
	N6	834913.7	818681.8	8.542E-03	8.930E-04	1.829E-04	2.75	6.51	2.56			
	N7	834913.7	818695.8	8.542E-03	8.930E-04	1.829E-04	2.75	6.51	2.56			
	N8	834913.8	818709.8	8.542E-03	8.930E-04	1.829E-04	2.75	6.51	2.56	1.025E-01	1.072E-02	2.195E-03
Austin Road West (Westbound)	P1	834846.8	818177.1	4.272E-02	4.374E-03	1.191E-03	2.85	5.12	2.65			
	P2	834836.8	818177.0	4.272E-02	4.374E-03	1.191E-03	2.85	5.12	2.65			
	P3	834826.8	818176.9	4.272E-02	4.374E-03	1.191E-03	2.85	5.12	2.65			
	P4	834816.8	818176.9	4.272E-02	4.374E-03	1.191E-03	2.85	5.12	2.65			
	P5	834806.8	818176.8	4.272E-02	4.374E-03	1.191E-03	2.85	5.12	2.65			
	P6	834796.8	818176.8	2.136E-02	2.187E-03	5.953E-04	2.85	5.12	2.65			
	P7	834786.8	818176.7	2.136E-02	2.187E-03	5.953E-04	2.85	5.12	2.65			
	P8	834776.8	818176.6	2.136E-02	2.187E-03	5.953E-04	2.85	5.12	2.65			
	P9	834766.8	818176.5	2.136E-02	2.187E-03	5.953E-04	2.85	5.12	2.65			
	P10	834756.8	818176.5	2.136E-02	2.187E-03	5.953E-04	2.85	5.12	2.65	3.204E-01	3.280E-02	8.929E-03
West Harbour Crossing (Scenario 1)	W1	834182.7	818038.7	6.590E-01	7.250E-02	2.045E-02	4.29	6.51	3.99			
	W2	834191.2	818049.7	6.590E-01	7.250E-02	2.045E-02	4.29	6.51	3.99			
	W3	834199.8	818060.8	6.590E-01	7.250E-02	2.045E-02	4.29	6.51	3.99			
	W4	834208.3	818071.9	6.590E-01	7.250E-02	2.045E-02	4.29	6.51	3.99			
	W5	834216.9	818083.0	3.295E-01	3.625E-02	1.022E-02	4.29	6.51	3.99			
	W6	834225.4	818094.1	3.295E-01	3.625E-02	1.022E-02	4.29	6.51	3.99			
	W7	834234.0	818105.2	3.295E-01	3.625E-02	1.022E-02	4.29	6.51	3.99			
	W8	834242.5	818116.2	3.295E-01	3.625E-02	1.022E-02	4.29	6.51	3.99	3.954E+00	4.350E-01	1.227E-01
West Harbour Crossing (Scenario 2)	W1	834182.7	818038.7	1.098E+00	1.208E-01	3.408E-02	4.29	6.51	3.99			
	W2	834191.2	818049.7	1.098E+00	1.208E-01	3.408E-02	4.29	6.51	3.99			
	W3	834199.8	818060.8	1.098E+00	1.208E-01	3.408E-02	4.29	6.51	3.99			
	W4	834208.3	818071.9	1.098E+00	1.208E-01	3.408E-02	4.29	6.51	3.99			
	W5	834216.9	818083.0	5.492E-01	6.042E-02	1.704E-02	4.29	6.51	3.99			
	W6	834225.4	818094.1	5.492E-01	6.042E-02	1.704E-02	4.29	6.51	3.99			
	W7	834234.0	818105.2	5.492E-01	6.042E-02	1.704E-02	4.29	6.51	3.99			
	W8	834242.5	818116.2	5.492E-01	6.042E-02	1.704E-02	4.29	6.51	3.99	6.590E+00	7.250E-01	2.045E-01
West Harbour Crossing (Scenario 3)	W1	834182.7	818038.7	2.197E+00	2.417E-01	6.815E-02	4.29	6.51	3.99			
	W2	834191.2	818049.7	2.197E+00	2.417E-01	6.815E-02	4.29	6.51	3.99			
	W3	834199.8	818060.8	2.197E+00	2.417E-01	6.815E-02	4.29	6.51	3.99			
	W4	834208.3	818071.9	2.197E+00	2.417E-01	6.815E-02	4.29	6.51	3.99			
	W5	834216.9	818083.0	1.098E+00	1.208E-01	3.408E-02	4.29	6.51	3.99			
	W6	834225.4	818094.1	1.098E+00	1.208E-01	3.408E-02	4.29	6.51	3.99			
	W7	834234.0	818105.2	1.098E+00	1.208E-01	3.408E-02	4.29	6.51	3.99			
	W8	834242.5	818116.2	1.098E+00	1.208E-01	3.408E-02	4.29	6.51	3.99	1.318E+01	1.450E+00	4.089E-01

Emission from Underpass Top Openings (Area Source)

	Source ID	X	Y	Daily Emission Factor (QS) ($g/m^2/s$) [1] NO	NO_2	RSP	Height (m)	Xinit (m)	Yinit (m)	Angle (deg)
Underpass for Austin Road/Lin Cheung Road (Northbound)	B	834907.5	818322.3	8.396E-04	9.322E-05	2.363E-05	0.00	4.00	80.00	0.00
Underpass for Austin Road/Lin Cheung Road (Northbound)	CE	834918.2	818513.4	4.708E-05	5.229E-06	1.282E-06	0.00	19.50	33.00	0.00
Underpass for Austin Road/Lin Cheung Road (Southbound)	F	834930.8	818309.3	1.218E-04	1.353E-05	3.222E-06	0.00	9.00	30.00	0.00

Emission from Underpass Top Openings (Areapoly Source)

	Source ID	X	Y	Daily Emission Factor (QS) ($g/m^2/s$) [1] NO	NO_2	RSP	Height (m)
Underpass at Austin Road (Westbound) + Underpass at Lin Cheung Road (Southbound) + Austin Road West (Eastbound)	JKO1	834933.8	818210.2	2.632E-05	2.695E-06	7.479E-07	0.00
		834919.6	818214.1				
		834906.8	818204.6				
		834903.7	818188.2				
		834909.6	818172.6				
		834914.2	818168.9				
		834920.0	818168.0				
		834937.1	818171.0				
		834947.9	818179.5				
		834948.9	818193.3				

Emission from Ventilation Buildings / Exhausts (Point Source)

	Source ID	X	Y	Daily Emission Factor (QS) (g/s) [1] NO	NO_2	RSP	Height (m)	TS	VS	DS
West Harbour Crossing Ventilation Building (Scenario 1)	WHCVB	834036.1	817852.9	9.226E+00	1.015E+00	2.862E-01	28.00	303.00	2.00	15.13
West Harbour Crossing Ventilation Building (Scenario 2)	WHCVB	834036.1	817852.9	6.590E+00	7.250E-01	2.045E-01	28.00	303.00	2.00	15.13
West Harbour Crossing Ventilation Building (Scenario 3)	WHCVB	834036.1	817852.9	0.000E+00	0.000E+00	0.000E+00	28.00	303.00	2.00	15.13
Ventilation Exhausts for Internal Road B (12.5%)	V25	834921.6	818147.8	7.567E-02	6.434E-03	1.620E-03	6.00	0.00	2.00	4.18
Ventilation Exhausts for Internal Road B (12.5%)	V26	834922.9	818076.3	7.567E-02	6.434E-03	1.620E-03	6.00	0.00	2.00	4.18
Ventilation Exhausts for Internal Road B (12.5%)	V27	834844.1	818112.8	7.567E-02	6.434E-03	1.620E-03	6.00	0.00	2.00	4.18
Ventilation Exhausts for Internal Road B (12.5%)	V28	834847.1	818069.6	7.567E-02	6.434E-03	1.620E-03	6.00	0.00	2.00	4.18
Ventilation Exhausts for Internal Road B (12.5%)	V29	834707.9	818125.0	7.567E-02	6.434E-03	1.620E-03	6.00	0.00	2.00	4.18
Ventilation Exhausts for Internal Road B (12.5%)	V30	834688.7	818065.9	7.567E-02	6.434E-03	1.620E-03	6.00	0.00	2.00	4.18
Ventilation Exhausts for Internal Road B (12.5%)	V31	834620.8	818120.4	7.567E-02	6.434E-03	1.620E-03	6.00	0.00	2.00	8.10
Ventilation Exhausts for Internal Road C (16.7%)	V32	834626.7	817951.5	8.206E-02	7.235E-03	1.872E-03	0.55	0.00	2.00	8.20
Ventilation Exhausts for Internal Road B (12.5%)	V33	834628.6	818012.0	7.567E-02	6.434E-03	1.620E-03	6.15	0.00	2.00	7.90
Ventilation Exhausts for Internal Road C (16.7%)	V34	834546.8	817989.5	8.206E-02	7.235E-03	1.872E-03	40.65	0.00	2.00	10.70
Ventilation Exhausts for Internal Road C (16.7%)	V35	834460.8	818093.3	8.206E-02	7.235E-03	1.872E-03	7.00	0.00	2.00	10.20
Ventilation Exhausts for Internal Road C (16.7%)	V36	834490.8	818016.6	8.206E-02	7.235E-03	1.872E-03	8.65	0.00	2.00	2.40
Ventilation Exhausts for Internal Road C (16.7%)	V37	834421.5	818102.8	8.206E-02	7.235E-03	1.872E-03	15.95	0.00	2.00	8.70
Ventilation Exhausts for Internal Road C (16.7%)	V38	834489.9	818031.5	8.206E-02	7.235E-03	1.872E-03	8.65	0.00	2.00	6.80

Note:
[1] The emission factors for portal and VB are calculated from the results of EMFAC-HK model and traffic data adopted in this study.

Calculation of Portal Emission and Emissions of Underpass Top Openings, Ventilation Buildings and Ventilation Exhausts

Hourly Profile for Portals

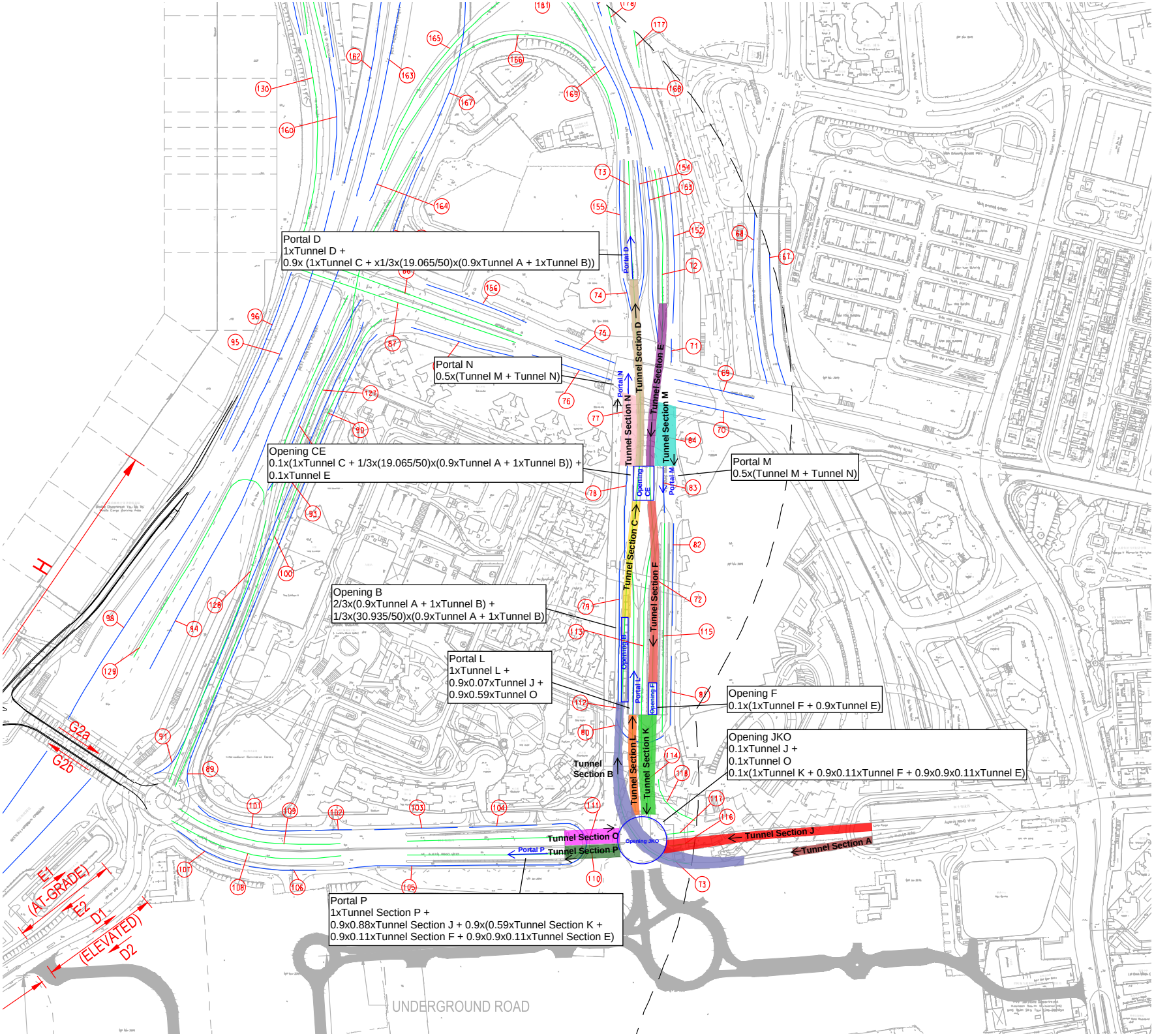
Hour	Portal D Underpass for Austin Road/Lin Cheung Road (NB)			Portal L Underpass at Lin Cheung Road (NB)			Portal M Landscape Deck at Lin Cheung Road (SB)			Portal N Landscape Deck at Lin Cheung Road (NB)			Portal P Austin Road West (WB)			Portal W West Harbour Crossing (for All Scenarios)		
	NO	NO_2	RSP	NO	NO_2	RSP	NO	NO_2	RSP	NO	NO_2	RSP	NO	NO_2	RSP	NO	NO_2	RSP
Hour 1	2.4%	1.8%	2.2%	2.4%	1.8%	2.1%	2.4%	1.8%	1.7%	2.4%	1.8%	1.7%	2.6%	1.9%	2.3%	2.4%	1.9%	2.4%
Hour 2	1.9%	1.5%	1.9%	1.9%	1.5%	1.7%	1.9%	1.5%	1.4%	1.9%	1.5%	1.4%	2.0%	1.6%	1.9%	1.9%	1.5%	1.9%
Hour 3	1.5%	1.3%	1.6%	1.6%	1.3%	1.5%	1.5%	1.3%	1.2%	1.5%	1.3%	1.2%	1.7%	1.4%	1.6%	1.5%	1.2%	1.5%
Hour 4	1.3%	1.1%	1.3%	1.3%	1.1%	1.3%	1.2%	1.1%	1.0%	1.2%	1.1%	1.0%	1.4%	1.2%	1.4%	1.2%	1.0%	1.3%
Hour 5	1.2%	1.1%	1.3%	1.3%	1.2%	1.3%	1.2%	1.2%	1.1%	1.2%	1.2%	1.1%	1.3%	1.2%	1.4%	1.1%	0.9%	1.1%
Hour 6	1.4%	1.4%	1.5%	1.5%	1.5%	1.6%	1.5%	1.6%	1.5%	1.5%	1.6%	1.5%	1.6%	1.6%	1.7%	1.2%	1.1%	1.3%
Hour 7	2.4%	2.5%	2.7%	2.7%	2.9%	2.9%	2.8%	3.3%	3.1%	2.8%	3.3%	3.1%	2.8%	3.0%	3.0%	1.9%	1.9%	2.0%
Hour 8	4.9%	5.5%	5.7%	5.8%	7.0%	6.6%	6.4%	8.0%	7.6%	6.4%	8.0%	7.6%	6.0%	7.1%	6.6%	3.9%	4.2%	4.2%
Hour 9	5.6%	6.0%	6.6%	6.8%	7.9%	8.0%	7.6%	9.3%	9.8%	7.6%	9.3%	9.8%	7.0%	7.9%	8.0%	4.3%	4.3%	4.7%
Hour 10	5.0%	5.1%	5.3%	5.7%	5.9%	5.8%	5.9%	5.8%	6.0%	5.9%	5.8%	6.0%	5.7%	5.7%	5.7%	4.0%	3.9%	4.0%
Hour 11	5.0%	5.3%	5.0%	5.4%	5.7%	5.2%	5.5%	5.4%	5.2%	5.5%	5.4%	5.2%	5.3%	5.4%	5.0%	4.2%	4.4%	4.0%
Hour 12	5.3%	5.8%	5.3%	5.6%	6.1%	5.5%	5.7%	6.1%	5.8%	5.7%	6.1%	5.8%	5.5%	5.9%	5.3%	4.8%	5.2%	4.6%
Hour 13	5.1%	5.5%	5.0%	5.2%	5.5%	5.1%	5.3%	5.4%	5.3%	5.3%	5.4%	5.3%	5.1%	5.4%	4.9%	4.9%	5.3%	4.7%
Hour 14	5.6%	6.3%	5.6%	5.3%	5.9%	5.4%	5.1%	5.4%	5.2%	5.1%	5.4%	5.2%	5.2%	5.7%	5.1%	5.6%	6.4%	5.5%
Hour 15	6.2%	7.2%	6.1%	5.8%	6.5%	5.8%	5.5%	6.0%	5.7%	5.5%	6.0%	5.7%	5.6%	6.4%	5.5%	6.5%	7.8%	6.3%
Hour 16	6.2%	7.2%	6.2%	5.6%	6.3%	5.7%	5.3%	5.9%	5.7%	5.3%	5.9%	5.7%	5.4%	6.2%	5.4%	6.7%	8.0%	6.6%
Hour 17	6.4%	7.3%	6.5%	5.7%	6.3%	6.0%	5.4%	6.0%	5.9%	5.4%	6.0%	5.9%	5.5%	6.2%	5.7%	7.3%	8.3%	7.3%
Hour 18	6.4%	6.9%	6.5%	5.6%	6.0%	6.0%	5.2%	5.6%	5.7%	5.2%	5.6%	5.7%	5.5%	5.9%	5.8%	7.5%	8.1%	7.7%
Hour 19	6.8%	7.1%	7.2%	6.1%	6.3%	6.8%	5.9%	6.4%	7.1%	5.9%	6.4%	7.1%	6.0%	6.3%	6.6%	8.1%	8.3%	8.7%
Hour 20	4.6%	4.0%	4.7%	4.3%	3.7%	4.6%	4.1%	3.7%	4.5%	4.1%	3.7%	4.5%	4.3%	3.8%	4.7%	5.5%	4.7%	5.9%
Hour 21	3.9%	2.8%	3.3%	3.7%	2.6%	3.1%	3.7%	2.5%	2.7%	3.7%	2.5%	2.7%	3.7%	2.7%	3.3%	4.4%	3.3%	4.1%
Hour 22	3.9%	2.6%	3.1%	3.7%	2.5%	2.9%	3.8%	2.5%	2.6%	3.8%	2.5%	2.6%	3.8%	2.6%	3.1%	4.1%	3.0%	3.7%
Hour 23	3.7%	2.3%	2.8%	3.7%	2.2%	2.7%	3.8%	2.2%	2.2%	3.8%	2.2%	2.2%	3.7%	2.4%	2.9%	3.9%	2.7%	3.5%
Hour 24	3.2%	2.3%	2.7%	3.2%	2.2%	2.5%	3.2%	2.2%	2.1%	3.2%	2.2%	2.1%	3.3%	2.3%	2.8%	3.3%	2.4%	3.1%

Hourly Profile for Underpass Top Openings

Hour	Underpass Top Opening B Underpass for Austin Road/Lin Cheung Road (NB)			Underpass Top Opening CE Underpass for Austin Road/Lin Cheung Road (NB)			Underpass Top Opening F Underpass for Austin Road/Lin Cheung Road (SB)			Underpass Top Opening JKO1 Underpass at Austin Road (WB) + Underpass at Lin Cheung Road		
	NO	NO_2	RSP	NO	NO_2	RSP	NO	NO_2	RSP	NO	NO_2	RSP
Hour 1	2.4%	1.8%	2.2%	2.4%	1.8%	2.1%	2.4%	1.8%	2.1%	2.6%	1.9%	2.3%
Hour 2	1.9%	1.5%	1.9%	1.9%	1.5%	1.8%	1.9%	1.5%	1.7%	2.1%	1.6%	2.0%
Hour 3	1.5%	1.3%	1.6%	1.5%	1.3%	1.5%	1.5%	1.2%	1.4%	1.7%	1.4%	1.7%
Hour 4	1.3%	1.1%	1.3%	1.3%	1.1%	1.3%	1.3%	1.1%	1.2%	1.4%	1.2%	1.4%
Hour 5	1.2%	1.1%	1.3%	1.2%	1.1%	1.3%	1.2%	1.1%	1.2%	1.4%	1.2%	1.4%
Hour 6	1.4%	1.4%	1.5%	1.4%	1.4%	1.5%	1.5%	1.5%	1.5%	1.6%	1.6%	1.7%
Hour 7	2.4%	2.5%	2.7%	2.5%	2.7%	2.7%	2.6%	2.9%	2.8%	2.8%	3.0%	3.0%
Hour 8	4.9%	5.5%	5.7%	5.4%	6.3%	6.0%	5.8%	7.0%	6.4%	5.9%	7.0%	6.5%
Hour 9	5.6%	6.0%	6.6%	6.2%	7.0%	7.2%	6.7%	7.8%	7.7%	6.9%	7.9%	7.9%
Hour 10	5.0%	5.1%	5.3%	5.4%	5.7%	5.6%	5.7%	6.1%	5.8%	5.7%	5.8%	5.8%
Hour 11	5.0%	5.3%	5.0%	5.3%	5.7%	5.2%	5.5%	6.0%	5.3%	5.3%	5.5%	5.0%
Hour 12	5.3%	5.8%	5.3%	5.5%	6.0%	5.4%	5.7%	6.3%	5.6%	5.5%	5.9%	5.3%
Hour 13	5.1%	5.5%	5.0%	5.2%	5.6%	5.1%	5.3%	5.7%	5.2%	5.1%	5.4%	4.9%
Hour 14	5.6%	6.3%	5.6%	5.5%	6.1%	5.5%	5.4%	6.0%	5.4%	5.2%	5.7%	5.1%
Hour 15	6.2%	7.2%	6.1%	6.0%	6.9%	6.0%	5.9%	6.7%	5.9%	5.6%	6.4%	5.5%
Hour 16	6.2%	7.2%	6.2%	5.9%	6.8%	6.0%	5.7%	6.4%	5.9%	5.4%	6.2%	5.4%
Hour 17	6.4%	7.3%	6.5%	6.1%	6.8%	6.3%	5.8%	6.3%	6.1%	5.5%	6.2%	5.7%
Hour 18	6.4%	6.9%	6.5%	6.0%	6.4%	6.3%	5.7%	5.9%	6.1%	5.5%	5.9%	5.8%
Hour 19	6.8%	7.1%	7.2%	6.4%	6.6%	7.0%	6.1%	6.1%	6.8%	6.0%	6.2%	6.6%
Hour 20	4.6%	4.0%	4.7%	4.5%	3.8%	4.7%	4.3%	3.6%	4.7%	4.4%	3.8%	4.7%
Hour 21	3.9%	2.8%	3.3%	3.8%	2.6%	3.2%	3.7%	2.5%	3.1%	3.8%	2.7%	3.3%
Hour 22	3.9%	2.6%	3.1%	3.8%	2.5%	3.0%	3.7%	2.4%	2.9%	3.8%	2.6%	3.1%
Hour 23	3.7%	2.3%	2.8%	3.7%	2.2%	2.8%	3.6%	2.2%	2.7%	3.8%	2.4%	3.0%
Hour 24	3.2%	2.3%	2.7%	3.2%	2.2%	2.6%	3.1%	2.1%	2.5%	3.3%	2.3%	2.8%

Hourly Profile for Ventilation Building and Ventilation Exhausts

Hour	Ventilation Building WHCVB West Harbour Crossing (for All Scenarios)			Ventilation Exhausts V25-V31, V33 Internal Road B			Ventilation Exhausts V32, V34-V38 Internal Road C		
	NO	NO_2	RSP	NO	NO_2	RSP	NO	NO_2	RSP
Hour 1	2.4%	1.9%	2.4%	2.7%	2.0%	1.8%	2.7%	2.1%	2.1%
Hour 2	1.9%	1.5%	1.9%	2.0%	1.6%	1.4%	1.9%	1.7%	1.5%
Hour 3	1.5%	1.2%	1.5%	1.5%	1.3%	1.1%	1.4%	1.3%	1.1%
Hour 4	1.2%	1.0%	1.3%	1.2%	1.1%	0.9%	1.1%	1.1%	0.9%
Hour 5	1.1%	0.9%	1.1%	1.1%	1.2%	0.9%	1.0%	1.1%	0.8%
Hour 6	1.2%	1.1%	1.3%	1.3%	1.5%	1.2%	1.2%	1.4%	1.0%
Hour 7	1.9%	1.9%	2.0%	2.3%	3.1%	2.4%	2.1%	2.7%	2.0%
Hour 8	3.9%	4.2%	4.2%	5.3%	7.8%	6.0%	4.5%	6.3%	4.4%
Hour 9	4.3%	4.3%	4.7%	6.2%	9.0%	8.3%	5.0%	6.7%	5.7%
Hour 10	4.0%	3.9%	4.0%	4.7%	4.5%	4.9%	3.7%	3.6%	3.8%
Hour 11	4.2%	4.4%	4.0%	4.4%	3.8%	3.9%	3.7%	3.3%	3.4%
Hour 12	4.8%	5.2%	4.6%	4.9%	5.1%	4.8%	4.4%	4.7%	4.2%
Hour 13	4.9%	5.3%	4.7%	4.8%	4.6%	4.5%	4.5%	4.4%	4.2%
Hour 14	5.6%	6.4%	5.5%	4.5%	4.2%	4.3%	4.4%	4.3%	4.3%
Hour 15	6.5%	7.8%	6.3%	4.9%	4.7%	4.8%	5.1%	5.0%	4.9%
Hour 16	6.7%	8.0%	6.6%	5.0%	5.0%	5.4%	5.3%	5.3%	5.7%
Hour 17	7.3%	8.3%	7.3%	5.5%	5.9%	6.2%	6.2%	6.6%	6.9%
Hour 18	7.5%	8.1%	7.7%	5.8%	6.1%	6.9%	6.8%	7.1%	8.0%
Hour 19	8.1%	8.3%	8.7%	7.7%	9.7%	10.4%	9.6%	11.4%	12.1%
Hour 20	5.5%	4.7%	5.9%	5.5%	5.6%	7.0%	6.5%	6.5%	7.9%
Hour 21	4.4%	3.3%	4.1%	4.8%	3.5%	3.8%	5.2%	4.0%	4.6%
Hour 22	4.1%	3.0%	3.7%	5.0%	3.4%	3.5%	5.1%	3.8%	4.0%
Hour 23	3.9%	2.7%	3.5%	4.8%	2.9%	3.0%	4.7%	3.0%	3.5%
Hour 24	3.3%	2.4%	3.1%	3.9%	2.6%	2.5%	3.8%	2.7%	2.9%


Portal D
1xTunnel D +
0.9x (1xTunnel C + x1/3x(19.065/50)x(0.9xTunnel A + 1xTunnel B))
Portal N
0.5x(Tunnel M + Tunnel N)
Opening CE
0.1x(1xTunnel C + 1/3x(19.065/50)x(0.9xTunnel A + 1xTunnel B)) +
0.1xTunnel E
Portal M
0.5x(Tunnel M + Tunnel N)
Opening B
2/3x(0.9xTunnel A + 1xTunnel B) +
1/3x(30.935/50)x(0.9xTunnel A + 1xTunnel B)
Portal L
1xTunnel L +
0.9x0.07xTunnel J +
0.9x0.59xTunnel O
Opening F
0.1x(1xTunnel F + 0.9xTunnel E)
Opening JKO
0.1xTunnel J +
0.1xTunnel O
0.1x(1xTunnel K + 0.9x0.11xTunnel F + 0.9x0.9x0.11xTunnel E)
Portal P
1xTunnel Section P +
0.9x0.88xTunnel Section J + 0.9x(0.59xTunnel Section K +
0.9x0.11xTunnel Section F + 0.9x0.9x0.11xTunnel Section E)
Tunnel Section D
Tunnel Section E
Tunnel Section N
Tunnel Section M
Tunnel Section C
Tunnel Section F
Tunnel Section B
Tunnel Section L
Tunnel Section K
Tunnel Section O
Tunnel Section P
Tunnel Section J
Tunnel Section A
Portal D
Portal N
Portal M
Portal L
Portal P
Opening CE
Opening B
Opening F
Opening JKO
H
G2a
G2b
E1
(AT-GRADE)
E2
D1
(ELEVATED)
D2
UNDERGROUND ROAD