

Calculation of Emissions from Tunnel Portals and Ventilation Building

HKP to Airport Tunnel
TSP Emission Rate

Hour	Source	Tunnel Length ^[1]	Tunnel Length	Traffic Flow ^[2]	Composite Emission Factor ^[3]	Total Emission	Total Emission	Emission Split ^[4]		Portal Emission ^[5]	
		(m)	(km)	(veh/hr)				(g/s)	(g/s)	first 50m	second 50m
Hr01	HKP to Airport Tunnel	600	0.600	76	0.091	4	0.0012	-	0.0012	0.0008	0.0004
Hr02	HKP to Airport Tunnel	600	0.600	44	0.091	2	0.0007	-	0.0007	0.0004	0.0002
Hr03	HKP to Airport Tunnel	600	0.600	29	0.091	2	0.0004	-	0.0004	0.0003	0.0001
Hr04	HKP to Airport Tunnel	600	0.600	24	0.091	1	0.0004	-	0.0004	0.0002	0.0001
Hr05	HKP to Airport Tunnel	600	0.600	32	0.091	2	0.0005	-	0.0005	0.0003	0.0002
Hr06	HKP to Airport Tunnel	600	0.600	56	0.091	3	0.0008	-	0.0008	0.0006	0.0003
Hr07	HKP to Airport Tunnel	600	0.600	100	0.091	5	0.0015	-	0.0015	0.0010	0.0005
Hr08	HKP to Airport Tunnel	600	0.600	176	0.091	10	0.0027	-	0.0027	0.0018	0.0009
Hr09	HKP to Airport Tunnel	600	0.600	187	0.093	10	0.0029	-	0.0029	0.0019	0.0010
Hr10	HKP to Airport Tunnel	600	0.600	162	0.091	9	0.0025	-	0.0025	0.0016	0.0008
Hr11	HKP to Airport Tunnel	600	0.600	144	0.091	8	0.0022	-	0.0022	0.0015	0.0007
Hr12	HKP to Airport Tunnel	600	0.600	150	0.091	8	0.0023	-	0.0023	0.0015	0.0008
Hr13	HKP to Airport Tunnel	600	0.600	170	0.091	9	0.0026	-	0.0026	0.0017	0.0009
Hr14	HKP to Airport Tunnel	600	0.600	167	0.091	9	0.0025	-	0.0025	0.0017	0.0008
Hr15	HKP to Airport Tunnel	600	0.600	167	0.091	9	0.0025	-	0.0025	0.0017	0.0008
Hr16	HKP to Airport Tunnel	600	0.600	147	0.091	8	0.0022	-	0.0022	0.0015	0.0007
Hr17	HKP to Airport Tunnel	600	0.600	156	0.091	9	0.0024	-	0.0024	0.0016	0.0008
Hr18	HKP to Airport Tunnel	600	0.600	180	0.090	10	0.0027	-	0.0027	0.0018	0.0009
Hr19	HKP to Airport Tunnel	600	0.600	159	0.091	9	0.0024	-	0.0024	0.0016	0.0008
Hr20	HKP to Airport Tunnel	600	0.600	138	0.091	8	0.0021	-	0.0021	0.0014	0.0007
Hr21	HKP to Airport Tunnel	600	0.600	123	0.091	7	0.0019	-	0.0019	0.0013	0.0006
Hr22	HKP to Airport Tunnel	600	0.600	120	0.091	7	0.0018	-	0.0018	0.0012	0.0006
Hr23	HKP to Airport Tunnel	600	0.600	117	0.091	6	0.0018	-	0.0018	0.0012	0.0006
Hr24	HKP to Airport Tunnel	600	0.600	109	0.091	6	0.0017	-	0.0017	0.0011	0.0006

RSP Emission Rate

Hour	Source	Tunnel Length ^[1]	Tunnel Length	Traffic Flow ^[2]	Composite Emission Factor ^[3]	Total Emission	Total Emission	Emission Split ^[4]		Portal Emission ^[5]	
		(m)	(km)	(veh/hr)				(g/s)	(g/s)	first 50m	second 50m
Hr01	HKP to Airport Tunnel	600	0.600	76	0.091	4	0.0012	-	0.0012	0.0008	0.0004
Hr02	HKP to Airport Tunnel	600	0.600	44	0.091	2	0.0007	-	0.0007	0.0004	0.0002
Hr03	HKP to Airport Tunnel	600	0.600	29	0.091	2	0.0004	-	0.0004	0.0003	0.0001
Hr04	HKP to Airport Tunnel	600	0.600	24	0.091	1	0.0004	-	0.0004	0.0002	0.0001
Hr05	HKP to Airport Tunnel	600	0.600	32	0.091	2	0.0005	-	0.0005	0.0003	0.0002
Hr06	HKP to Airport Tunnel	600	0.600	56	0.091	3	0.0008	-	0.0008	0.0006	0.0003
Hr07	HKP to Airport Tunnel	600	0.600	100	0.091	5	0.0015	-	0.0015	0.0010	0.0005
Hr08	HKP to Airport Tunnel	600	0.600	176	0.091	10	0.0027	-	0.0027	0.0018	0.0009
Hr09	HKP to Airport Tunnel	600	0.600	187	0.093	10	0.0029	-	0.0029	0.0019	0.0010
Hr10	HKP to Airport Tunnel	600	0.600	162	0.091	9	0.0025	-	0.0025	0.0016	0.0008
Hr11	HKP to Airport Tunnel	600	0.600	144	0.091	8	0.0022	-	0.0022	0.0015	0.0007
Hr12	HKP to Airport Tunnel	600	0.600	150	0.091	8	0.0023	-	0.0023	0.0015	0.0008
Hr13	HKP to Airport Tunnel	600	0.600	170	0.091	9	0.0026	-	0.0026	0.0017	0.0009
Hr14	HKP to Airport Tunnel	600	0.600	167	0.091	9	0.0025	-	0.0025	0.0017	0.0008
Hr15	HKP to Airport Tunnel	600	0.600	167	0.091	9	0.0025	-	0.0025	0.0017	0.0008
Hr16	HKP to Airport Tunnel	600	0.600	147	0.091	8	0.0022	-	0.0022	0.0015	0.0007
Hr17	HKP to Airport Tunnel	600	0.600	156	0.091	9	0.0024	-	0.0024	0.0016	0.0008
Hr18	HKP to Airport Tunnel	600	0.600	180	0.090	10	0.0027	-	0.0027	0.0018	0.0009
Hr19	HKP to Airport Tunnel	600	0.600	159	0.091	9	0.0024	-	0.0024	0.0016	0.0008
Hr20	HKP to Airport Tunnel	600	0.600	138	0.091	8	0.0021	-	0.0021	0.0014	0.0007
Hr21	HKP to Airport Tunnel	600	0.600	123	0.091	7	0.0019	-	0.0019	0.0013	0.0006
Hr22	HKP to Airport Tunnel	600	0.600	120	0.091	7	0.0018	-	0.0018	0.0012	0.0006
Hr23	HKP to Airport Tunnel	600	0.600	117	0.091	6	0.0018	-	0.0018	0.0012	0.0006
Hr24	HKP to Airport Tunnel	600	0.600	109	0.091	6	0.0017	-	0.0017	0.0011	0.0006

FSP Emission Rate

Hour	Source	Tunnel Length ^[1]	Tunnel Length	Traffic Flow ^[2]	Composite Emission Factor ^[3]	Total Emission	Total Emission	Emission Split ^[4]		Portal Emission ^[5]	
		(m)	(km)	(veh/hr)				(g/s)	(g/s)	first 50m	second 50m
Hr01	HKP to Airport Tunnel	600	0.600	76	0.084	4	0.0011	-	0.0011	0.0007	0.0004
Hr02	HKP to Airport Tunnel	600	0.600	44	0.084	2	0.0006	-	0.0006	0.0004	0.0002
Hr03	HKP to Airport Tunnel	600	0.600	29	0.084	1	0.0004	-	0.0004	0.0003	0.0001
Hr04	HKP to Airport Tunnel	600	0.600	24	0.084	1	0.0003	-	0.0003	0.0002	0.0001
Hr05	HKP to Airport Tunnel	600	0.600	32	0.084	2	0.0005	-	0.0005	0.0003	0.0002
Hr06	HKP to Airport Tunnel	600	0.600	56	0.084	3	0.0008	-	0.0008	0.0005	0.0003
Hr07	HKP to Airport Tunnel	600	0.600	100	0.084	5	0.0014	-	0.0014	0.0009	0.0005
Hr08	HKP to Airport Tunnel	600	0.600	176	0.084	9	0.0025	-	0.0025	0.0016	0.0008
Hr09	HKP to Airport Tunnel	600	0.600	187	0.086	10	0.0027	-	0.0027	0.0018	0.0009
Hr10	HKP to Airport Tunnel	600	0.600	162	0.084	8	0.0023	-	0.0023	0.0015	0.0008
Hr11	HKP to Airport Tunnel	600	0.600	144	0.084	7	0.0020	-	0.0020	0.0013	0.0007
Hr12	HKP to Airport Tunnel	600	0.600	150	0.084	8	0.0021	-	0.0021	0.0014	0.0007
Hr13	HKP to Airport Tunnel	600	0.600	170	0.084	9	0.0024	-	0.0024	0.0016	0.0008
Hr14	HKP to Airport Tunnel	600	0.600	167	0.084	8	0.0023	-	0.0023	0.0016	0.0008
Hr15	HKP to Airport Tunnel	600	0.600	167	0.084	8	0.0023	-	0.0023	0.0016	0.0008
Hr16	HKP to Airport Tunnel	600	0.600	147	0.084	7	0.0021	-	0.0021	0.0014	0.0007
Hr17	HKP to Airport Tunnel	600	0.600	156	0.084	8	0.0022	-	0.0022	0.0015	0.0007
Hr18	HKP to Airport Tunnel	600	0.600	180	0.082	9	0.0025	-	0.0025	0.0016	0.0008
Hr19	HKP to Airport Tunnel	600	0.600	159	0.084	8	0.0022	-	0.0022	0.0015	0.0007
Hr20	HKP to Airport Tunnel	600	0.600	138	0.084	7	0.0019	-	0.0019	0.0013	0.0006
Hr21	HKP to Airport Tunnel	600	0.600	123	0.084	6	0.0017	-	0.0017	0.0012	0.0006
Hr22	HKP to Airport Tunnel	600	0.600	120	0.084	6	0.0017	-	0.0017	0.0011	0.0006
Hr23	HKP to Airport Tunnel	600	0.600	117	0.084	6	0.0016	-	0.0016	0.0011	0.0005
Hr24	HKP to Airport Tunnel	600	0.600	109	0.084	5	0.0015	-	0.0015	0.0010	0.0005

Remarks:

[1] Tunnel Length are made reference to TD's website https://www.td.gov.hk/en/transport_in_hong_kong/tunnels_and_bridges_n/location_map/index.html.

[2] Traffic Forecast of Road Link ID 125 (HKP to Airport Tunnel) for Year 2028 during construction phase provided by the Project Traffic Consultant was adopted.

[3] Composite Emission Factor are calculated based on the 24-hour traffic data of 18 vehicle classes provided by the Project Traffic Consultant and the vehicular emission factors from EMFAC-HK v4.3, refer to Appendix 3.5 for Link ID 125.

[4] According to the approved EIA Report (AEIAR-144/2009) for HZMB Hong Kong Link Road, 100% total emission are discharged from the tunnel portal.

[5] The total emissions are allocated into 10 volume sources with 2/3 of the total emission strength for first 5 sources (i.e. first 50m) and 1/3 of total emission strength for the remaining 5 sources (i.e. second 50m).

Calculation of Emissions from Tunnel Portals and Ventilation Building

Scenic Hill Tunnel
TSP Emission Rate

Hour	Source	Tunnel Length ^[1] (m)	Tunnel Length (km)	Traffic Flow ^[2] (veh/hr)	Composite Emission Factor ^[3] (g/km-veh)	Total Emission (g/hr)	Total Emission (g/s)	Emission Split ^[4]		Portal Emission ^[5]	
								to VB (g/s)	to Portal (g/s)	first 50m (g/s)	second 50m (g/s)
Hr01	Scenic Hill Tunnel (Northbound)	1110	1.110	240	0.033	9	0.0025	0.0042	0.0007	0.0005	0.0002
Hr01	Scenic Hill Tunnel (Southbound)	1110	1.110	393	0.029	13	0.0035		0.0011	0.0007	0.0004
Hr02	Scenic Hill Tunnel (Northbound)	1110	1.110	150	0.033	6	0.0015	0.0026	0.0005	0.0003	0.0002
Hr02	Scenic Hill Tunnel (Southbound)	1110	1.110	245	0.029	8	0.0022		0.0007	0.0004	0.0002
Hr03	Scenic Hill Tunnel (Northbound)	1110	1.110	105	0.033	4	0.0011	0.0018	0.0003	0.0002	0.0001
Hr03	Scenic Hill Tunnel (Southbound)	1110	1.110	172	0.029	6	0.0016		0.0005	0.0003	0.0002
Hr04	Scenic Hill Tunnel (Northbound)	1110	1.110	90	0.033	3	0.0009	0.0016	0.0003	0.0002	0.0001
Hr04	Scenic Hill Tunnel (Southbound)	1110	1.110	147	0.029	5	0.0013		0.0004	0.0003	0.0001
Hr05	Scenic Hill Tunnel (Northbound)	1110	1.110	150	0.033	6	0.0015	0.0026	0.0005	0.0003	0.0002
Hr05	Scenic Hill Tunnel (Southbound)	1110	1.110	245	0.029	8	0.0022		0.0007	0.0004	0.0002
Hr06	Scenic Hill Tunnel (Northbound)	1110	1.110	345	0.033	13	0.0035	0.0061	0.0011	0.0007	0.0004
Hr06	Scenic Hill Tunnel (Southbound)	1110	1.110	565	0.029	18	0.0051		0.0015	0.0010	0.0005
Hr07	Scenic Hill Tunnel (Northbound)	1110	1.110	661	0.033	24	0.0068	0.0116	0.0020	0.0014	0.0007
Hr07	Scenic Hill Tunnel (Southbound)	1110	1.110	1080	0.029	35	0.0098		0.0029	0.0020	0.0010
Hr08	Scenic Hill Tunnel (Northbound)	1110	1.110	811	0.033	30	0.0083	0.0142	0.0025	0.0017	0.0008
Hr08	Scenic Hill Tunnel (Southbound)	1110	1.110	1326	0.029	43	0.0120		0.0036	0.0024	0.0012
Hr09	Scenic Hill Tunnel (Northbound)	1110	1.110	757	0.033	28	0.0078	0.0133	0.0023	0.0016	0.0008
Hr09	Scenic Hill Tunnel (Southbound)	1110	1.110	1237	0.029	40	0.0112		0.0034	0.0022	0.0011
Hr10	Scenic Hill Tunnel (Northbound)	1110	1.110	781	0.033	29	0.0080	0.0137	0.0024	0.0016	0.0008
Hr10	Scenic Hill Tunnel (Southbound)	1110	1.110	1277	0.029	42	0.0115		0.0035	0.0023	0.0012
Hr11	Scenic Hill Tunnel (Northbound)	1110	1.110	796	0.033	29	0.0082	0.0140	0.0025	0.0016	0.0008
Hr11	Scenic Hill Tunnel (Southbound)	1110	1.110	1301	0.029	42	0.0118		0.0035	0.0024	0.0012
Hr12	Scenic Hill Tunnel (Northbound)	1110	1.110	826	0.033	31	0.0085	0.0145	0.0025	0.0017	0.0008
Hr12	Scenic Hill Tunnel (Southbound)	1110	1.110	1350	0.029	44	0.0122		0.0037	0.0024	0.0012
Hr13	Scenic Hill Tunnel (Northbound)	1110	1.110	886	0.033	33	0.0091	0.0155	0.0027	0.0018	0.0009
Hr13	Scenic Hill Tunnel (Southbound)	1110	1.110	1448	0.029	47	0.0131		0.0039	0.0026	0.0013
Hr14	Scenic Hill Tunnel (Northbound)	1110	1.110	871	0.033	32	0.0089	0.0153	0.0027	0.0018	0.0009
Hr14	Scenic Hill Tunnel (Southbound)	1110	1.110	1424	0.029	46	0.0129		0.0039	0.0026	0.0013
Hr15	Scenic Hill Tunnel (Northbound)	1110	1.110	856	0.033	32	0.0088	0.0150	0.0026	0.0018	0.0009
Hr15	Scenic Hill Tunnel (Southbound)	1110	1.110	1399	0.029	46	0.0126		0.0038	0.0025	0.0013
Hr16	Scenic Hill Tunnel (Northbound)	1110	1.110	856	0.033	32	0.0088	0.0150	0.0026	0.0018	0.0009
Hr16	Scenic Hill Tunnel (Southbound)	1110	1.110	1399	0.029	46	0.0126		0.0038	0.0025	0.0013
Hr17	Scenic Hill Tunnel (Northbound)	1110	1.110	886	0.033	33	0.0091	0.0155	0.0027	0.0018	0.0009
Hr17	Scenic Hill Tunnel (Southbound)	1110	1.110	1448	0.029	47	0.0131		0.0039	0.0026	0.0013
Hr18	Scenic Hill Tunnel (Northbound)	1110	1.110	849	0.033	31	0.0087	0.0149	0.0026	0.0017	0.0009
Hr18	Scenic Hill Tunnel (Southbound)	1110	1.110	1388	0.029	45	0.0125		0.0038	0.0025	0.0013
Hr19	Scenic Hill Tunnel (Northbound)	1110	1.110	826	0.033	31	0.0085	0.0145	0.0025	0.0017	0.0008
Hr19	Scenic Hill Tunnel (Southbound)	1110	1.110	1350	0.029	44	0.0122		0.0037	0.0024	0.0012
Hr20	Scenic Hill Tunnel (Northbound)	1110	1.110	706	0.033	26	0.0072	0.0124	0.0022	0.0014	0.0007
Hr20	Scenic Hill Tunnel (Southbound)	1110	1.110	1154	0.029	38	0.0104		0.0031	0.0021	0.0010
Hr21	Scenic Hill Tunnel (Northbound)	1110	1.110	751	0.033	28	0.0077	0.0132	0.0023	0.0015	0.0008
Hr21	Scenic Hill Tunnel (Southbound)	1110	1.110	1227	0.029	40	0.0111		0.0033	0.0022	0.0011
Hr22	Scenic Hill Tunnel (Northbound)	1110	1.110	751	0.033	28	0.0077	0.0132	0.0023	0.0015	0.0008
Hr22	Scenic Hill Tunnel (Southbound)	1110	1.110	1227	0.029	40	0.0111		0.0033	0.0022	0.0011
Hr23	Scenic Hill Tunnel (Northbound)	1110	1.110	661	0.033	24	0.0068	0.0116	0.0020	0.0014	0.0007
Hr23	Scenic Hill Tunnel (Southbound)	1110	1.110	1080	0.029	35	0.0098		0.0029	0.0020	0.0010
Hr24	Scenic Hill Tunnel (Northbound)	1110	1.110	405	0.033	15	0.0042	0.0071	0.0012	0.0008	0.0004
Hr24	Scenic Hill Tunnel (Southbound)	1110	1.110	663	0.029	22	0.0060		0.0018	0.0012	0.0006

Remarks:

[1] Tunnel Lengths are made reference to the approved EIA Report (AEIAR-144/2009) for HZMB Hong Kong Link Road.

[2] Traffic Forecast of Road Link IDs 227 (HKLR to China 712, SB) and 228 (HKLR to BCF, NB) for Year 2028 during construction phase provided by the Project Traffic Consultant were adopted.

[3] Composite Emission Factor are calculated based on the 24-hour traffic data of 18 vehicle classes provided by the Project Traffic Consultant and the vehicular emission factors from EMFAC-HK v4.3, refer to Appendix 3.5 for Link IDs 227 and 228.

[4] According to the approved EIA Report (AEIAR-144/2009) for HZMB Hong Kong Link Road, a split of emissions of 30% from the tunnel portals and 70% from the ventilation building is adopted.

[5] For the each portal, 30% of total emissions are allocated into 10 volume sources with 2/3 of the portal emission strength for first 5 sources (i.e. first 50m) and 1/3 of the portal emission strength for the remaining 5 sources (i.e. second 50m).

RSP Emission Rate

Hour	Source	Tunnel Length ^[1] (m)	Tunnel Length (km)	Traffic Flow ^[2] (veh/hr)	Composite Emission Factor ^[3] (g/km-veh)	Total Emission (g/hr)	Total Emission (g/s)	Emission Split ^[4]		Portal Emission ^[5]	
								to VB (g/s)	to Portal (g/s)	first 50m (g/s)	second 50m (g/s)
Hr01	Scenic Hill Tunnel (Northbound)	1110	1.110	240	0.033	9	0.0025	0.0042	0.0007	0.0005	0.0002
Hr01	Scenic Hill Tunnel (Southbound)	1110	1.110	393	0.029	13	0.0035				
Hr02	Scenic Hill Tunnel (Northbound)	1110	1.110	150	0.033	6	0.0015	0.0026	0.0005	0.0003	0.0002
Hr02	Scenic Hill Tunnel (Southbound)	1110	1.110	245	0.029	8	0.0022				
Hr03	Scenic Hill Tunnel (Northbound)	1110	1.110	105	0.033	4	0.0011	0.0018	0.0003	0.0002	0.0001
Hr03	Scenic Hill Tunnel (Southbound)	1110	1.110	172	0.029	6	0.0016				
Hr04	Scenic Hill Tunnel (Northbound)	1110	1.110	90	0.033	3	0.0009	0.0016	0.0003	0.0002	0.0001
Hr04	Scenic Hill Tunnel (Southbound)	1110	1.110	147	0.029	5	0.0013				
Hr05	Scenic Hill Tunnel (Northbound)	1110	1.110	150	0.033	6	0.0015	0.0026	0.0005	0.0003	0.0002
Hr05	Scenic Hill Tunnel (Southbound)	1110	1.110	245	0.029	8	0.0022				
Hr06	Scenic Hill Tunnel (Northbound)	1110	1.110	345	0.033	13	0.0035	0.0060	0.0011	0.0007	0.0004
Hr06	Scenic Hill Tunnel (Southbound)	1110	1.110	565	0.029	18	0.0051				
Hr07	Scenic Hill Tunnel (Northbound)	1110	1.110	661	0.033	24	0.0068	0.0116	0.0020	0.0014	0.0007
Hr07	Scenic Hill Tunnel (Southbound)	1110	1.110	1080	0.029	35	0.0097				
Hr08	Scenic Hill Tunnel (Northbound)	1110	1.110	811	0.033	30	0.0083	0.0142	0.0025	0.0017	0.0008
Hr08	Scenic Hill Tunnel (Southbound)	1110	1.110	1326	0.029	43	0.0120				
Hr09	Scenic Hill Tunnel (Northbound)	1110	1.110	757	0.033	28	0.0078	0.0132	0.0023	0.0016	0.0008
Hr09	Scenic Hill Tunnel (Southbound)	1110	1.110	1237	0.029	40	0.0112				
Hr10	Scenic Hill Tunnel (Northbound)	1110	1.110	781	0.033	29	0.0080	0.0137	0.0024	0.0016	0.0008
Hr10	Scenic Hill Tunnel (Southbound)	1110	1.110	1277	0.029	41	0.0115				
Hr11	Scenic Hill Tunnel (Northbound)	1110	1.110	796	0.033	29	0.0082	0.0139	0.0024	0.0016	0.0008
Hr11	Scenic Hill Tunnel (Southbound)	1110	1.110	1301	0.029	42	0.0117				
Hr12	Scenic Hill Tunnel (Northbound)	1110	1.110	826	0.033	30	0.0085	0.0145	0.0025	0.0017	0.0008
Hr12	Scenic Hill Tunnel (Southbound)	1110	1.110	1350	0.029	44	0.0122				
Hr13	Scenic Hill Tunnel (Northbound)	1110	1.110	886	0.033	33	0.0091	0.0155	0.0027	0.0018	0.0009
Hr13	Scenic Hill Tunnel (Southbound)	1110	1.110	1448	0.029	47	0.0131				
Hr14	Scenic Hill Tunnel (Northbound)	1110	1.110	871	0.033	32	0.0089	0.0152	0.0027	0.0018	0.0009
Hr14	Scenic Hill Tunnel (Southbound)	1110	1.110	1424	0.029	46	0.0128				
Hr15	Scenic Hill Tunnel (Northbound)	1110	1.110	856	0.033	32	0.0088	0.0150	0.0026	0.0018	0.0009
Hr15	Scenic Hill Tunnel (Southbound)	1110	1.110	1399	0.029	45	0.0126				
Hr16	Scenic Hill Tunnel (Northbound)	1110	1.110	856	0.033	32	0.0088	0.0150	0.0026	0.0018	0.0009
Hr16	Scenic Hill Tunnel (Southbound)	1110	1.110	1399	0.029	45	0.0126				
Hr17	Scenic Hill Tunnel (Northbound)	1110	1.110	886	0.033	33	0.0091	0.0155	0.0027	0.0018	0.0009
Hr17	Scenic Hill Tunnel (Southbound)	1110	1.110	1448	0.029	47	0.0131				
Hr18	Scenic Hill Tunnel (Northbound)	1110	1.110	849	0.033	31	0.0087	0.0149	0.0026	0.0017	0.0009
Hr18	Scenic Hill Tunnel (Southbound)	1110	1.110	1388	0.029	45	0.0125				
Hr19	Scenic Hill Tunnel (Northbound)	1110	1.110	826	0.033	30	0.0085	0.0145	0.0025	0.0017	0.0008
Hr19	Scenic Hill Tunnel (Southbound)	1110	1.110	1350	0.029	44	0.0122				
Hr20	Scenic Hill Tunnel (Northbound)	1110	1.110	706	0.033	26	0.0072	0.0124	0.0022	0.0014	0.0007
Hr20	Scenic Hill Tunnel (Southbound)	1110	1.110	1154	0.029	37	0.0104				
Hr21	Scenic Hill Tunnel (Northbound)	1110	1.110	751	0.033	28	0.0077	0.0131	0.0023	0.0015	0.0008
Hr21	Scenic Hill Tunnel (Southbound)	1110	1.110	1227	0.029	40	0.0111				
Hr22	Scenic Hill Tunnel (Northbound)	1110	1.110	751	0.033	28	0.0077	0.0131	0.0023	0.0015	0.0008
Hr22	Scenic Hill Tunnel (Southbound)	1110	1.110	1227	0.029	40	0.0111				
Hr23	Scenic Hill Tunnel (Northbound)	1110	1.110	661	0.033	24	0.0068	0.0116	0.0020	0.0014	0.0007
Hr23	Scenic Hill Tunnel (Southbound)	1110	1.110	1080	0.029	35	0.0097				
Hr24	Scenic Hill Tunnel (Northbound)	1110	1.110	405	0.033	15	0.0042	0.0071	0.0012	0.0008	0.0004
Hr24	Scenic Hill Tunnel (Southbound)	1110	1.110	663	0.029	22	0.0060				

Remarks:

[1] Tunnel Lengths are made reference to the approved EIA Report (AEIAR-144/2009) for HZMB Hong Kong Link Road.

[2] Traffic Forecast of Road Link IDs 227 (HKLR_to China 712, SB) and 228 (HKLR_to BCF, NB) for Year 2028 during construction phase provided by the Project Traffic Consultant were adopted.

[3] Composite Emission Factor are calculated based on the 24-hour traffic data of 18 vehicle classes provided by the Project Traffic Consultant and the vehicular emission factors from EMFAC-HK v4.3, refer to Appendix 3.5 for Link IDs 227 and 228.

[4] According to the approved EIA Report (AEIAR-144/2009) for HZMB Hong Kong Link Road, a split of emissions of 30% from the tunnel portals and 70% from the ventilation building is adopted.

[5] For the each portal, 30% of total emissions are allocated into 10 volume sources with 2/3 of the portal emission strength for first 5 sources (i.e. first 50m) and 1/3 of the portal emission strength for the remaining 5 sources (i.e. second 50m).

FSP Emission Rate

Hour	Source	Tunnel Length ^[1] (m)	Tunnel Length (km)	Traffic Flow ^[2] (veh/hr)	Composite Emission Factor ^[3] (g/km-veh)	Total Emission (g/hr)	Total Emission (g/s)	Emission Split ^[4]		Portal Emission ^[5]	
								to VB (g/s)	to Portal (g/s)	first 50m (g/s)	second 50m (g/s)
Hr01	Scenic Hill Tunnel (Northbound)	1110	1.110	240	0.031	8	0.0023	0.0039	0.0007	0.0005	0.0002
Hr01	Scenic Hill Tunnel (Southbound)	1110	1.110	393	0.027	12	0.0033				
Hr02	Scenic Hill Tunnel (Northbound)	1110	1.110	150	0.031	5	0.0014	0.0024	0.0004	0.0003	0.0001
Hr02	Scenic Hill Tunnel (Southbound)	1110	1.110	245	0.027	7	0.0020				
Hr03	Scenic Hill Tunnel (Northbound)	1110	1.110	105	0.031	4	0.0010	0.0017	0.0003	0.0002	0.0001
Hr03	Scenic Hill Tunnel (Southbound)	1110	1.110	172	0.027	5	0.0014				
Hr04	Scenic Hill Tunnel (Northbound)	1110	1.110	90	0.031	3	0.0008	0.0015	0.0003	0.0002	0.0001
Hr04	Scenic Hill Tunnel (Southbound)	1110	1.110	147	0.027	4	0.0012				
Hr05	Scenic Hill Tunnel (Northbound)	1110	1.110	150	0.031	5	0.0014	0.0024	0.0004	0.0003	0.0001
Hr05	Scenic Hill Tunnel (Southbound)	1110	1.110	245	0.027	7	0.0020				
Hr06	Scenic Hill Tunnel (Northbound)	1110	1.110	345	0.031	12	0.0033	0.0056	0.0010	0.0007	0.0003
Hr06	Scenic Hill Tunnel (Southbound)	1110	1.110	565	0.027	17	0.0047				
Hr07	Scenic Hill Tunnel (Northbound)	1110	1.110	661	0.031	22	0.0062	0.0106	0.0019	0.0012	0.0006
Hr07	Scenic Hill Tunnel (Southbound)	1110	1.110	1080	0.027	32	0.0090				
Hr08	Scenic Hill Tunnel (Northbound)	1110	1.110	811	0.031	28	0.0077	0.0131	0.0023	0.0015	0.0008
Hr08	Scenic Hill Tunnel (Southbound)	1110	1.110	1326	0.027	40	0.0110				
Hr09	Scenic Hill Tunnel (Northbound)	1110	1.110	757	0.031	26	0.0071	0.0122	0.0021	0.0014	0.0007
Hr09	Scenic Hill Tunnel (Southbound)	1110	1.110	1237	0.027	37	0.0103				
Hr10	Scenic Hill Tunnel (Northbound)	1110	1.110	781	0.031	27	0.0074	0.0126	0.0022	0.0015	0.0007
Hr10	Scenic Hill Tunnel (Southbound)	1110	1.110	1277	0.027	38	0.0106				
Hr11	Scenic Hill Tunnel (Northbound)	1110	1.110	796	0.031	27	0.0075	0.0128	0.0023	0.0015	0.0008
Hr11	Scenic Hill Tunnel (Southbound)	1110	1.110	1301	0.027	39	0.0108				
Hr12	Scenic Hill Tunnel (Northbound)	1110	1.110	826	0.031	28	0.0078	0.0133	0.0023	0.0016	0.0008
Hr12	Scenic Hill Tunnel (Southbound)	1110	1.110	1350	0.027	40	0.0112				
Hr13	Scenic Hill Tunnel (Northbound)	1110	1.110	886	0.031	30	0.0084	0.0143	0.0025	0.0017	0.0008
Hr13	Scenic Hill Tunnel (Southbound)	1110	1.110	1448	0.027	43	0.0120				
Hr14	Scenic Hill Tunnel (Northbound)	1110	1.110	871	0.031	30	0.0082	0.0140	0.0025	0.0016	0.0008
Hr14	Scenic Hill Tunnel (Southbound)	1110	1.110	1424	0.027	43	0.0118				
Hr15	Scenic Hill Tunnel (Northbound)	1110	1.110	856	0.031	29	0.0081	0.0138	0.0024	0.0016	0.0008
Hr15	Scenic Hill Tunnel (Southbound)	1110	1.110	1399	0.027	42	0.0116				
Hr16	Scenic Hill Tunnel (Northbound)	1110	1.110	856	0.031	29	0.0081	0.0138	0.0024	0.0016	0.0008
Hr16	Scenic Hill Tunnel (Southbound)	1110	1.110	1399	0.027	42	0.0116				
Hr17	Scenic Hill Tunnel (Northbound)	1110	1.110	886	0.031	30	0.0084	0.0143	0.0025	0.0017	0.0008
Hr17	Scenic Hill Tunnel (Southbound)	1110	1.110	1448	0.027	43	0.0120				
Hr18	Scenic Hill Tunnel (Northbound)	1110	1.110	849	0.031	29	0.0080	0.0137	0.0024	0.0016	0.0008
Hr18	Scenic Hill Tunnel (Southbound)	1110	1.110	1388	0.027	41	0.0115				
Hr19	Scenic Hill Tunnel (Northbound)	1110	1.110	826	0.031	28	0.0078	0.0133	0.0023	0.0016	0.0008
Hr19	Scenic Hill Tunnel (Southbound)	1110	1.110	1350	0.027	40	0.0112				
Hr20	Scenic Hill Tunnel (Northbound)	1110	1.110	706	0.031	24	0.0067	0.0114	0.0020	0.0013	0.0007
Hr20	Scenic Hill Tunnel (Southbound)	1110	1.110	1154	0.027	34	0.0096				
Hr21	Scenic Hill Tunnel (Northbound)	1110	1.110	751	0.031	26	0.0071	0.0121	0.0021	0.0014	0.0007
Hr21	Scenic Hill Tunnel (Southbound)	1110	1.110	1227	0.027	37	0.0102				
Hr22	Scenic Hill Tunnel (Northbound)	1110	1.110	751	0.031	26	0.0071	0.0121	0.0021	0.0014	0.0007
Hr22	Scenic Hill Tunnel (Southbound)	1110	1.110	1227	0.027	37	0.0102				
Hr23	Scenic Hill Tunnel (Northbound)	1110	1.110	661	0.031	22	0.0062	0.0106	0.0019	0.0012	0.0006
Hr23	Scenic Hill Tunnel (Southbound)	1110	1.110	1080	0.027	32	0.0090				
Hr24	Scenic Hill Tunnel (Northbound)	1110	1.110	405	0.031	14	0.0038	0.0065	0.0011	0.0008	0.0004
Hr24	Scenic Hill Tunnel (Southbound)	1110	1.110	663	0.027	20	0.0055				

Remarks:

[1] Tunnel Lengths are made reference to the approved EIA Report (AEIAR-144/2009) for HZMB Hong Kong Link Road.

[2] Traffic Forecast of Road Link IDs 227 (HKLR_to China 712, SB) and 228 (HKLR_to BCF, NB) for Year 2028 during construction phase provided by the Project Traffic Consultant were adopted.

[3] Composite Emission Factor are calculated based on the 24-hour traffic data of 18 vehicle classes provided by the Project Traffic Consultant and the vehicular emission factors from EMFAC-HK v4.3, refer to Appendix 3.5 for Link IDs 227 and 228.

[4] According to the approved EIA Report (AEIAR-144/2009) for HZMB Hong Kong Link Road, a split of emissions of 30% from the tunnel portals and 70% from the ventilation building is adopted.

[5] For the each portal, 30% of total emissions are allocated into 10 volume sources with 2/3 of the portal emission strength for first 5 sources (i.e. first 50m) and 1/3 of the portal emission strength for the remaining 5 sources (i.e. second 50m).

Emission Sources (Tunnel Portals and Ventilation Building) Listing in AERMOD

TSP Emission Input

Table with columns: Source, Number of Volume Source, Source ID, Type, X, Y, Base Elevation, Release Height, Exit Temp, Exit Velocity, Internal Diameter, Lateral Dim, Vertical Dim, Hourly TSP Emission Rate (g/s) for 24 hours, Daily Emission (g/s). Includes sources like HKP to Airport Tunnel Portal and Scenic Hill Tunnel Portal.

RSP Emission Input

Table with columns: Source, Number of Volume Source, Source ID, Type, X, Y, Base Elevation, Release Height, Exit Temp, Exit Velocity, Internal Diameter, Lateral Dim, Vertical Dim, Hourly RSP Emission Rate (g/s) for 24 hours, Daily Emission (g/s). Includes sources like HKP to Airport Tunnel Portal and Scenic Hill Tunnel Portal.

FSP Emission Input

Table with columns: Source, Number of Volume Source, Source ID, Type, X, Y, Base Elevation, Release Height, Exit Temp, Exit Velocity, Internal Diameter, Lateral Dim, Vertical Dim, Hourly FSP Emission Rate (g/s) for 24 hours, Daily Emission (g/s). Includes sources like HKP to Airport Tunnel Portal and Scenic Hill Tunnel Portal.

Remarks:

- [1] Exhaust parameter of ventilation building including release height, exit velocity and internal diameter are made reference to the approved EIA Report (AEIAR-144/2009) for HZMB Hong Kong Link Road.
[2] Release Height for Portal = Height of portal / 2, where vertical dimension of source (i.e. portal height) refers to the approved EIA Report (AEIAR-144/2009) for HZMB Hong Kong Link Road.
[3] A value of 0 Kelvin indicates ambient temperature. The ambient air temperature from the meteorological data file is used for this source.
[4] Initial Lateral Dimension (Sy) = Width of portal / 2.15, where length of side (i.e. portal width) refers to the approved EIA Report (AEIAR-144/2009) for HZMB Hong Kong Link Road.
[5] Initial Vertical Dimension (Sz) = Height of portal / 2.15, where vertical dimension of source (i.e. portal height) refers to the approved EIA Report (AEIAR-144/2009) for HZMB Hong Kong Link Road.
[6] For Source ID HAT01-05, SHTE01-05 and SHTW01-05, Hourly Emission Rate = Portal Emission for First 50m / 5
[7] For Source ID HAT06-10, SHTE06-10 and SHTW06-10, Hourly Emission Rate = Portal Emission for Second 50m / 5

% Hourly Profile for Portal Emission

TSP

	HAT01-10	SHTE01-10	SHTW01-10	SHTVB
Hr01	3%	2%	2%	2%
Hr02	2%	1%	1%	1%
Hr03	1%	1%	1%	1%
Hr04	1%	1%	1%	1%
Hr05	1%	1%	1%	1%
Hr06	2%	2%	2%	2%
Hr07	3%	4%	4%	4%
Hr08	6%	5%	5%	5%
Hr09	7%	5%	5%	5%
Hr10	6%	5%	5%	5%
Hr11	5%	5%	5%	5%
Hr12	5%	6%	6%	6%
Hr13	6%	6%	6%	6%
Hr14	6%	6%	6%	6%
Hr15	6%	6%	6%	6%
Hr16	5%	6%	6%	6%
Hr17	5%	6%	6%	6%
Hr18	6%	6%	6%	6%
Hr19	5%	6%	6%	6%
Hr20	5%	5%	5%	5%
Hr21	4%	5%	5%	5%
Hr22	4%	5%	5%	5%
Hr23	4%	4%	4%	4%
Hr24	4%	3%	3%	3%

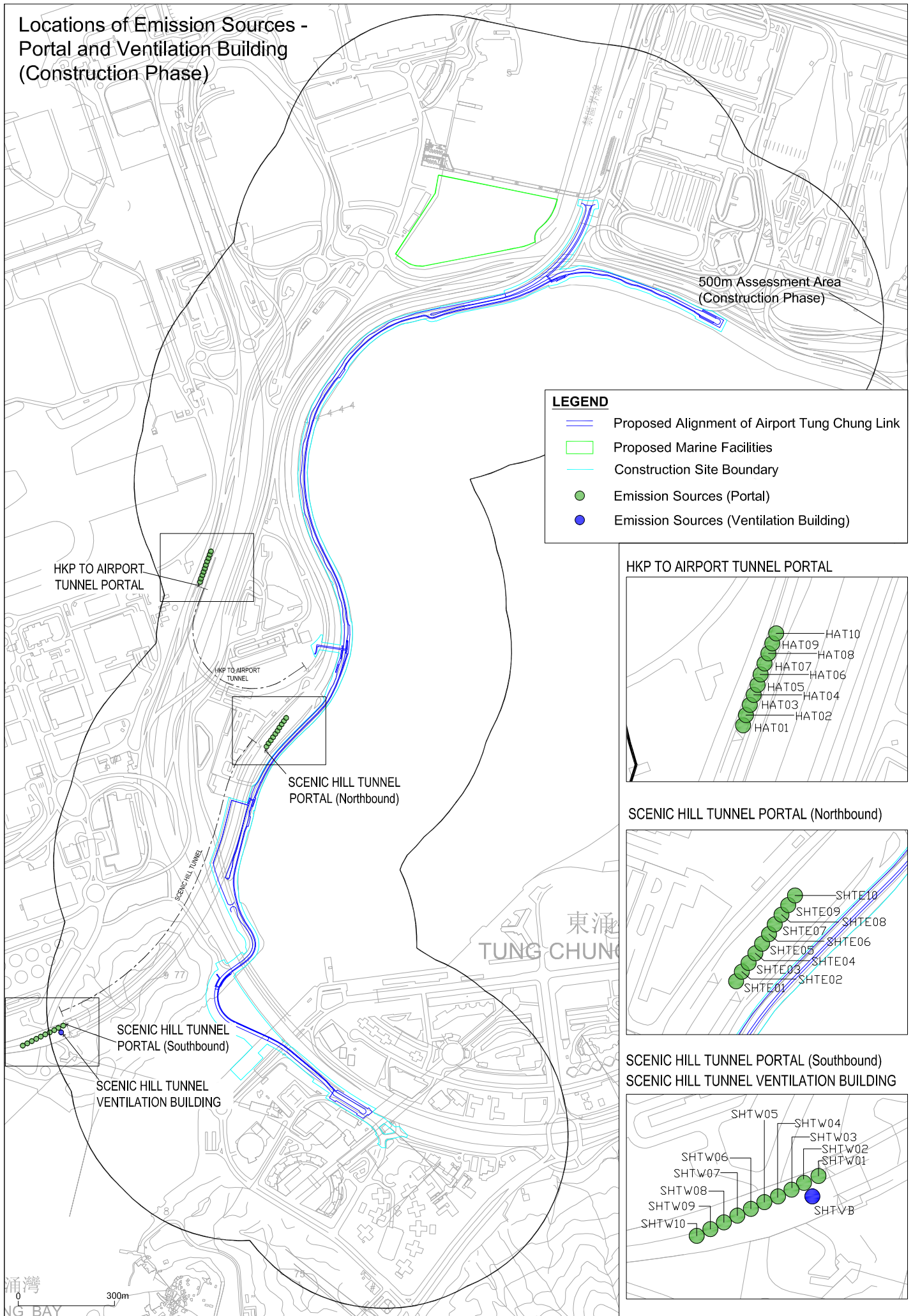
RSP

	HAT01-10	SHTE01-10	SHTW01-10	SHTVB
Hr01	3%	2%	2%	2%
Hr02	2%	1%	1%	1%
Hr03	1%	1%	1%	1%
Hr04	1%	1%	1%	1%
Hr05	1%	1%	1%	1%
Hr06	2%	2%	2%	2%
Hr07	3%	4%	4%	4%
Hr08	6%	5%	5%	5%
Hr09	7%	5%	5%	5%
Hr10	6%	5%	5%	5%
Hr11	5%	5%	5%	5%
Hr12	5%	6%	6%	6%
Hr13	6%	6%	6%	6%
Hr14	6%	6%	6%	6%
Hr15	6%	6%	6%	6%
Hr16	5%	6%	6%	6%
Hr17	5%	6%	6%	6%
Hr18	6%	6%	6%	6%
Hr19	5%	6%	6%	6%
Hr20	5%	5%	5%	5%
Hr21	4%	5%	5%	5%
Hr22	4%	5%	5%	5%
Hr23	4%	4%	4%	4%
Hr24	4%	3%	3%	3%

FSP

	HAT01-10	SHTE01-10	SHTW01-10	SHTVB
Hr01	3%	2%	2%	2%
Hr02	2%	1%	1%	1%
Hr03	1%	1%	1%	1%
Hr04	1%	1%	1%	1%
Hr05	1%	1%	1%	1%
Hr06	2%	2%	2%	2%
Hr07	3%	4%	4%	4%
Hr08	6%	5%	5%	5%
Hr09	7%	5%	5%	5%
Hr10	6%	5%	5%	5%
Hr11	5%	5%	5%	5%
Hr12	5%	6%	6%	6%
Hr13	6%	6%	6%	6%
Hr14	6%	6%	6%	6%
Hr15	6%	6%	6%	6%
Hr16	5%	6%	6%	6%
Hr17	5%	6%	6%	6%
Hr18	6%	6%	6%	6%
Hr19	5%	6%	6%	6%
Hr20	5%	5%	5%	5%
Hr21	4%	5%	5%	5%
Hr22	4%	5%	5%	5%
Hr23	4%	4%	4%	4%
Hr24	4%	3%	3%	3%

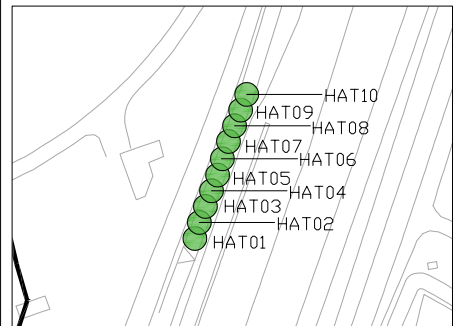
Locations of Emission Sources - Portal and Ventilation Building (Construction Phase)



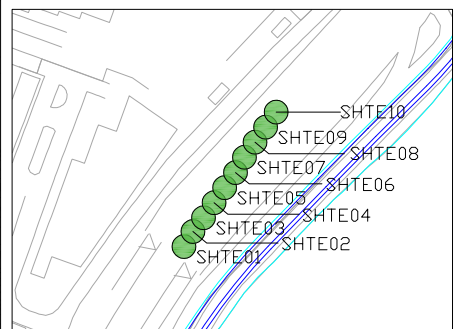
LEGEND

- Proposed Alignment of Airport Tung Chung Link
- Proposed Marine Facilities
- Construction Site Boundary
- Emission Sources (Portal)
- Emission Sources (Ventilation Building)

HKP TO AIRPORT TUNNEL PORTAL



SCENIC HILL TUNNEL PORTAL (Northbound)



SCENIC HILL TUNNEL PORTAL (Southbound) SCENIC HILL TUNNEL VENTILATION BUILDING

