Appendix 4-P Chimney Emission Inventory

Since the Project is located in the vicinity of the industrial premises in Tsuen Wan and Kwai Chung, cumulative impact of potential chimney emissions is considered.

Chimney emission inventory (within 500m from the Project Boundary) was achieved from Technical Appendices - Environmental Impact Assessment Reports of Section 16 Application for Development Tsuen Wan West (TW5, TW6 and TW7) West Rail, Phase 1, prepared by Kowloon-Canton Railway Corporation.

In order to validate the abovementioned emission inventory, photographic surveys (at both ground and elevated levels) were conducted to visually check locations and conditions of the chimneys. Details of photographic surveys are shown in **Appendix 4-N**.

To further update the emission inventory, request letter has been sent to the management offices/incorporated owners of the subjective industrial buildings to collect the chimney emission information. Details of request letter and corresponding responses are shown in **Appendix 4-O**.

After the validation and updating processes, there are totally 106 chimney emission sources identified and the chimney location is summarized and presented in **Figure 4-3**.

Since only SO_2 was considered in these EIA Reports, therefore it is necessary to deduce the fuel consumption rates by SO_2 emission rates according to **Table 1.3-1** *Criteria Pollution Emission Factors for Fuel Oil Combustion of USEPA AP-42* as shown below:

Emission Factor of SO_2 = 142S lb $SO_2/10^3$ gal fuel consumed,
where S = sulphur content (%) in fuel

Emission Rate of SO_2 = Emission Factor x Fuel Consumption Rate

After obtaining the fuel consumption rate, NOx and RSP emissions can be deduced from the emission factors of NOx and RSP in the abovementioned **Table 1.3-1** as detailed below:

Emission Factor of NOx = 20 lb $NOx/10^3$ gal fuel consumed
Emission Factor of RSP = 2 lb $RSP/10^3$ gal fuel consumed

Then,

Daytime Emission Rate of NOx = Emission Factor of NOx x Fuel Consumption Rate x 41%
Nighttime Emission Rate of NOx = Emission Factor of NOx x Fuel Consumption Rate x 23%

Daytime Emission Rate of RSP = Emission Factor of RSP x Fuel Consumption Rate x 41%
Nighttime Emission Rate of RSP = Emission Factor of RSP x Fuel Consumption Rate x 23%

Assumptions made:
(1) Combustion consumes distillate oil as fuel.
(2) Maximum sulphur content of fuel is 0.5 wt%.
(3) Load factor during daytime is 41% (assumed as general industrial operation pattern in the area).
(4) Load factor during nighttime is 23% (assumed as general industrial operation pattern in the area).

Note: References were made to the following approved EIA Reports:
(a) EIA-068/2001 Planning and Engineering Feasibility Study for Sham Tseng Development;
(b) EIA-073/2001 Yau Tong Bay Development – Engineering Feasibility Study for the Comprehensive Development at Yau Tong Bay;
(c) EIA-111/2005 Further Development of Tseung Kwan O Feasibility Study; and
(d) EIA-121/2006 Repositioning and Long Term Operation Plan of Ocean Park.

For the ease of reading, a sample calculation converting the information from the EIA Reports of TW5, TW6 and TW7 to the model input parameter is presented below:

Step 1: Validation and Updating

The chimney emission inventory was validated and updated by photographic surveys and checking with the management offices/tenants of the subjected industrial premises by sending request letters.

Step 2: Correlation of SO_2 Emission Rates with NOx and RSP Emission Rates

Emission Factor of SO_2 = 142S lb $SO_2/10^3$ gal fuel consumed,
where S = sulphur content (%) in fuel

Emission Factor of NOx = 20 lb $NOx/10^3$ gal fuel consumed
Emission Factor of RSP = 2 lb $RSP/10^3$ gal fuel consumed

Since, Emission Rate = Emission Factor x Fuel Consumption Rate, so

Emission Rate of SO_2 = 142 x 0.5 lb $SO_2/10^3$ gal fuel consumed x Fuel Consumption Rate
Emission Rate of NOx = 20 lb $NOx/10^3$ gal fuel consumed x Fuel Consumption Rate
Emission Rate of RSP = 2 lb $RSP/10^3$ gal fuel consumed x Fuel Consumption Rate

Therefore, Emission Rate of SO_2 : Emission Rate of NO_x : Emission Rate of RSP = 71 : 20 : 2

Step 3: Calculation of NOx and RSP Emission Rates

Using Chimney ID TW5-2 as an example,
SO_2 emission rate = 1.0527 g/s

NOx emission rate = 1.0527 x 20 / 71 = 0.2965 g/s
RSP emission rate = 1.0527 x 2 / 71 = 0.0297 g/s

Step 4: Calculation of NOx and RSP Emission Rates in Daytime and Nighttime

In daytime,

NOx emission rate = 0.2965 g/s x 41% = 0.1216 g/s
RSP emission rate = 0.0297 g/s x 41% = 0.0122 g/s

In nighttime,

NOx emission rate = 0.2965 g/s x 23% = 0.0682 g/s
RSP emission rate = 0.0297 g/s x 23% = 0.0068 g/s

The chimney emission inventory for the operational air quality impact assessment is detailed in the spreadsheet as follows.

No.	Chimney ID	X-Coordinate	Y-Coordinate	Base Elevation (m)	Stack Height (m)	Stack Temp. (K)	Stack Exit Velocity (m/s)	Stack Diameter (m)	Daytime NO_x Emission Rate (g/s)	Nighttime NO_x Emission Rate (g/s)	Daytime RSP Emission Rate (g/s)	Nighttime RSP Emission Rate (g/s)	SO_2 Emission Rate (g/s)	NO_x Emission Rate (g/s)	RSP Emission Rate (g/s)
1	TW5-2	828760	826020	5.0	109.0	412	13.05	0.75	0.1216	0.0682	0.0122	0.0068	1.0527	0.2965	0.0297
2	TW5-3	828770	825980	5.0	108.1	395	20.05	0.55	0.1005	0.0564	0.0100	0.0056	0.8699	0.2450	0.0245
3	TW5-5	828780	825980	5.0	114.0	450	16.30	0.61	0.1005	0.0564	0.0100	0.0056	0.8699	0.2450	0.0245
4	TW5-6	828780	826000	5.0	115.0	415	7.14	0.66	0.0515	0.0289	0.0052	0.0029	0.4461	0.1257	0.0126
5	TW5-7	828780	826030	5.0	114.0	450	7.62	0.61	0.0469	0.0263	0.0047	0.0026	0.4064	0.1145	0.0114
6	TW5-8	828800	826010	5.0	114.9	429	9.00	0.54	0.0265	0.0149	0.0026	0.0015	0.2293	0.0646	0.0065
7	TW5-9	828810	826040	5.0	90.0	473	9.00	0.46	0.0240	0.0135	0.0024	0.0013	0.2080	0.0586	0.0059
8	TW5-10	828820	825980	5.0	114.7	403	9.00	0.62	0.0388	0.0218	0.0039	0.0022	0.3358	0.0946	0.0095
9	TW5-11	828840	826000	5.0	112.0	416	9.49	0.43	0.0291	0.0163	0.0029	0.0016	0.2516	0.0709	0.0071
10	TW5-51	829220	825900	4.5	82.3	450	9.00	0.23	0.0039	0.0022	0.0004	0.0002	0.0339	0.0095	0.0010
11	TW5-52	829250	826010	5.1	102.0	423	9.23	0.16	0.0039	0.0022	0.0004	0.0002	0.0339	0.0095	0.0010
12	TW5-72	829960	825160	4.6	35.1	450	9.00	0.30	0.0053	0.0029	0.0005	0.0003	0.0455	0.0128	0.0013
13	TW5-74	829990	825260	4.0	65.2	453	8.70	0.76	0.0830	0.0466	0.0083	0.0047	0.7189	0.2025	0.0203
14	TW5-79	830160	825150	4.7	57.6	369	7.03	0.33	0.0123	0.0069	0.0012	0.0007	0.1064	0.0300	0.0030
15	TW5-80	830160	825150	4.7	58.8	450	9.00	0.46	0.0123	0.0069	0.0012	0.0007	0.1064	0.0300	0.0030
16	TW5-81	830160	825160	4.7	56.8	450	9.00	0.36	0.0093	0.0052	0.0009	0.0005	0.0803	0.0226	0.0023
17	TW5-83	830170	825160	4.7	58.7	450	11.51	0.36	0.0240	0.0135	0.0024	0.0013	0.2080	0.0586	0.0059
18	TW5-84	830180	825170	4.7	53.9	450	7.47	0.56	0.0388	0.0218	0.0039	0.0022	0.3358	0.0946	0.0095
19	TW5-91	830240	825160	4.8	51.7	450	11.88	0.25	0.0123	0.0069	0.0012	0.0007	0.1064	0.0300	0.0030
20	TW5-96	830280	825060	5.9	69.2	338	13.57	0.46	0.0469	0.0263	0.0047	0.0026	0.4064	0.1145	0.0114
21	TW5-97	830280	825060	5.9	69.2	322	9.00	0.94	0.0481	0.0270	0.0048	0.0027	0.4161	0.1172	0.0117
22	TW6-40	830210	824360	12.6	90.6	450	9.00	0.58	0.0388	0.0218	0.0039	0.0022	0.3358	0.0946	0.0095
23	TW6-41	830210	824360	12.6	94.1	435	9.00	0.62	0.0352	0.0197	0.0035	0.0020	0.3048	0.0859	0.0086
24	TW6-42	830220	824370	12.6	95.8	433	11.75	0.31	0.0181	0.0102	0.0018	0.0010	0.1568	0.0442	0.0044
25	TW6-44	830230	824370	12.6	89.6	453	7.47	0.56	0.0388	0.0218	0.0039	0.0022	0.3358	0.0946	0.0095
26	TW6-45	830230	824370	12.6	87.6	393	8.43	0.58	0.0469	0.0263	0.0047	0.0026	0.4064	0.1145	0.0114
27	TW6-46	830230	824370	12.6	91.1	472	8.92	0.35	0.0181	0.0102	0.0018	0.0010	0.1568	0.0442	0.0044
28	TW6-56	830270	824420	10.8	13.1	450	24.62	0.12	0.0064	0.0036	0.0006	0.0004	0.0552	0.0155	0.0016
29	TW6-66	830340	824980	6.3	99.2	449	18.37	0.43	0.0568	0.0318	0.0057	0.0032	0.4915	0.1385	0.0138
30	TW6-67	830430	825070	7.8	122.1	450	7.20	0.15	0.0027	0.0015	0.0003	0.0002	0.0232	0.0065	0.0007
31	TW6-69	830490	825270	5.6	29.7	450	9.00	0.66	0.0426	0.0239	0.0043	0.0024	0.3687	0.1039	0.0104
32	TW6-70	830490	825270	5.6	29.7	450	9.00	0.76	0.0624	0.0350	0.0062	0.0035	0.5399	0.1521	0.0152
33	TW6-71	830490	825270	5.6	36.3	450	9.00	0.32	0.0027	0.0015	0.0003	0.0002	0.0232	0.0065	0.0007
34	TW7-140	830210	824340	12.6	91.3	407	4.45	0.66	0.0321	0.0180	0.0032	0.0018	0.2777	0.0782	0.0078
35	TW7-141	830210	824340	12.6	88.9	419	10.50	0.45	0.0352	0.0197	0.0035	0.0020	0.3048	0.0859	0.0086
36	TW7-142	830210	824350	12.6	106.3	450	7.22	0.41	0.0199	0.0112	0.0020	0.0011	0.1722	0.0485	0.0049
37	TW7-145-1	830186	824188	22.4	52.4	433	10.00	0.33	0.0128	0.0000 [5]	0.0042	0.0000 [5]		0.0128	0.0042
38	TW7-145-2	830189	824188	22.4	52.4	433	10.00	0.33	0.0094	0.0000 [5]	0.0026	0.0000 [5]		0.0094	0.0026
39	TW7-146-1	830194	824187	22.4	52.4	433	10.00	0.33	0.0097	0.0000 [5]	0.0050	0.0000 [5]		0.0097	0.0050
40	TW7-146-2	830196	824186	22.4	52.4	433	10.00	0.33	0.0108	0.0000 [5]	0.0056	0.0000 [5]		0.0108	0.0056
41	TW7-147	830220	824280	7.2	96.9	443	8.02	0.41	0.0219	0.0123	0.0022	0.0012	0.1896	0.0534	0.0053
42	TW7-148	830220	824280	7.2	79.6	477	11.51	0.25	0.0123	0.0069	0.0012	0.0007	0.1064	0.0300	0.0030
43	TW7-149	830220	824310	7.2	93.3	445	8.67	0.36	0.0181	0.0102	0.0018	0.0010	0.1568	0.0442	0.0044
44	TW7-152	830230	824290	7.2	81.3	422	9.99	0.38	0.0240	0.0135	0.0024	0.0013	0.2080	0.0586	0.0059
45	TW7-153	830230	824290	7.2	96.9	461	6.20	0.51	0.0265	0.0149	0.0026	0.0015	0.2293	0.0646	0.0065
46	TW7-154	830230	824290	7.2	96.5	443	0.88	0.43	0.0027	0.0015	0.0003	0.0002	0.0232	0.0065	0.0007
47	TW7-155	830230	824360	12.6	89.6	433	13.25	0.53	0.0624	0.0350	0.0062	0.0035	0.5399	0.1521	0.0152
48	TW7-156	830230	824370	12.6	89.6	453	7.47	0.56	0.0388	0.0218	0.0039	0.0022	0.3358	0.0946	0.0095
49	TW7-157	830230	824370	12.6	87.6	393	8.43	0.58	0.0469	0.0263	0.0047	0.0026	0.4064	0.1145	0.0114
50	TW7-158	830230	824370	12.6	91.1	472	8.92	0.35	0.0181	0.0102	0.0018	0.0010	0.1568	0.0442	0.0044
51	TW7-160	830240	824290	7.2	74.7	441	4.13	0.31	0.0064	0.0036	0.0006	0.0004	0.0552	0.0155	0.0016
52	TW7-167	830250	824250	7.2	91.6	459	8.68	0.25	0.0093	0.0052	0.0009	0.0005	0.0803	0.0226	0.0023
53	TW7-168	830250	824250	7.2	98.0	428	9.72	0.54	0.0469	0.0263	0.0047	0.0026	0.4064	0.1145	0.0114
54	TW7-169	830250	824250	7.2	97.2	456	7.16	0.55	0.0352	0.0197	0.0035	0.0020	0.3048	0.0859	0.0086
55	TW7-170	830250	824250	7.2	95.3	406	8.72	0.41	0.0240	0.0135	0.0024	0.0013	0.2080	0.0586	0.0059
56	TW7-171	830250	824260	7.2	84.4	450	8.83	0.32	0.0150	0.0084	0.0015	0.0008	0.1297	0.0365	0.0037
57	TW7-172	830250	824290	7.2	90.9	477	11.21	0.46	0.0388	0.0218	0.0039	0.0022	0.3358	0.0946	0.0095
58	TW7-173	830250	824300	7.2	93.7	422	8.26	0.56	0.0426	0.0239	0.0043	0.0024	0.3687	0.1039	0.0104
59	TW7-174	830250	824300	7.2	100.8	436	7.90	0.45	0.0265	0.0149	0.0026	0.0015	0.2293	0.0646	0.0065
60	TW7-178	830260	824250	7.2	82.1	450	8.72	0.41	0.0240	0.0135	0.0024	0.0013	0.2080	0.0586	0.0059
61	TW7-179	830260	824260	7.2	82.1	415	8.72	0.41	0.0240	0.0135	0.0024	0.0013	0.2080	0.0586	0.0059

No.	Chimney ID	X-Coordinate	Y-Coordinate	Base Elevation (m)	Stack Height (m)	Stack Temp. (K)	Stack Exit Velocity (m/s)	Stack Diameter (m)	Daytime NO_x Emission Rate (g/s)	Nighttime NO_x Emission Rate (g/s)	Daytime RSP Emission Rate (g/s)	Nighttime RSP Emission Rate (g/s)	SO_2 Emission Rate (g/s)	NO_x Emission Rate (g/s)	RSP Emission Rate (g/s)
62	TW7-180	830260	824260	7.2	98.8	443	9.31	0.64	0.0624	0.0350	0.0062	0.0035	0.5399	0.1521	0.0152
63	TW7-181	830260	824260	7.2	95.6	450	17.03	0.41	0.0469	0.0263	0.0047	0.0026	0.4064	0.1145	0.0114
64	TW7-182	830270	824260	7.2	87.9	450	9.81	0.35	0.0199	0.0112	0.0020	0.0011	0.1722	0.0485	0.0049
65	TW7-183	830270	824260	7.2	85.7	463	8.57	0.43	0.0265	0.0149	0.0026	0.0015	0.2293	0.0646	0.0065
66	TW7-184	830270	824260	7.2	85.7	477	7.77	0.43	0.0240	0.0135	0.0024	0.0013	0.2080	0.0586	0.0059
67	TW7-197	830350	824360	7.3	93.7	450	3.78	0.25	0.0039	0.0022	0.0004	0.0002	0.0339	0.0095	0.0010
68	TW7-198	830360	824340	7.3	97.8	439	6.95	0.46	0.0240	0.0135	0.0024	0.0013	0.2080	0.0586	0.0059
69	TW7-199	830360	824350	7.3	95.7	477	7.53	0.38	0.0181	0.0102	0.0018	0.0010	0.1568	0.0442	0.0044
70	TW7-200	830360	824350	7.3	100.5	393	9.49	0.43	0.0291	0.0163	0.0029	0.0016	0.2516	0.0709	0.0071
71	TW7-201	830370	824350	7.3	95.2	450	6.94	0.48	0.0265	0.0149	0.0026	0.0015	0.2293	0.0646	0.0065
72	TW7-202	830370	824350	7.3	100.7	460	7.02	0.50	0.0291	0.0163	0.0029	0.0016	0.2516	0.0709	0.0071
73	TW7-203	830370	824350	7.3	94.8	453	8.64	0.22	0.0069	0.0039	0.0007	0.0004	0.0600	0.0169	0.0017
74	TW7-204	830370	824360	7.3	96.3	414	7.62	0.61	0.0469	0.0263	0.0047	0.0026	0.4064	0.1145	0.0114
75	TW7-205	830370	824360	7.3	94.6	428	8.77	0.20	0.0058	0.0033	0.0006	0.0003	0.0503	0.0142	0.0014
76	TW7-206	830380	824370	7.3	100.8	440	8.83	0.29	0.0123	0.0069	0.0012	0.0007	0.1064	0.0300	0.0030
77	TW7-207	830390	824370	7.3	96.3	444	13.18	0.51	0.0568	0.0318	0.0057	0.0032	0.4915	0.1385	0.0138
78	TW7-208	830390	824380	7.3	105.4	470	9.27	0.36	0.0199	0.0112	0.0020	0.0011	0.1722	0.0485	0.0049
79	TW7-209	830400	824390	7.3	102.5	452	6.87	0.38	0.0164	0.0092	0.0016	0.0009	0.1422	0.0401	0.0040
80	TW7-210	830410	824370	7.3	97.7	505	9.52	0.60	0.0568	0.0318	0.0057	0.0032	0.4915	0.1385	0.0138
81	TW7-211	830410	824380	7.3	101.1	450	9.52	0.60	0.0568	0.0318	0.0057	0.0032	0.4915	0.1385	0.0138
82	TW7-212	830420	824370	7.3	108.9	423	7.62	0.61	0.0469	0.0263	0.0047	0.0026	0.4064	0.1145	0.0114
83	TW7-213	830420	824370	7.3	94.7	450	8.83	0.32	0.0150	0.0084	0.0015	0.0008	0.1297	0.0365	0.0037
84	TW7-214	830420	824380	7.3	95.7	505	5.86	0.36	0.0123	0.0069	0.0012	0.0007	0.1064	0.0300	0.0030
85	TW-1*	829083	826035	4.3	90.1	322	0.88	0.50	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
86	TW-4*	830542	825379	5.5	43.1	322	0.88	0.50	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
87	TW-5*	830264	825298	4.7	34.2	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
88	TW-6*	830275	825292	4.7	34.2	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
89	TW-7*	830297	825280	4.7	34.2	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
90	TW-8*	830310	825274	4.7	34.2	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
91	TW-9*	830258	825287	4.7	34.2	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
92	TW-10*	830268	825282	4.7	34.2	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
93	TW-11*	830291	825268	4.7	34.2	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
94	TW-12*	830303	825262	4.7	34.2	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
95	TW-13*	829997	825237	4.6	57.0	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
96	TW-14*	829963	825225	4.6	57.0	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
97	TW-15*	829971	825202	4.6	57.0	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
98	TW-16*	829957	825134	3.9	53.7	322	0.88	0.50	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
99	TW-17*	829925	825217	3.7	57.0	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
100	TW-18*	829908	825212	3.7	57.0	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
101	TW-19*	829892	825207	3.7	57.0	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
102	TW-20*	830653	824316	7.8	117.7	322	0.88	0.30	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
103	TW-21*	830645	824300	7.8	117.7	322	0.88	0.30	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
104	TW-22*	830737	823836	5.0	54.8	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
105	TW-23*	830726	823815	5.0	54.8	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296
106	TW-24*	830745	823859	5.0	54.8	322	0.88	0.20	0.1213	0.0680	0.0121	0.0068	1.05	0.2958	0.0296

Notes:
* For those without any chimney emission data from the EIA reports of TW5, TW6 and TW7, assumptions (as below) are made in order to account the emissions in a resonably conservative approach:
(1) Flue gas temperature is assumed as the minimum among the emission inventory;
(2) Exit velocity is assumed as the minimum among the emission invenotry; and
(3) Pollutant emission rate is assumed as the maximum among the emission inventory.
(4) Stack height and diameter are estimated by site and photographic surveys.
(5) There is no operation at nighttime.

Chimney ID	X-Coordinate	Y-Coordinate	Remarks (Red = Deleted, Pink = Superseded [1], Black = Input)
TW5			
TW5-1	828650	826050	Deleted by site survey observation
TW5-2	828760	826020	Input
TW5-3	828770	825980	Input
TW5-4	828770	826020	Deleted by site survey observation
TW5-5	828780	825980	Input
TW5-6	828780	826000	Input
TW5-7	828780	826030	Input
TW5-8	828800	826010	Input
TW5-9	828810	826040	Input
TW5-10	828820	825980	Input
TW5-11	828840	826000	Input
TW5-12	828940	826050	Deleted by request of chimney information (All chimneys at the building have been stopped operation. The building has been sold)
TW5-13	828950	826050	
TW5-14	828950	826090	
TW5-15	828960	826040	
TW5-16	828970	826100	
TW5-17	828970	826100	
TW5-18	828980	824850	Deleted due to out of study area
TW5-19	828980	826100	Deleted by request of chimney information (All chimneys at the building have been stopped operation. The building has been sold)
TW5-20	829000	826050	
TW5-21	829000	826070	
TW5-22	829000	826070	
TW5-23	829000	826090	
TW5-24	829010	826040	
TW5-25	829010	826050	
TW5-26	829010	826050	
TW5-27	829010	826060	
TW5-28	829010	826080	
TW5-29	829020	824850	Deleted due to out of study area
TW5-30	829020	826040	Deleted by request of chimney information (All chimneys at the building have been stopped operation. The building has been sold)
TW5-31	829020	826080	
TW5-32	829020	826210	Deleted by request of chimney information (There is no chimney currently in operation.)
TW5-33	829030	826040	Deleted by request of chimney information (All chimneys at the building have been stopped operation. The building has been sold)
TW5-34	829030	826190	Deleted by request of chimney information (There is no chimney currently in operation.)
TW5-35	829040	825960	Deleted by site survey observation
TW5-36	829040	826030	Deleted by request of chimney information (All chimneys at the building have been stopped operation. The building has been sold)
TW5-37	829040	826040	
TW5-38	829040	826190	Deleted by request of chimney information (There is no chimney currently in operation.)
TW5-39	829050	825970	Deleted by site survey observation
TW5-40	829050	826040	Deleted by request of chimney information (All chimneys at the building have been stopped operation. The building has been sold)
TW5-41	829060	825960	Deleted by site survey observation
TW5-42	829060	825970	
TW5-43	829060	826170	Deleted by request of chimney information (There is no chimney currently in operation.)
TW5-44	829060	826170	
TW5-45	829060	826230	
TW5-46	829070	826170	
TW5-47	829080	824850	Deleted due to out of study area
TW5-48	829080	826200	Deleted by request of chimney information (All chimneys at the building have been stopped operation. The building has been sold)
TW5-49	829180	826040	Deleted by request of chimney information (There is no chimney currently in operation.)
TW5-50	829190	826170	Deleted by site survey observation
TW5-51	829220	825900	Input
TW5-52	829250	826010	Input
TW5-53	829310	826110	Deleted by site survey observation
TW5-54	829310	826110	
TW5-55	829360	825970	Deleted by request of chimney information (There is no chimney currently in operation.)
TW5-56	829410	826100	Deleted by request of chimney information (There is no chimney currently in operation.)
TW5-57	829410	826100	
TW5-58	829410	826100	
TW5-59	829410	826100	
TW5-60	829420	826050	Deleted by request of chimney information (There are 4 chimneys while 3 of them are not currently in used while the remaining one will be stopped shortly since its premise has been sold.)
TW5-61	829460	826330	Deleted by site survey observation and due to out of study area
TW5-62	829460	826340	
TW5-63	829610	825840	Deleted by site survey observation

Note:
[1] Since TW5, TW6 and TW7 are adjacent, the study areas of their EIA reports would have certain overlapping. Therefore, some chimneys would have different IDs in these reports.

Chimney ID	X-Coordinate	Y-Coordinate	Remarks (Red = Deleted, Pink = Superseded [1], Black = Input)
TW5-64	829620	826340	Deleted by site survey observation and due to out of study area
TW5-65	829630	826340	
TW5-66	829670	826300	
TW5-67	829670	826300	
TW5-68	829820	826170	
TW5-69	829850	826220	
TW5-70	829930	824950	Deleted by site survey observation
TW5-71	829930	824980	
TW5-72	829960	825160	Input
TW5-73	829990	824720	Deleted by site survey observation
TW5-74	829990	825260	Input
TW5-75	830010	825810	Deleted due to site survey observation
TW5-76	830020	825780	
TW5-77	830130	825740	
TW5-78	830150	825730	
TW5-79	830160	825150	Input
TW5-80	830160	825150	Input
TW5-81	830160	825160	Input
TW5-82	830160	825590	Deleted due to out of study area
TW5-83	830170	825160	Input
TW5-84	830180	825170	Input
TW5-85	830200	825180	Deleted by site survey observation
TW5-86	830220	825560	Deleted due to out of study area
TW5-87	830230	825310	Deleted by site survey observation
TW5-88	830240	825150	
TW5-89	830240	825150	
TW5-90	830240	825150	
TW5-91	830240	825160	Input
TW5-92	830240	825850	Deleted due to out of study area
TW5-93	830250	825150	Deleted by site survey observation
TW5-94	830250	825150	
TW5-95	830250	825160	
TW5-96	830280	825060	Input
TW5-97	830280	825060	Input
TW5-98	830300	825450	Deleted by site survey observation
TW5-99	830310	825410	Deleted by site survey observation
TW5-100	830310	825600	Deleted due to out of study area
TW5-101	830330	825300	Deleted by site survey observation
TW6			
TW6-1	828980	824850	Superseded (same as TW5-18)
TW6-2	829020	824850	Superseded (same as TW5-29)
TW6-3	829040	825960	Superseded (same as TW5-35)
TW6-4	829050	825970	Superseded (same as TW5-39)
TW6-5	829060	825960	Superseded (same as TW5-41)
TW6-6	829060	825970	Superseded (same as TW5-42)
TW6-7	829080	824850	Superseded (same as TW5-47)
TW6-8	829180	826040	Superseded (same as TW5-49)
TW6-9	829220	825900	Superseded (same as TW5-51)
TW6-10	829230	824280	Deleted due to out of study area
TW6-11	829250	826010	Superseded (same as TW5-52)
TW6-12	829310	826110	Superseded (same as TW5-53&54)
TW6-13	829310	826110	Superseded (same as TW5-53&54)
TW6-14	829360	825970	Superseded (same as TW5-55)
TW6-15	829410	826100	Superseded (same as TW5-56 to 59)
TW6-16	829410	826100	
TW6-17	829410	826100	
TW6-18	829410	826100	
TW6-19	829420	826050	Superseded (same as TW5-60)
TW6-20	829600	825580	Deleted by site survey observation
TW6-21	829610	825600	
TW6-23	829620	825600	
TW6-24	829930	824950	Superseded (same as TW5-70)
TW6-25	829930	824980	Superseded (same as TW5-71)
TW6-26	829960	825160	Superseded (same as TW5-72)
TW6-27	829990	824720	Superseded (same as TW5-73)
TW6-28	829990	825260	Superseded (same as TW5-74)
TW6-29	830010	825810	Superseded (same as TW5-75)
TW6-30	830020	825780	Superseded (same as TW5-76)
TW6-31	830130	825740	Superseded (same as TW5-77)
TW6-32	830150	825730	Superseded (same as TW5-78)
TW6-33	830160	825150	Superseded (same as TW5-79)
TW6-34	830160	825150	Superseded (same as TW5-80)
TW6-35	830160	825160	Superseded (same as TW5-81)
TW6-36	830160	825590	Superseded (same as TW5-82)

Note:
[1] Since TW5, TW6 and TW7 are adjacent, the study areas of their EIA reports would have certain overlapping. Therefore, some chimneys would have different IDs in these reports.

Chimney ID	X-Coordinate	Y-Coordinate	Remarks (Red = Deleted, Pink = Superseded [1], Black = Input)
TW6-37	830170	825160	Superseded (same as TW5-83)
TW6-38	830180	825170	Superseded (same as TW5-84)
TW6-39	830200	825180	Superseded (same as TW5-85)
TW6-40	830210	824360	Input
TW6-41	830210	824360	Input
TW6-42	830220	824370	Input
TW6-43	830220	825560	Superseded (same as TW5-86)
TW6-44	830230	824370	Input
TW6-45	830230	824370	Input
TW6-46	830230	824370	Input
TW6-47	830230	825310	Superseded (same as TW5-87)
TW6-48	830240	825150	Superseded (same as TW5-88)
TW6-49	830240	825150	Superseded (same as TW5-89)
TW6-50	830240	825150	Superseded (same as TW5-90)
TW6-51	830240	825160	Superseded (same as TW5-91)
TW6-52	830240	825850	Superseded (same as TW5-92)
TW6-53	830250	825150	Superseded (same as TW5-93)
TW6-54	830250	825150	Superseded (same as TW5-94)
TW6-55	830250	825160	Superseded (same as TW5-95)
TW6-56	830270	824420	Input
TW6-57	830280	825060	Superseded (same as TW5-96)
TW6-58	830280	825060	Superseded (same as TW5-97)
TW6-59	830300	824530	Deleted by site survey observation
TW6-60	830300	825450	Superseded (same as TW5-98)
TW6-61	830310	824850	Deleted by site survey observation
TW6-62	830310	825410	Superseded (same as TW5-99)
TW6-63	830310	825600	Superseded (same as TW5-100)
TW6-64	830320	824510	Deleted by site survey observation
TW6-65	830330	825300	Superseded (same as TW5-101)
TW6-66	830340	824980	Input
TW6-67	830430	825070	Input
TW6-68	830440	825280	Deleted by site survey observation
TW6-69	830490	825270	Input
TW6-70	830490	825270	Input
TW6-71	830490	825270	Input
TW6-72	830490	825570	Deleted due to out of study area
TW7			
TW7-27	828980	824850	Superseded (same as TW5-18)
TW7-39	829020	824850	Superseded (same as TW5-29)
TW7-58	829080	824850	Superseded (same as TW5-47)
TW7-65	829230	824280	Superseded (same as TW6-10)
TW7-106	829600	824280	Superseded (same as TW6-20)
TW7-107	829610	825600	Superseded (same as TW6-21)
TW7-108	829610	825840	Superseded (same as TW5-63)
TW7-109	829620	825600	Superseded (same as TW6-23)
TW7-123	829960	825160	Superseded (same as TW5-72)
TW7-124	829990	824720	Superseded (same as TW5-73)
TW7-125	829990	825260	Superseded (same as TW5-74)
TW7-126	830010	825810	Superseded (same as TW5-75)
TW7-127	830120	825780	Superseded (same as TW5-76)
TW7-128	830130	825740	Superseded (same as TW5-77)
TW7-130	830150	825730	Superseded (same as TW5-78)
TW7-131	830160	825150	Superseded (same as TW5-79)
TW7-132	830160	825150	Superseded (same as TW5-80)
TW7-133	830160	825160	Superseded (same as TW5-81)
TW7-135	830160	825590	Superseded (same as TW5-82)
TW7-137	830170	825160	Superseded (same as TW5-83)
TW7-138	830180	825170	Superseded (same as TW5-84)
TW7-139	830200	825180	Superseded (same as TW5-85)
TW7-140	830210	824340	Input
TW7-141	830210	824340	Input
TW7-142	830210	824350	Input
TW7-143	830210	824360	Superseded (same as TW6-40)
TW7-144	830210	824360	Superseded (same as TW6-41)
TW7-145	830220	824230	Input and Updated with FEHD's information
TW7-146	830220	824230	Input and Updated with FEHD's information
TW7-147	830220	824280	Input
TW7-148	830220	824280	Input
TW7-149	830220	824310	Input
TW7-150	830220	824370	Superseded (same as TW6-42)
TW7-151	830220	825560	Superseded (same as TW5-86)
TW7-152	830230	824290	Input
TW7-153	830230	824290	Input
TW7-154	830230	824290	Input

Note:
[1] Since TW5, TW6 and TW7 are adjacent, the study areas of their EIA reports would have certain overlapping. Therefore, some chimneys would have different IDs in these reports.

Chimney ID	X-Coordinate	Y-Coordinate	Remarks (Red = Deleted, Pink = Superseded [1], Black = Input)
TW7-155	830230	824360	Input
TW7-156	830230	824370	Input
TW7-157	830230	824370	Input
TW7-158	830230	824370	Input
TW7-159	830230	825310	Superseded (same as TW5-87)
TW7-160	830240	824290	Input
TW7-161	830240	825150	Superseded (same as TW5-88)
TW7-162	830240	825150	Superseded (same as TW5-89)
TW7-163	830240	825150	Superseded (same as TW5-90)
TW7-164	830240	825160	Superseded (same as TW5-91)
TW7-166	830240	825850	Superseded (same as TW5-92)
TW7-167	830250	824250	Input
TW7-168	830250	824250	Input
TW7-169	830250	824250	Input
TW7-170	830250	824250	Input
TW7-171	830250	824260	Input
TW7-172	830250	824290	Input
TW7-173	830250	824300	Input
TW7-174	830250	824300	Input
TW7-175	830250	825150	Superseded (same as TW5-93)
TW7-176	830250	825150	Superseded (same as TW5-94)
TW7-177	830250	825160	Superseded (same as TW5-95)
TW7-178	830260	824250	Input
TW7-179	830260	824260	Input
TW7-180	830260	824260	Input
TW7-181	830260	824260	Input
TW7-182	830270	824260	Input
TW7-183	830270	824260	Input
TW7-184	830270	824260	Input
TW7-185	830270	824310	Deleted by site survey observation
TW7-186	830270	824420	Superseded (same as TW6-56)
TW7-187	830280	825060	Superseded (same as TW5-96)
TW7-188	830280	825060	Superseded (same as TW5-97)
TW7-189	830300	824530	Superseded (same as TW6-59)
TW7-190	830300	825450	Superseded (same as TW5-98)
TW7-191	830310	824850	Superseded (same as TW6-61)
TW7-192	830310	825410	Superseded (same as TW5-99)
TW7-193	830310	825600	Superseded (same as TW5-100)
TW7-194	830320	824510	Superseded (same as TW6-64)
TW7-195	830330	825300	Superseded (same as TW5-101)
TW7-196	830340	824980	Superseded (same as TW6-66)
TW7-197	830350	824360	Input
TW7-198	830360	824340	Input
TW7-199	830360	824350	Input
TW7-200	830360	824350	Input
TW7-201	830370	824350	Input
TW7-202	830370	824350	Input
TW7-203	830370	824350	Input
TW7-204	830370	824360	Input
TW7-205	830370	824360	Input
TW7-206	830380	824370	Input
TW7-207	830390	824370	Input
TW7-208	830390	824380	Input
TW7-209	830400	824390	Input
TW7-210	830410	824370	Input
TW7-211	830410	824380	Input
TW7-212	830420	824370	Input
TW7-213	830420	824370	Input
TW7-214	830420	824380	Input
TW7-215	830430	825070	Superseded (same as TW6-67)
TW7-216	830440	824530	Deleted by site survey observation
TW7-217	830440	825280	Superseded (same as TW6-68)
TW7-218	830470	824550	Deleted by site survey observation
TW7-219	830480	824550	Deleted by site survey observation
TW7-220	830490	825270	Superseded (same as TW6-69)
TW7-221	830490	825270	Superseded (same as TW6-69)
TW7-222	830490	825270	Superseded (same as TW6-70)
TW7-223	830490	825270	Superseded (same as TW6-71)

Note:
[1] Since TW5, TW6 and TW7 are adjacent, the study areas of their EIA reports would have certain overlapping. Therefore, some chimneys would have different IDs in these reports.