

**Guangdong-Hong Kong-Macao
Pearl River Delta
Regional Air Quality Monitoring Network**

April to June 2021

**Statistical Summary of the Second quarter
Monitoring Results**

Report Number : PRDAIR-2021-2

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Guangdong-Hong Kong-Macao Pearl River
Delta Regional Air Quality Monitoring
Network**

Security Classification : Unrestricted

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1. Foreword

Since the Pearl River Delta (PRD) Regional Air Quality Monitoring Network came into operation on 30 November 2005, the PRD Regional Air Quality Index (RAQI) was reported to the public on a daily basis. Starting from 2006, half-yearly and annual air quality monitoring reports were also published every year. The network was subsequently enhanced and expanded in September 2014 and renamed to “Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network” (the “Network”).

To cope with the enhancement of the network, the update of the national ambient air quality standards as well as the need for improving the reporting frequency of monitoring results, starting from 2014, the real-time hourly monitoring data was reported on a new internet platform to replace the daily RAQI, the half-yearly report was also replaced by a quarterly report while the annual air quality monitoring report was maintained. The quarterly report is a brief statistical summary of the regional air quality monitoring results in a quarter. The annual report, in addition to the reporting of the monitoring data, provides a more detailed analysis and comparison of the air quality in the year. From the fourth quarter of 2014, the statistical results of carbon monoxide (CO) and fine suspended particulates (PM_{2.5} or FSP) were added to the report in addition to those of respirable suspended particulates (PM₁₀ or RSP), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and ozone (O₃).

This report is the statistical summary of the monitoring results of the PRD Regional Air Quality Monitoring Network in the second quarter of 2021. It is the thirtieth report published in the form of a quarterly report and the twenty-seventh report with the statistical summaries of the six pollutants (i.e. PM₁₀, PM_{2.5}, SO₂, NO₂, O₃ and CO).

2. Introduction to Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network

The PRD Regional Air Quality Monitoring Network was jointly established by the Guangdong Provincial Environmental Monitoring Center¹ (GDEMC) and the Environmental Protection Department of the Hong Kong Special Administrative Region (HKEPD) from 2003 to 2005, and commenced its operation to report the Regional Air Quality Index (RAQI) on 30 November 2005.

With the growing concerns of air pollution control and economic development of the region, the GDEMC¹ and HKEPD had worked in collaboration with the environmental protection cum meteorological authorities of Macao to enhance the network by extending the coverage of monitoring area to Guangdong, Hong Kong and Macao in September 2014. The enhancements included the addition of monitoring stations from 16 to 23 to further improve the spatial distribution and the inclusion of two new monitoring parameters, i.e. carbon monoxide (CO) and fine suspended particulates (PM_{2.5}), to enrich the air quality monitoring information. At the same time, the network was renamed to “Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network” (the “Network”) while the “Quality Management Committee of Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network”, which was jointly established by Guangdong Ecological and Environmental Monitoring Center (GDEEMC), HKEPD, Environmental Protection Bureau of

¹ Guangdong Provincial Environmental Monitoring Center was renamed as Guangdong Ecological and Environmental Monitoring Center in December 2020.

Macao SARG and the Meteorological and Geophysical Bureau of Macao SARG, was responsible for quality management of the Network and dissemination of information.

The Network comprises 23 automatic air quality monitoring stations (see Figure 2.1) across the PRD region. Ten city stations are operated either by the Ecological and Environmental Monitoring Centers of the individual cities in Guangdong or the operation-cum-maintenance agencies commissioned by the State. Eight regional stations are operated by the GDEEMC, the four stations located in Hong Kong are managed by the HKEPD and the remaining one in Macao is operated by Meteorological and Geophysical Bureau of Macao SARG.

All stations are installed with monitoring equipment to measure the ambient concentrations of PM₁₀, PM_{2.5}, SO₂, NO₂, O₃ and CO.

Annexes A and B show the site information of the monitoring stations in the Network and the methods used for measuring air pollutant concentrations respectively.

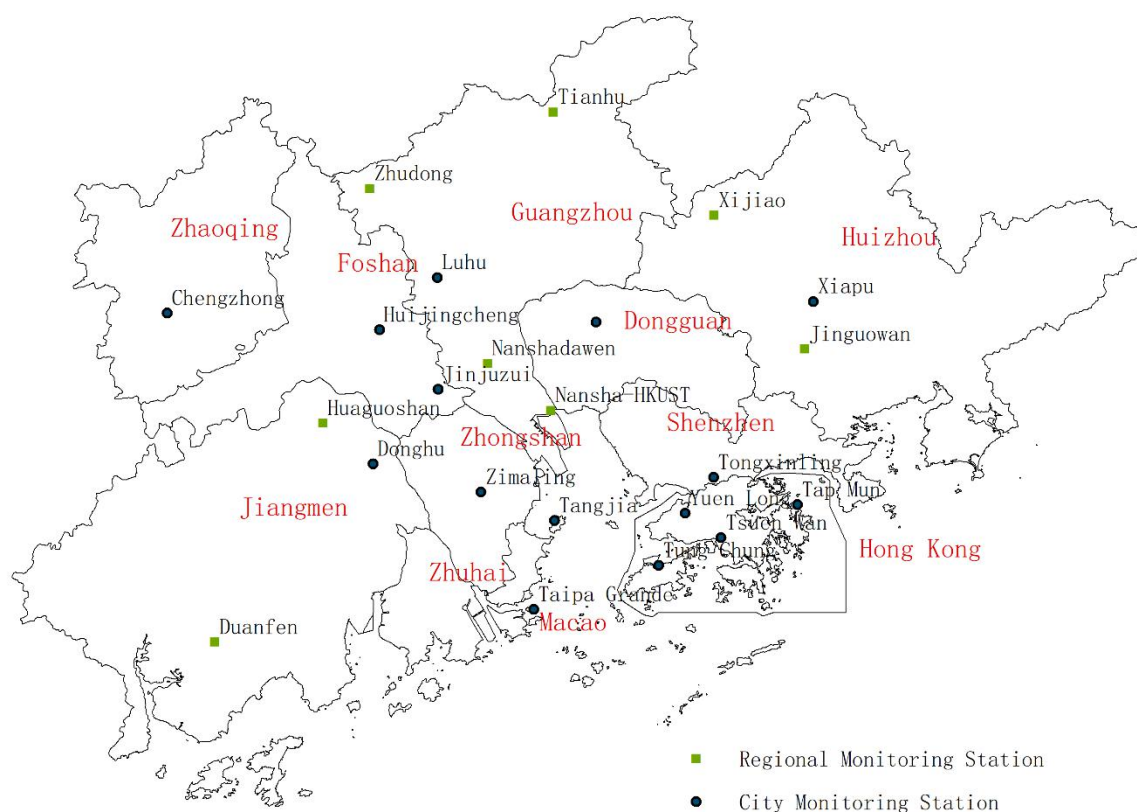


Figure 2.1: Spatial Distribution of Monitoring Stations in the Network

Remark: For the boundary of the administrative division of the Macao Special Administrative Region, according to the Decree n.º665 of the State Council of the People’s Republic of China, “the map of the administrative division of the Macao Special Administrative Region” was approved at the 116th Executive Meeting of the State Council on 16 December 2015.

3. Operation of the Network

The overall operation of the Network was smooth in the second quarter of 2021. The average data capture rate of hourly air pollutant monitoring data measured at all monitoring stations was 97.1% in the second quarter.

4. Statistical Results of Pollutant Concentrations

Tables 4.1a to 4.6b list the detailed statistical results of the six air pollutants (SO₂, NO₂, O₃, CO, PM₁₀ and PM_{2.5}) from April to June 2021. Per the amended *GB 3095-2012: Ambient Air Quality Standards*, starting from 2019, the concentrations of gaseous pollutants are calculated at a reference temperature of 298.15K and a pressure of 101.325 kPa, while the concentrations of PM₁₀ and PM_{2.5} are measured at real-time temperature and atmospheric pressure during monitoring.

Table 4.1a: The monthly maxima and minima of hourly averages of SO₂

Monitoring Station	April 2021		May 2021		June 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	3	22	3	10	1	15
Nanshadawen (Guangzhou)	4	32	5	15	6	23
Nansha-HKUST (Guangzhou)	5	23	5	17	5	17
Tianhu (Guangzhou)	2	11	2	20	8	15
Zhudong (Guangzhou)	5	9	5	19	5	19
Tongxinling (Shenzhen)	2	30	3	8	3	12
Jinjuzui (Foshan)	2	23	1	8	1	12
Huijingcheng (Foshan)	2	64	1	15	1	39
Tangjia (Zhuhai)	4	18	3	11	4	20
Donghu (Jiangmen)	5	18	4	13	4	22
Duanfen (Jiangmen)	3	27	1	10	3	14
Huaguoshan (Jiangmen)	2	82	1	50	1	67
Chengzhong (Zhaoqing)	5	49	5	95	4	74
Xiapu (Huizhou)	6	25	6	20	3	40
Xijiao (Huizhou)	1	14	1	9	1	8
Jinguowan (Huizhou)	4	24	4	17	1	13
Zimaling (Zhongshan)	1	17	1	11	2	23
Nanchengyuanling (Dongguan)	7	20	5	14	6	17
Tap Mun (Hong Kong)	3	8	3	10	3	9
Tsuen Wan (Hong Kong)	0	13	2	12	2	18
Yuen Long (Hong Kong)	6	21	7	13	8	15
Tung Chung (Hong Kong)	2	11	3	10	4	15
Taipa Grande (Macao)	3	11	4	11	3	13

Remark : All concentration units are in micrograms per cubic metre (µg/m³).

Table 4.1b: The monthly maxima and minima of daily averages of SO₂

Monitoring Station	April 2021		May 2021		June 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	4	10	4	7	2	7
Nanshadawen (Guangzhou)	5	15	6	9	6	13
Nansha-HKUST (Guangzhou)	6	13	5	9	5	11
Tianhu (Guangzhou)	3	7	2	12	9	12
Zhudong (Guangzhou)	5	8	6	10	5	9
Tongxinling (Shenzhen)	3	5	3	6	4	10
Jinjuzui (Foshan)	2	8	1	5	1	4
Huijingcheng (Foshan)	4	25	2	8	5	16
Tangjia (Zhuhai)	4	9	4	7	4	7
Donghu (Jiangmen)	5	11	5	9	5	10
Duanfen (Jiangmen)	3	9	3	6	4	8
Huaguoshan (Jiangmen)	4	23	2	14	2	16
Chengzhong (Zhaoqing)	7	20	8	26	6	21
Xiapu (Huizhou)	7	14	7	12	4	12
Xijiao (Huizhou)	1	5	1	3	1	3
Jinguowan (Huizhou)	4	8	4	6	2	6
Zimaling (Zhongshan)	2	7	3	8	2	8
Nanchengyuanling (Dongguan)	7	13	6	11	7	11
Tap Mun (Hong Kong)	4	7	4	6	4	6
Tsuen Wan (Hong Kong)	2	6	2	7	3	8
Yuen Long (Hong Kong)	7	9	8	9	8	10
Tung Chung (Hong Kong)	3	6	3	5	4	8
Taipa Grande (Macao)	3	6	4	5	4	7

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.1c : The monthly averages of SO₂

Monitoring Station	April 2021	May 2021	June 2021
Luhu (Guangzhou)	5	5	5
Nanshadawen (Guangzhou)	9	7	9
Nansha-HKUST (Guangzhou)	8	7	7
Tianhu (Guangzhou)	4	9	10
Zhudong (Guangzhou)	6	8	6
Tongxinling (Shenzhen)	4	4	5
Jinjuzui (Foshan)	4	3	2
Huijingcheng (Foshan)	8	6	7
Tangjia (Zhuhai)	6	5	5
Donghu (Jiangmen)	8	6	6
Duanfen (Jiangmen)	5	4	4
Huaguoshan (Jiangmen)	8	6	5
Chengzhong (Zhaoqing)	12	12	12
Xiapu (Huizhou)	10	9	8
Xijiao (Huizhou)	3	2	2
Jinguowan (Huizhou)	5	5	4
Zimaling (Zhongshan)	4	5	5
Nanchengyuanling (Dongguan)	10	8	8
Tap Mun (Hong Kong)	5	5	5
Tsuen Wan (Hong Kong)	3	4	5
Yuen Long (Hong Kong)	8	8	8
Tung Chung (Hong Kong)	4	4	5
Taipa Grande (Macao)	4	4	4

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.2a: The monthly maxima and minima of hourly averages of NO₂

Monitoring Station	April 2021		May 2021		June 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	13	134	8	88	6	83
Nanshadawen (Guangzhou)	9	116	5	106	4	79
Nansha-HKUST (Guangzhou)	5	115	2	84	2	63
Tianhu (Guangzhou)	5	46	4	38	2	28
Zhudong (Guangzhou)	11	95	6	103	4	63
Tongxinling (Shenzhen)	3	60	4	64	4	57
Jinjuzui (Foshan)	7	106	1	92	1	54
Huijingcheng (Foshan)	5	141	5	86	5	110
Tangjia (Zhuhai)	1	65	1	27	1	39
Donghu (Jiangmen)	6	78	4	44	5	44
Duanfen (Jiangmen)	1	54	1	19	2	23
Huaguoshan (Jiangmen)	6	76	3	43	3	42
Chengzhong (Zhaoqing)	8	102	8	104	8	124
Xiapu (Huizhou)	7	79	6	62	5	66
Xijiao (Huizhou)	4	38	1	38	1	30
Jinguowan (Huizhou)	6	53	3	45	1	32
Zimaling (Zhongshan)	4	84	1	56	1	48
Nanchengyuanling (Dongguan)	8	125	5	74	6	93
Tap Mun (Hong Kong)	1	47	0	33	0	42
Tsuen Wan (Hong Kong)	7	122	9	116	6	117
Yuen Long (Hong Kong)	6	102	6	104	6	95
Tung Chung (Hong Kong)	2	76	1	85	0	75
Taipa Grande (Macao)	4	92	1	52	2	45

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.2b: The monthly maxima and minima of daily averages of NO₂

Monitoring Station	April 2021		May 2021		June 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	24	71	15	41	14	45
Nanshadawen (Guangzhou)	22	71	12	48	17	41
Nansha-HKUST (Guangzhou)	16	66	9	36	8	34
Tianhu (Guangzhou)	7	24	6	22	4	15
Zhudong (Guangzhou)	19	38	14	37	11	31
Tongxinling (Shenzhen)	5	28	6	25	7	26
Jinjuzui (Foshan)	13	56	3	24	6	37
Huijingcheng (Foshan)	14	61	13	39	11	47
Tangjia (Zhuhai)	9	38	2	15	5	25
Donghu (Jiangmen)	11	55	7	25	9	23
Duanfen (Jiangmen)	2	33	2	9	4	13
Huaguoshan (Jiangmen)	13	51	5	25	6	23
Chengzhong (Zhaoqing)	17	50	14	42	14	47
Xiapu (Huizhou)	15	37	12	30	11	27
Xijiao (Huizhou)	8	20	7	20	4	12
Jinguowan (Huizhou)	12	30	9	29	2	14
Zimaling (Zhongshan)	6	45	4	26	3	26
Nanchengyuanling (Dongguan)	15	66	10	28	10	34
Tap Mun (Hong Kong)	3	24	2	15	1	14
Tsuen Wan (Hong Kong)	29	71	29	58	22	60
Yuen Long (Hong Kong)	23	53	12	42	14	47
Tung Chung (Hong Kong)	5	42	5	42	4	42
Taipa Grande (Macao)	8	49	4	30	5	29

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.2c: The monthly averages of NO₂

Monitoring Station	April 2021	May 2021	June 2021
Luhu (Guangzhou)	40	25	27
Nanshadawen (Guangzhou)	40	24	26
Nansha-HKUST (Guangzhou)	39	19	19
Tianhu (Guangzhou)	14	14	9
Zhudong (Guangzhou)	29	22	21
Tongxinling (Shenzhen)	13	13	14
Jinjuzui (Foshan)	32	13	18
Huijingcheng (Foshan)	39	21	24
Tangjia (Zhuhai)	19	7	11
Donghu (Jiangmen)	27	13	15
Duanfen (Jiangmen)	10	4	8
Huaguoshan (Jiangmen)	29	12	14
Chengzhong (Zhaoqing)	32	23	26
Xiapu (Huizhou)	22	19	17
Xijiao (Huizhou)	13	13	8*
Jinguowan (Huizhou)	19	15	7
Zimaling (Zhongshan)	21	8	9
Nanchengyuanling (Dongguan)	32	18	21
Tap Mun (Hong Kong)	7	6	6
Tsuen Wan (Hong Kong)	40	40	40
Yuen Long (Hong Kong)	33	24	26
Tung Chung (Hong Kong)	20	14	16
Taipa Grande (Macao)	18	8	11

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

* The capture rate of validated daily data per month is below 85%

Table 4.3a: The monthly maxima and minima of hourly averages of O₃

Monitoring Station	April 2021		May 2021		June 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	3	331	3	237	3	242
Nanshadawen (Guangzhou)	2	348	3	242	2	243
Nansha-HKUST (Guangzhou)	3	322	3	209	3	305
Tianhu (Guangzhou)	11	351	7	245	21	194
Zhudong (Guangzhou)	4	206	3	195	3	222
Tongxinling (Shenzhen)	1	202	1	194	1	252
Jinjuzui (Foshan)	2	328	2	175	2	231
Huijingcheng (Foshan)	4	360	4	229	4	233
Tangjia (Zhuhai)	2	215	8	244	1	272
Donghu (Jiangmen)	1	276	2	220	2	277
Duanfen (Jiangmen)	2	225	2	174	2	170
Huaguoshan (Jiangmen)	2	237	4	198	5	242
Chengzhong (Zhaoqing)	6	207	6	170	6	263
Xiapu (Huizhou)	3	237	4	245	4	173
Xijiao (Huizhou)	2	298	2	238	3	164
Jinguowan (Huizhou)	1	281	1	305	8	189
Zimaling (Zhongshan)	2	303	4	224	4	260
Nanchengyuanling (Dongguan)	2	459	5	229	5	204
Tap Mun (Hong Kong)	2	209	5	195	5	292
Tsuen Wan (Hong Kong)	1	207	1	170	1	233
Yuen Long (Hong Kong)	1	213	1	232	2	248
Tung Chung (Hong Kong)	0	232	3	232	3	221
Taipa Grande (Macao)	1	180	13	241	12	230

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.3b: Daily maximum 8-hour averages of O₃ (the monthly maxima, minima and the 90th percentile)

Monitoring Station	April 2021			May 2021			June 2021		
	Min	Max	90 th per	Min	Max	90 th per	Min	Max	90 th per
Luhu (Guangzhou)	8	259	187	61	205	141	49	198	148
Nanshadawen (Guangzhou)	10	278	195	53	220	146	37	227	178
Nansha-HKUST (Guangzhou)	30	239	158	46	178	109	45	258	185
Tianhu (Guangzhou)	45	281	185	73	220	172	56	168	152
Zhudong (Guangzhou)	14	164	140	60	155	136	61	180	169
Tongxinling (Shenzhen)	34	162	144	33	170	109	34	219	91
Jinjuzui (Foshan)	8	249	152	51	159	100	36	208	161
Huijingcheng (Foshan)	7	284	195	62	211	139	40	217	152
Tangjia (Zhuhai)	46	178	172	41	227	120	43	253	121
Donghu (Jiangmen)	14	231	162	50	201	125	38	250	174
Duanfen (Jiangmen)	27	208	145	36	137	81	42	154	127
Huaguoshan (Jiangmen)	8	208	169	50	173	112	46	197	113
Chengzhong (Zhaoqing)	25	183	162	60	150	104	45	243	127
Xiapu (Huizhou)	40	196	158	52	214	146	44	136	122
Xijiao (Huizhou)	34	238	183	61	207	155	48	137	133
Jinguowan (Huizhou)	49	242	168	59	230	152	45	154	122
Zimaling (Zhongshan)	17	235	158	50	204	119	42	230	139
Nanchengyuanling (Dongguan)	17	330	228	63	200	132	54	189	169
Tap Mun (Hong Kong)	37	185	165	50	162	127	51	246	106
Tsuen Wan (Hong Kong)	19	140	109	12	137	78	21	188	78
Yuen Long (Hong Kong)	29	162	142	21	176	104	30	224	91
Tung Chung (Hong Kong)	24	158	127	31	173	88	27	204	66
Taipa Grande (Macao)	35	170	151	32	192	84	37	203	101

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.3c: The monthly averages of O₃

Monitoring Station	April 2021	May 2021	June 2021
Luhu (Guangzhou)	55	53	55
Nanshadawen (Guangzhou)	63	52	53
Nansha-HKUST (Guangzhou)	70	48	56
Tianhu (Guangzhou)	79	77	74
Zhudong (Guangzhou)	47	55	62
Tongxinling (Shenzhen)	77	46	49
Jinjuzui (Foshan)	56	46	51
Huijingcheng (Foshan)	67	60	61
Tangjia (Zhuhai)	78	53	58
Donghu (Jiangmen)	67	56	57
Duanfen (Jiangmen)	68	48	56
Huaguoshan (Jiangmen)	58	51	51
Chengzhong (Zhaoqing)	59	50	57
Xiapu (Huizhou)	73	58	54
Xijiao (Huizhou)	68	56	51
Jinguowan (Huizhou)	77	58	54
Zimaling (Zhongshan)	72	57	59
Nanchengyuanling (Dongguan)	81	59	61
Tap Mun (Hong Kong)	98	55	61
Tsuen Wan (Hong Kong)	62	28	33
Yuen Long (Hong Kong)	70	43	42
Tung Chung (Hong Kong)	66	43	45
Taipa Grande (Macao)	81	49	55

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.4a: The monthly maxima and minima of hourly averages of CO

Monitoring Station	April 2021		May 2021		June 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	0.5	1.7	0.3	1.3	0.3	1.2
Nanshadawen (Guangzhou)	0.3	1.8	0.3	1.4	0.2	1.0
Nansha-HKUST (Guangzhou)	0.2	2.0	0.4	1.2	0.4	1.2
Tianhu (Guangzhou)	0.4	1.2	0.2	1.2	0.3	0.8
Zhudong (Guangzhou)	0.3	1.2	0.3	1.0	0.0	0.9
Tongxinling (Shenzhen)	0.3	1.0	0.3	0.9	0.4	0.9
Jinjuzui (Foshan)	0.1	1.4	0.4	1.4	0.4	0.9
Huijingcheng (Foshan)	0.3	1.6	0.3	1.1	0.2	1.0
Tangjia (Zhuhai)	0.1	1.1	0.2	1.0	0.2	0.8
Donghu (Jiangmen)	0.4	1.8	0.3	1.1	0.3	1.1
Duanfen (Jiangmen)	0.3	1.0	0.3	0.9	0.4	0.8
Huaguoshan (Jiangmen)	0.6	1.3	0.2	1.1	0.2	1.0
Chengzhong (Zhaoqing)	0.3	1.2	0.3	1.1	0.3	1.0
Xiapu (Huizhou)	0.4	1.2	0.3	0.9	0.1	0.9
Xijiao (Huizhou)	0.2	0.9	0.2	1.0	0.1	0.8
Jinguowan (Huizhou)	0.3	1.1	0.2	1.1	0.1	2.8
Zimaling (Zhongshan)	0.2	1.1	0.3	1.0	0.3	1.0
Nanchengyuanling (Dongguan)	0.1	1.1	0.3	1.2	0.2	1.0
Tap Mun (Hong Kong)	0.3	1.0	0.2	0.8	0.2	0.8
Tsuen Wan (Hong Kong)	0.3	1.0	0.2	0.9	0.2	1.0
Yuen Long (Hong Kong)	0.2	1.0	0.2	0.8	0.4	1.1
Tung Chung (Hong Kong)	0.1	1.0	0.1	0.7	0.0	0.6
Taipa Grande (Macao)	0.4	1.1	0.3	1.3	0.2	1.6

Remark : All concentration units are in milligrams per cubic metre (mg/m³).

Table 4.4b: Daily averages of CO (the monthly maxima, minima and the 95th percentile)

Monitoring Station	April 2021			May 2021			June 2021		
	Min	Max	95 th per	Min	Max	95 th per	Min	Max	95 th per
Luhu (Guangzhou)	0.6	1.2	1.1	0.5	1.1	0.9	0.5	0.8	0.8
Nanshadawen (Guangzhou)	0.3	1.3	1.1	0.5	1.1	1.0	0.3	0.7	0.7
Nansha-HKUST (Guangzhou)	0.2	1.2	1.2	0.4	0.9	0.8	0.5	1.0	0.8
Tianhu (Guangzhou)	0.5	1.0	1.0	0.4	0.9	0.9	0.4	0.7	0.7
Zhudong (Guangzhou)	0.4	1.0	1.0	0.3	0.8	0.7	0.2	0.6	0.6
Tongxinling (Shenzhen)	0.3	0.7	0.7	0.4	0.8	0.7	0.4	0.9	0.7
Jinjuzui (Foshan)	0.2	1.2	1.0	0.5	1.1	0.9	0.4	0.7	0.7
Huijingcheng (Foshan)	0.4	1.1	1.1	0.4	0.9	0.8	0.3	0.8	0.7
Tangjia (Zhuhai)	0.1	0.9	0.9	0.3	0.8	0.8	0.3	0.7	0.6
Donghu (Jiangmen)	0.5	1.1	1.0	0.3	0.9	0.8	0.4	0.7	0.7
Duanfen (Jiangmen)	0.3	0.9	0.8	0.4	0.7	0.6	0.4	0.7	0.7
Huaguoshan (Jiangmen)	0.6	1.2	1.1	0.4	1.0	0.9	0.3	0.7	0.7
Chengzhong (Zhaoqing)	0.4	1.0	1.0	0.3	0.8	0.8	0.4	0.7	0.6
Xiapu (Huizhou)	0.4	0.9	0.8	0.4	0.8	0.7	0.3	0.7	0.6
Xijiao (Huizhou)	0.3	0.8	0.7	0.3	0.8	0.6	0.2	0.5	0.4
Jinguowan (Huizhou)	0.5	1.0	1.0	0.5	0.9	0.8	0.5	0.8	0.8
Zimaling (Zhongshan)	0.3	0.9	0.8	0.4	0.8	0.7	0.3	0.7	0.7
Nanchengyuanling (Dongguan)	0.2	1.0	0.9	0.4	1.0	0.9	0.4	0.7	0.7
Tap Mun (Hong Kong)	0.3	0.9	0.8	0.3	0.7	0.6	0.2	0.7	0.6
Tsuen Wan (Hong Kong)	0.4	0.8	0.8	0.3	0.8	0.7	0.3	0.9	0.8
Yuen Long (Hong Kong)	0.4	0.8	0.8	0.3	0.7	0.6	0.5	0.9	0.8
Tung Chung (Hong Kong)	0.2	0.6	0.6	0.1	0.5	0.5	0.0	0.5	0.5
Taipa Grande (Macao)	0.4	0.9	0.9	0.3	0.9	0.8	0.3	1.5	1.0

Remark : All concentration units are in milligrams per cubic metre (mg/m³).

Table 4.4c: The monthly averages of CO

Monitoring Station	April 2021	May 2021	June 2021
Luhu (Guangzhou)	0.8	0.6	0.7
Nanshadawen (Guangzhou)	0.8	0.8	0.5
Nansha-HKUST (Guangzhou)	0.8	0.6	0.6
Tianhu (Guangzhou)	0.8	0.6	0.6
Zhudong (Guangzhou)	0.8	0.4	0.4
Tongxinling (Shenzhen)	0.5	0.5	0.5
Jinjuzui (Foshan)	0.7	0.6	0.6
Huijingcheng (Foshan)	0.8	0.5	0.5
Tangjia (Zhuhai)	0.6	0.5	0.5
Donghu (Jiangmen)	0.7	0.5	0.5
Duanfen (Jiangmen)	0.5	0.4	0.5
Huaguoshan (Jiangmen)	0.9	0.6	0.5
Chengzhong (Zhaoqing)	0.7	0.5	0.5
Xiapu (Huizhou)	0.6	0.5	0.5
Xijiao (Huizhou)	0.6	0.4	0.3
Jinguowan (Huizhou)	0.7	0.7	0.6
Zimaling (Zhongshan)	0.5	0.5	0.5
Nanchengyuanling (Dongguan)	0.6	0.6	0.5
Tap Mun (Hong Kong)	0.5	0.5	0.4
Tsuen Wan (Hong Kong)	0.6	0.5	0.6
Yuen Long (Hong Kong)	0.5	0.4	0.6
Tung Chung (Hong Kong)	0.3	0.2	0.2
Taipa Grande (Macao)	0.6	0.5	0.5

Remark : All concentration units are in milligrams per cubic metre (mg/m³).

Table 4.5a: The monthly maxima and minima of daily averages of PM₁₀

Monitoring Station	April 2021		May 2021		June 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	16	113	20	62	17	57
Nanshadawen (Guangzhou)	30	123	24	59	10	58
Nansha-HKUST (Guangzhou)	19	101	12	40	12	61
Tianhu (Guangzhou)	4	66	18	68	8	37
Zhudong (Guangzhou)	23	106	33	95	15	55
Tongxinling (Shenzhen)	17	94	8	38	8	55
Jinjuzui (Foshan)	25	112	18	49	13	52
Huijingcheng (Foshan)	20	128	20	67	16	61
Tangjia (Zhuhai)	10	80	4	37	7	60
Donghu (Jiangmen)	15	108	15	53	13	59
Duanfen (Jiangmen)	18	77	6	35	9	36
Huaguoshan (Jiangmen)	22	103	20	93	20	83
Chengzhong (Zhaoqing)	7	90	14	64	11	73
Xiapu (Huizhou)	27	117	19	61	12	54
Xijiao (Huizhou)	18	95	18	63	14	34
Jinguowan (Huizhou)	21	96	15	40	14	53
Zimaling (Zhongshan)	21	87	13	46	12	61
Nanchengyuanling (Dongguan)	21	123	13	46	14	58
Tap Mun (Hong Kong)	11	96	3	39	5	48
Tsuen Wan (Hong Kong)	13	89	6	35	8	56
Yuen Long (Hong Kong)	13	88	4	39	8	67
Tung Chung (Hong Kong)	10	98	4	35	5	49
Taipa Grande (Macao)	15	111	4	45	5	46

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.5b: The monthly averages of PM₁₀

Monitoring Station	April 2021	May 2021	June 2021
Luhu (Guangzhou)	51	32	29
Nanshadawen (Guangzhou)	55	35	32
Nansha-HKUST (Guangzhou)	44	24	24
Tianhu (Guangzhou)	35	30	24
Zhudong (Guangzhou)	63	49	38*
Tongxinling (Shenzhen)	37	20	21
Jinjuzui (Foshan)	49	28	29
Huijingcheng (Foshan)	55	30	30
Tangjia (Zhuhai)	35	15	17
Donghu (Jiangmen)	48	26	28
Duanfen (Jiangmen)	31	17	20
Huaguoshan (Jiangmen)	55	35	36
Chengzhong (Zhaoqing)	43	28	30
Xiapu (Huizhou)	51	33	29
Xijiao (Huizhou)	41	32	24*
Jinguowan (Huizhou)	41	24	25
Zimaling (Zhongshan)	40	23	23
Nanchengyuanling (Dongguan)	49	25	26
Tap Mun (Hong Kong)	29	12	14
Tsuen Wan (Hong Kong)	29	15	18
Yuen Long (Hong Kong)	31	16	19
Tung Chung (Hong Kong)	29	14	16
Taipa Grande (Macao)	37	15	16

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

* The capture rate of validated daily data per month is below 85%

Table 4.6a: The monthly maxima and minima of daily averages of PM_{2.5}

Monitoring Station	April 2021		May 2021		June 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	9	55	8	34	8	33
Nanshadawen (Guangzhou)	10	44	3	28	2	39
Nansha-HKUST (Guangzhou)	8	45	5	34	5	44
Tianhu (Guangzhou)	3	41	5	41	4	20
Zhudong (Guangzhou)	11	64	13	57	9	33
Tongxinling (Shenzhen)	10	34	2	28	3	36
Jinjuzui (Foshan)	12	42	6	26	6	32
Huijingcheng (Foshan)	14	57	8	44	7	33
Tangjia (Zhuhai)	10	37	2	22	3	46
Donghu (Jiangmen)	7	42	3	32	6	35
Duanfen (Jiangmen)	9	32	4	27	6	25
Huaguoshan (Jiangmen)	13	61	7	49	9	46
Chengzhong (Zhaoqing)	5	46	7	39	5	43
Xiapu (Huizhou)	14	42	5	30	7	24
Xijiao (Huizhou)	11	47	10	44	8	22
Jinguowan (Huizhou)	14	41	7	27	8	32
Zimaling (Zhongshan)	10	37	3	24	4	33
Nanchengyuanling (Dongguan)	5	49	3	28	8	32
Tap Mun (Hong Kong)	8	29	2	16	3	34
Tsuen Wan (Hong Kong)	9	34	4	21	5	42
Yuen Long (Hong Kong)	6	31	3	26	6	49
Tung Chung (Hong Kong)	8	29	2	20	4	36
Taipa Grande (Macao)	8	36	3	24	3	31

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.6b: The monthly averages of PM_{2.5}

Monitoring Station	April 2021	May 2021	June 2021
Luhu (Guangzhou)	25	16	15
Nanshadawen (Guangzhou)	21	12	12
Nansha-HKUST (Guangzhou)	24	14	16
Tianhu (Guangzhou)	19	15	10
Zhudong (Guangzhou)	34	24	22
Tongxinling (Shenzhen)	18	10	10
Jinjuzui (Foshan)	22	13	13
Huijingcheng (Foshan)	28	15	14
Tangjia (Zhuhai)	20	9	10
Donghu (Jiangmen)	21	12	13
Duanfen (Jiangmen)	18	10	11
Huaguoshan (Jiangmen)	29	16	18
Chengzhong (Zhaoqing)	24	15	16
Xiapu (Huizhou)	24	14	12
Xijiao (Huizhou)	25	21*	14*
Jinguowan (Huizhou)	23	14	13
Zimaling (Zhongshan)	19	11	12
Nanchengyuanling (Dongguan)	22	13	13
Tap Mun (Hong Kong)	14	7	8
Tsuen Wan (Hong Kong)	17	10	11
Yuen Long (Hong Kong)	15	10	11
Tung Chung (Hong Kong)	16	9	10
Taipa Grande (Macao)	16	9	10

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

* The capture rate of validated daily data per month is below 85%

Annex A: Site Information of Monitoring Stations

Monitoring Stations	Address	Area Type	Sampling Height (Above P.D.)	Above Ground	Date Commenced Operation
Luhu (Guangzhou)	Jufong Garden of Luhu Park (Big yard, No. 11 Luhu Park)	City	30m	9m	1993
Nanshadawen ⁽¹⁾ (Guangzhou)	Shinan Road, Dongchong Town, Nansha	City	23m	10m	Jan 2021
Nansha-HKUST ⁽²⁾ (Guangzhou)	HKUST Fok Ying Tung Research Institute, Nansha	Mixed educational/commercial and residential/industrial	54m	28m	Oct 2004
Tianhu (Guangzhou)	Tianhu Park, Conghua	Background : rural	251m	13m	Oct 2004
Zhudong (Guangzhou)	Zhudong Village Committee, Chini Town, Huadu District	Rural	19m	10m	Dec 2011
Tongxinling ⁽³⁾ (Shenzhen)	Shennan Zhong Road, Futian District	City	38m	12m	Sep 1997
Jinjuzui (Foshan)	Foshan City Communist Party School, Jinjuzui, Shunde District	Tourist and cultural /educational	27m	17m	Oct 1999
Huijingcheng (Foshan)	No. 127, Fenjiang Nan Road, Chancheng District	Urban: mixed residential/commercial/industrial	24m	14m	Feb 2000
Tangjia (Zhuhai)	Qiao Island Mangrove Monitoring Station, Tangjia Town	Mixed educational/commercial and residential/industrial	13m	13m	Jan 2010
Donghu (Jiangmen)	Donghu Park, Jiangmen	City	17.5m	5m	Nov 2001
Duanfen (Jiangmen)	Duanfen Middle School, Taishan	Rural	15m	12m	Dec 2011
Huaguoshan (Jiangmen)	Huaguoshan, Taoyuan, Heshan	Rural	25m	15m	Feb 2012
Chengzhong (Zhaoqing)	No. 63, Zhengdong Road, Duanzhou District	Urban: mixed residential/commercial	38m	16m	Jun 2001
Xiapu (Huizhou)	No. 4 Xiabuhengjiang Road No. 3, Huicheng District	Urban: commercial	49m	20m	Dec 1999
Xijiao ⁽⁴⁾ (Huizhou)	Zhangbei Yaowei She Nationality Primary School, Henghe Town	Rural	44m	10m	Dec 2011
Jinguowan (Huizhou)	Jinguowan Ecological Farm, Huizhou	Residential	77m	8m	Oct 2004

Monitoring Stations	Address	Area Type	Sampling Height (Above P.D.)	Above Ground	Date Commenced Operation
Zimaling (Zhongshan)	Zimaling Park, Zhongshan	Mixed residential/commercial	45 m	7m	Aug 2002
Nancheng-yuanling ⁽⁵⁾ (Dongguan)	Dongguan administration center	Mixed residential/commercial/industrial	40 m	19m	May 2021
Tap Mun (Hong Kong)	Tap Mun Police Station	Background: rural	26m	11m	Apr 1998
Tsuen Wan (Hong Kong)	60 Tai Ho Road, Tsuen Wan	Urban: mixed residential/commercial/industrial	21m	17m	Aug 1988
Yuen Long (Hong Kong)	Yuen Long District Office, 269 Castle Peak Road, Yuen Long	New Town: residential	31m	25m	Jul 1995
Tung Chung (Hong Kong)	6 Fu Tung Street, Tung Chung	New Town: residential	34.5m	27.5m	Apr 1999
Taipa Grande (Macao)	Rampa do Observatorio, Taipa Grande	Rural	120m	10m	Mar 1999

Remarks:

- (1) Modiesha station closed permanently owing to insufficient space after the extensive renovation work at station, whereas Nanshadawen station joined the network in the 1st quarter of 2021.
- (2) Wanqingsha station was renamed as Nansha-HKUST station in the 1st quarter of 2019.
- (3) Liyuan station was renamed as Tongxinling station in the 1st quarter of 2019.
- (4) Xijiao station was relocated to Zhangbei Yaowei She Nationality Primary School, Henghe Town, Boluo County, in the 4th quarter of 2019. The distance between the old and new sites is about 200 metres.
- (5) Nancheng-yuanling station was relocated to Dongguan administration center in May 2021. The distance between the old and new sites is about 600 metres.

Annex B: Measurement Methods of Air Pollutant Concentration

Pollutants	Measuring Principles
Sulphur dioxide (SO ₂)	UV fluorescence / Differential Optical Absorption Spectroscopy
Nitrogen dioxide (NO ₂)	Chemiluminescence / Differential Optical Absorption Spectroscopy
Ozone (O ₃)	UV absorption / Differential Optical Absorption Spectroscopy
Respirable suspended particulates (PM ₁₀)	Oscillating microbalance (TEOM) / Beta particulate monitor
Fine suspended particulates (PM _{2.5})	Oscillating microbalance (TEOM) / Beta particulate monitor / Hybrid nephelometric / radiometric particulate mass monitor
Carbon monoxide (CO)	Gas filter correlation infrared absorption method / Non-dispersive infrared absorption method