

香港電燈有限公司
The Hongkong Electric Co., Ltd.



**Lamma Power Station
Units L2, L4 & L5 Flue Gas Desulphurization
Plants Retrofit**

Operational Phase

Quarterly Environmental Monitoring & Audit Report

January – March 2016


香港電燈有限公司
The Hongkong Electric Co., Ltd.




Lamma Power Station Ash Lagoon Operation Quarterly Environmental Monitoring & Audit

January – March 2016

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EXECUTIVE SUMMARY

This is the quarterly Environmental Monitoring and Audit (EM&A) report for the Projects “Lamma Power Station Units L4 & L5 Flue Gas Desulphurization Plant Retrofit” and “Lamma Power Station Unit L2 Flue Gas Desulphurization Plant Retrofit” prepared by the Environmental Team (ET). This report presents the results of impact monitoring on air and water quality and environmental audit for the operation of the said projects in the period from January to March 2016.

Environmental monitoring for air quality and water quality were carried out for the purpose of this EM&A program as well as for fulfilling the requirements stipulated in the relevant licences. The results were checked against the established Action/Limit (AL) levels. The implementation status of the environmental mitigation measures, Event/Action Plan and environmental complaint handling procedures were also checked.

Plant Availability

Unit L4 was fully available in the reporting period. Units L2 and L5 were out of service during the following period:

Unit	Period	Remark
L2	01/01/2016 00:00 to 31/03/2016 23:59	Unit Life Extension
L5	28/03/2016 00:21 to 28/03/2016 21:07	Defect Rectification

Malfunction/Outage Records of Pollution Control Equipment

Major outages of the Pollution Control Equipment during the reporting period are listed below:

Equipment	Period	Cause	Actions Taken
L5 FGD	01:04 on 16/02/2016 to 20:58 on 19/02/2016	FGD plant was bypassed for GGH washing and conducting miscellaneous defect rectification works	EPD was informed on 23/02/2016
L4 FGD	06/03/2016 05:59 to 18:48	FGD plant was bypassed to facilitate the Busbar I outage for conducting protective relay maintenance	EPD was informed on 09/03/2016
L5 FGD	06/03/2016 04:56 to 18:59	FGD plant was bypassed to facilitate the Busbar I outage for conducting protective relay maintenance	EPD was informed on 09/03/2016
L4 FGD	13/03/2016 05:52 to 21:11	FGD plant was bypassed to facilitate the Busbar II outage for conducting protective relay maintenance	EPD was informed on 16/03/2016

Equipment	Period	Cause	Actions Taken
L5 FGD	13/03/2016 05:00 to 21:17	FGD plant was bypassed to facilitate the Busbar II outage for conducting protective relay maintenance	EPD was informed on 16/03/2016
L4 FGD	23:16 on 15/03/2016 to 21:35 on 20/03/2016	FGD plant was bypassed for GGH washing and conducting miscellaneous defect rectification works	EPD was informed on 23/03/2016
L4 FGD	22/03/2016 09:09 to 11:11	FGD plant was bypassed due to BUF tripping on the operation of stalling protection alarm	EPD was informed on 29/03/2016

For other minor outages, please refer to section 1.4 of the report.

Environmental Monitoring Works

Environmental monitoring works were performed during the operation of Units L2, L4 and L5 FGD Plants in the reporting period.

Air Quality

No exceedance of Action and Limit levels for air quality were recorded in the reporting period.

Water Quality

No exceedance of Action and Limit levels for water quality were recorded in the reporting period.

Environmental Licensing and Permitting

Description	Permit / Licence No.	Valid Period		Issued To	Date of Issuance
		From	To		
Environmental Permit for L4/5 FGD plants retrofit project	EP-248/2006	25/04/2006	-	HK Electric	25/04/2006
Environmental Permit for Unit L2 FGD plant retrofit project	EP-287/2007	02/10/2007	-	HK Electric	02/10/2007
Specified Process Licence issued under APCO	L-7-002(10)	01/01/2015	31/12/2016	HK Electric	23/12/2014
WPCO discharge licence for Ash Lagoon	WT00011131-2011	15/12/2011	31/12/2016	HK Electric	15/12/2011

Implementation Status of Environmental Mitigation Measures

Environmental mitigation measures were implemented in the reporting period.

Environmental Complaints

No environmental complaint against the operation of Lamma Power Station was received during the reporting period.

Future key issues

Key issues to be considered in the coming months include:

Air Impact

- To continuously carry out the air quality monitoring for Units L2, L4 and L5.

Water Impact

- To continuously carry out the water quality monitoring for FGD WWT plant.

Concluding Remarks

The environmental performance of the projects was generally satisfactory.

1. INTRODUCTION

The Environmental Team (hereinafter called the “ET”) was formed within The Hongkong Electric Co. Ltd (HK Electric) to undertake Environmental Monitoring and Audit for the “Operation of Lamma Power Station Units L4 & L5 Flue Gas Desulphurization Plant Retrofit Project” under the requirements of Clause 2.18 of Environmental Permit (EP) No. EP-248/2006 and “Operation of Lamma Power Station Unit L2 Flue Gas Desulphurization Plant Retrofit Project” under the requirements of Clause 2.10 of Environmental Permit (EP) No. EP-287/2007.

This report summarizes the environmental monitoring and audit work for the said Projects for the period from January to March 2016.

1.1 Background

The Projects involves retrofitting the three existing coal-fired generating Units L2, L4 and L5 of Lamma Power Station with Flue Gas Desulphurisation (FGD) plants for reducing sulphur dioxide emissions in support of Government policy to improve the air quality of the Pearl River Delta.

The Projects include the installation and operation of FGD plants with flue gas desulphurization efficiency of 90% for the three coal-fired Units L2, L4 & L5 to reduce the overall SO₂ emissions from Lamma Power Station. The process adopted for the FGD plants is “Wet Limestone-Gypsum”, a technology which has already been used in, and proved effective and reliable for the existing coal-fired units L6, L7 & L8. The flue gas from the boiler is directed to the FGD absorber inside which removal of SO₂ is take place by reaction with limestone slurry. After passing through the absorber, the treated flue gas is heated up by a gas-gas heater to over 80°C at boiler rated capacity and directed back to the existing chimney for discharge to the atmosphere. Figure 1.1a, Figure 1.1b, Figure 1.2a, Figure 1.2b and Figure 1.3 show the location and schematic of the FGD plants.

Wastewater filtrated from the reacted limestone slurry, i.e. gypsum slurry, is produced and it is directed to the existing FGD wastewater treatment plant (WWTP). The FGD WWTP is designed to treat the effluent from FGD plants by alkalization, precipitation and neutralization processes. The schematic diagram of the FGD WWTP is illustrated in Figure 1.4.

The additional equipment for the FGD Plants retrofit projects for Units L2, L4 and L5 includes:

- Three sets of FGD absorbers and associated ductworks
- Three sets of booster fans
- Three sets of gas-gas heaters
- Two FGD Switchgear and Equipment Buildings
- Gypsum dewatering system comprising two sets of hydrocyclones and belt filters

1.2 Project Organisation

The management structure to oversee the Projects includes the following:

- Environmental Protection Department (The Authority);
- General Manager (Corporate Development) (The official contact person between HK Electric and EPD);
- Environmental Team Leader (ET Leader);
- Environmental Team (ET).

The organization chart for the Operation EM&A programme is shown in Figure 1.5.

1.3 Plant Availability during the Reporting Period

Unit L4 was fully available in the reporting period. Units L2 and L5 were out of service during the following period:

Unit	Period	Remark
L2	01/01/2016 00:00 to 31/03/2016 23:59	Unit Life Extension
L5	28/03/2016 00:21 to 28/03/2016 21:07	Defect Rectification

1.4 Malfunction/Outage Records of Pollution Control Equipment

Equipment	Period	Cause	Actions Taken
L5 FGD	02/01/2016 03:02 to 03:12	Routine dampers exercise	EPD was informed on 04/01/2016
L4 FGD	02/01/2016 23:26 to 23:41	FGD plant was bypassed due to the tripping of Absorber Recirculation Pump on its gear reducer temperature high	EPD was informed on 06/01/2016
L4 FGD	09/01/2016 02:34 to 02:37	Routine dampers exercise	EPD was informed on 13/01/2016
L5 FGD	09/01/2016 02:29 to 02:33	Routine dampers exercise	EPD was informed on 13/01/2016
L4 FGD	16/01/2016 02:35 to 02:40	Routine dampers exercise	EPD was informed on 20/01/2016
L5 FGD	16/01/2016 02:27 to 02:31	Routine dampers exercise	EPD was informed on 20/01/2016

Equipment	Period	Cause	Actions Taken
L4 FGD	23/01/2016 04:34 to 04:53	Routine dampers exercise	EPD was informed on 26/01/2016
L5 FGD	23/01/2016 04:15 to 04:32	Routine dampers exercise	EPD was informed on 26/01/2016
L4 FGD	30/01/2016 03:13 to 03:18	Routine dampers exercise	EPD was informed on 03/02/2016
L5 FGD	30/01/2016 03:06 to 03:11	Routine dampers exercise	EPD was informed on 03/02/2016
L5 FGD	06/02/2016 01:57 to 02:00	Routine dampers exercise	EPD was informed on 12/02/2016
L5 FGD	01:04 on 16/02/2016 to 20:58 on 19/02/2016	FGD plant was bypassed for GGH washing and conducting miscellaneous defect rectification works	EPD was informed on 23/02/2016
L4 FGD	27/02/2016 02:22 to 02:25	Routine dampers exercise	EPD was informed on 02/03/2016
L5 FGD	27/02/2016 03:36 to 03:39	Routine dampers exercise	EPD was informed on 02/03/2016
L4 FGD	06/03/2016 05:59 to 18:48	FGD plant was bypassed to facilitate the Busbar I outage for conducting protective relay maintenance	EPD was informed on 09/03/2016
L5 FGD	06/03/2016 04:56 to 18:59	FGD plant was bypassed to facilitate the Busbar I outage for conducting protective relay maintenance	EPD was informed on 09/03/2016
L4 FGD	13/03/2016 05:52 to 21:11	FGD plant was bypassed to facilitate the Busbar II outage for conducting protective relay maintenance	EPD was informed on 16/03/2016
L5 FGD	13/03/2016 05:00 to 21:17	FGD plant was bypassed to facilitate the Busbar II outage for conducting protective relay maintenance	EPD was informed on 16/03/2016
L4 FGD	23:16 on 15/03/2016 to 21:35 on 20/03/2016	FGD plant was bypassed for GGH washing and conducting miscellaneous defect rectification works	EPD was informed on 23/03/2016
L4 FGD	22/03/2016 09:09 to 11:11	FGD plant was bypassed due to BUF tripping on the operation of stalling protection alarm	EPD was informed on 29/03/2016

1.5 Summary of EM&A Requirements

Environmental Monitoring and Audit (EM&A) requirements have been discussed in the Environmental Impact Assessment (EIA) Report/ Project Profile for the Projects. The assessment results indicate that environmental monitoring works required for the EM&A programmes of these Projects are already in place or would be implemented under Lamma Power Station Extension Environmental Permit or environmental licenses for the operation of the existing Lamma Power Station. Such monitoring works are considered adequate for the Projects and no additional EM&A activities are required. Hence, environmental monitoring for air quality and water quality are carried out for the purpose of this EM&A program as well as for fulfilling the requirements stipulated in the relevant licences.

The EM&A monitoring work for air and water quality are described in Section 2 and Section 3 respectively.

The following environmental audits are summarized in Section 4 of the report:

- Environmental monitoring results;
- The status of environmental licensing and permits for the Projects;
- The implementation status of environmental protection and pollution control / mitigation measures.

The future key issues for the Projects will be reported in Section 5 of this report.

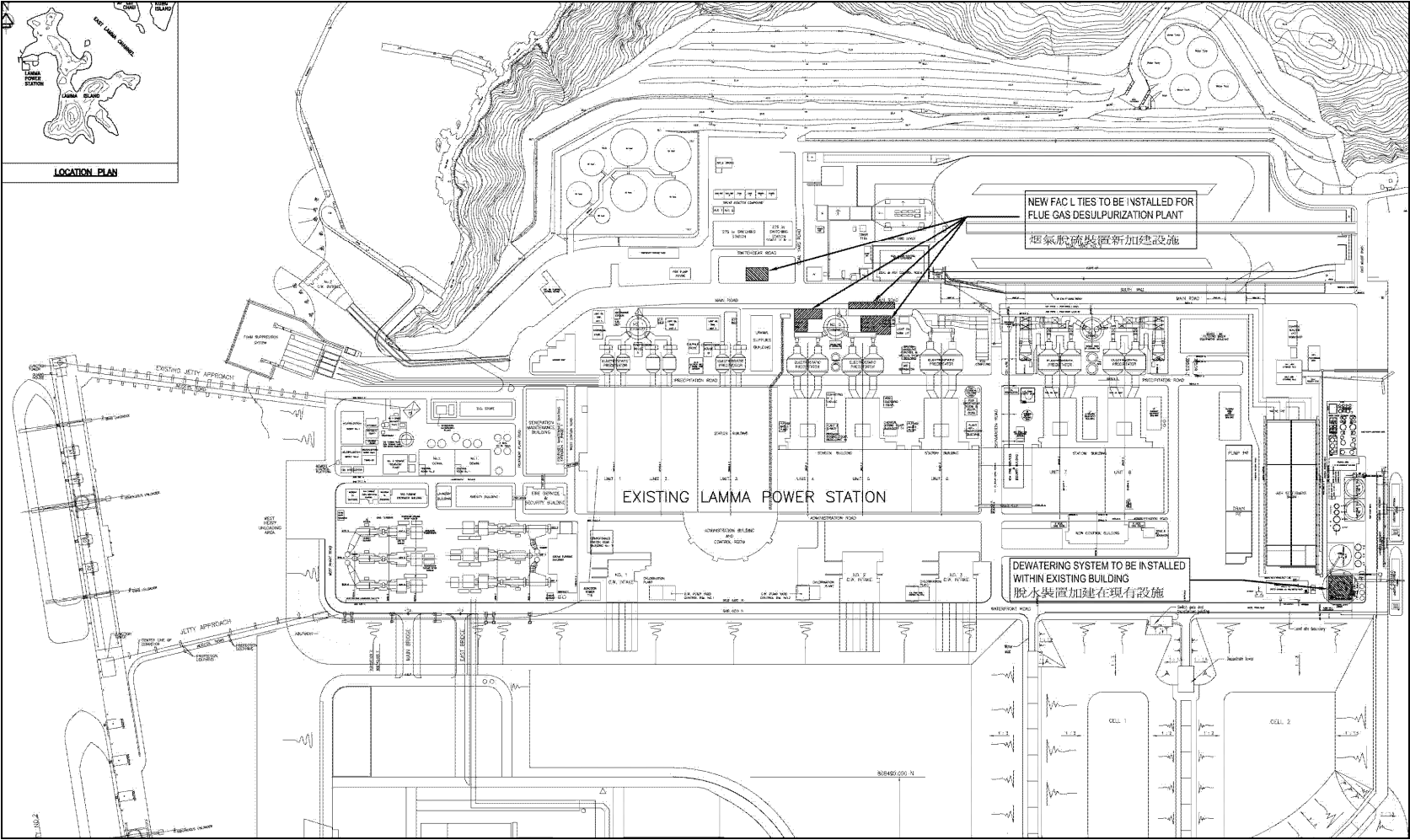


Figure 1.1a Location of New Facilities for L4 & L5 FGD Plants

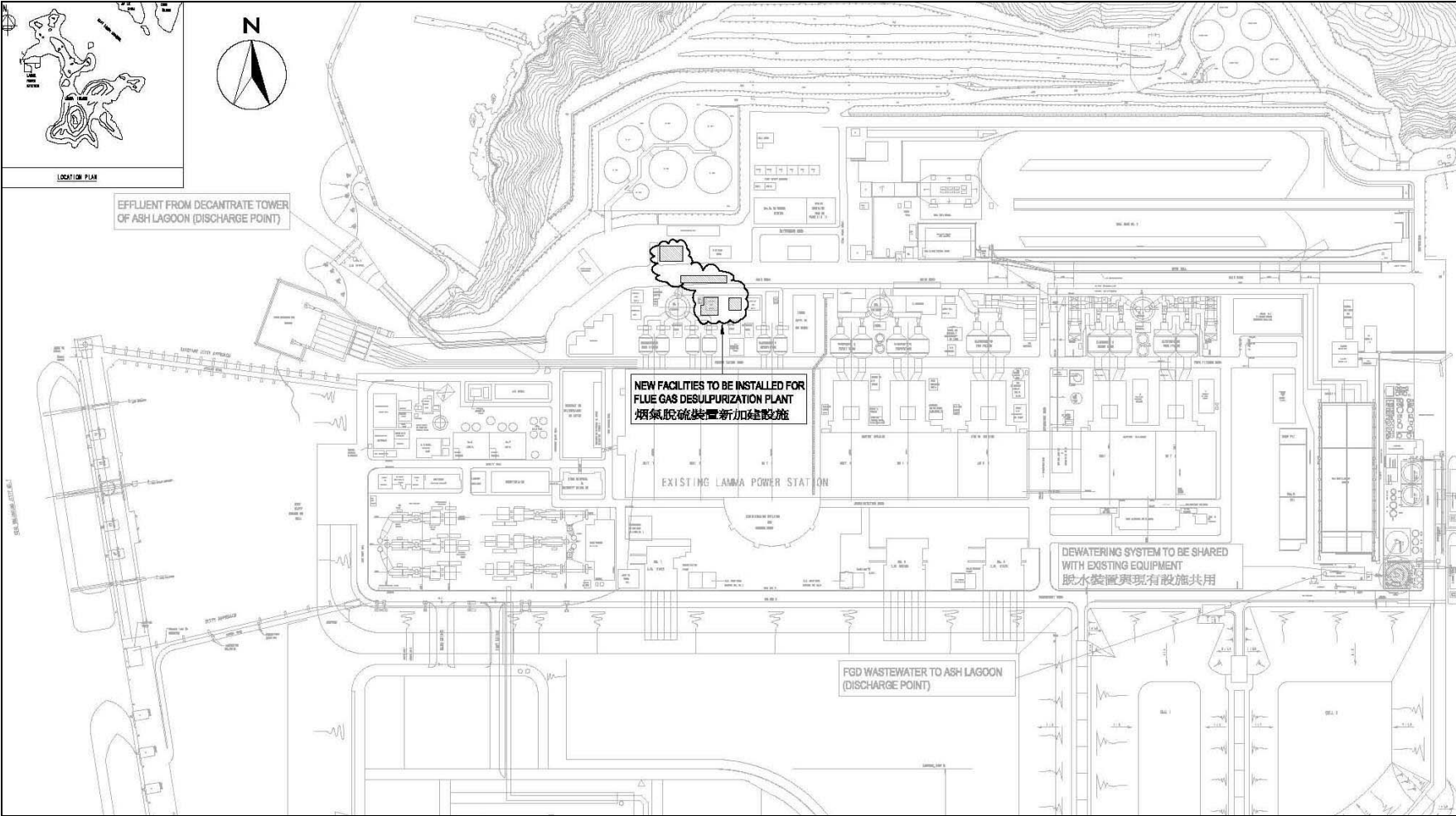


Figure 1.1b Location of New Facilities for L2 FGD Plant

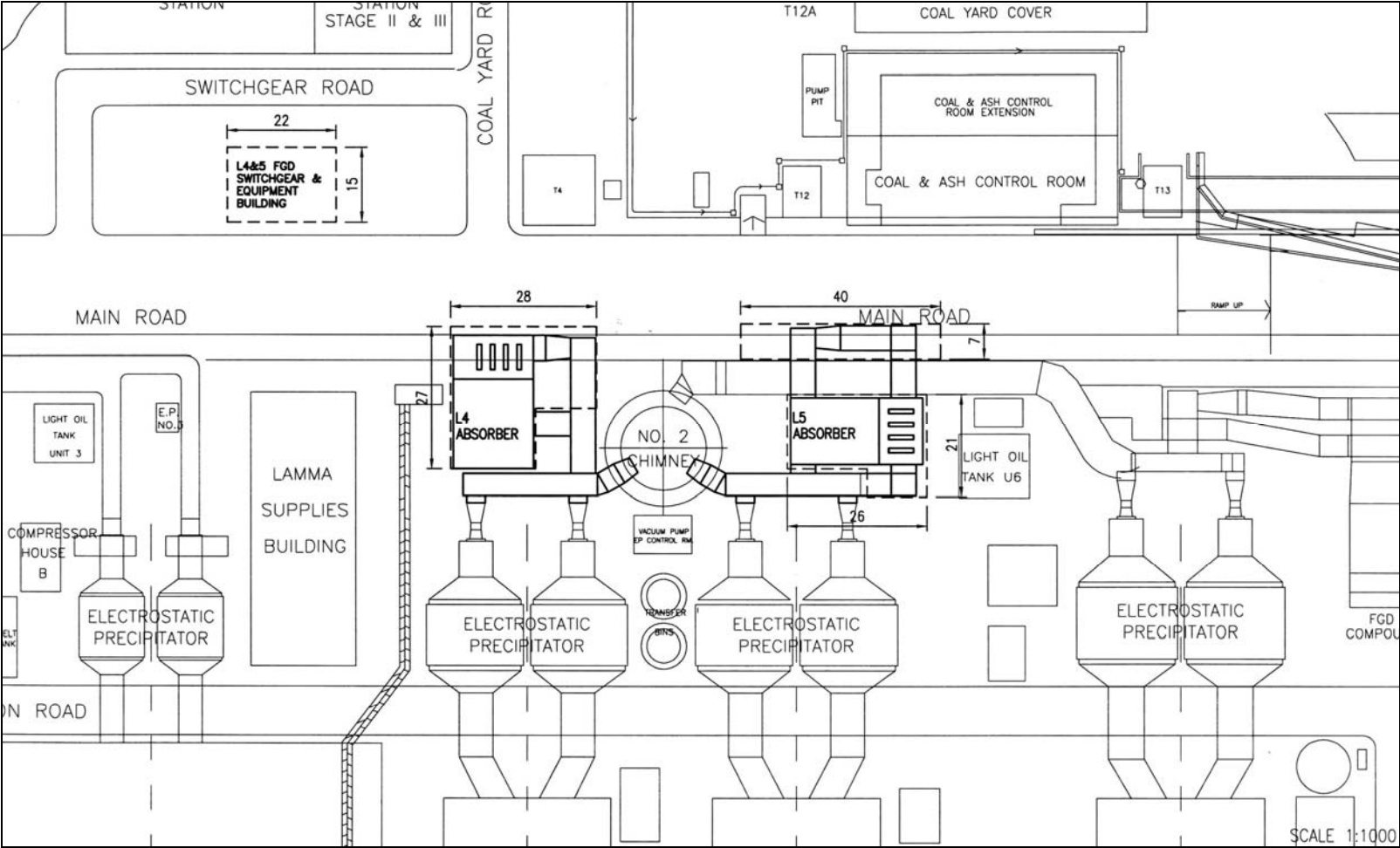


Figure 1.2a General Arrangement of L4 & L5 FGD Plants

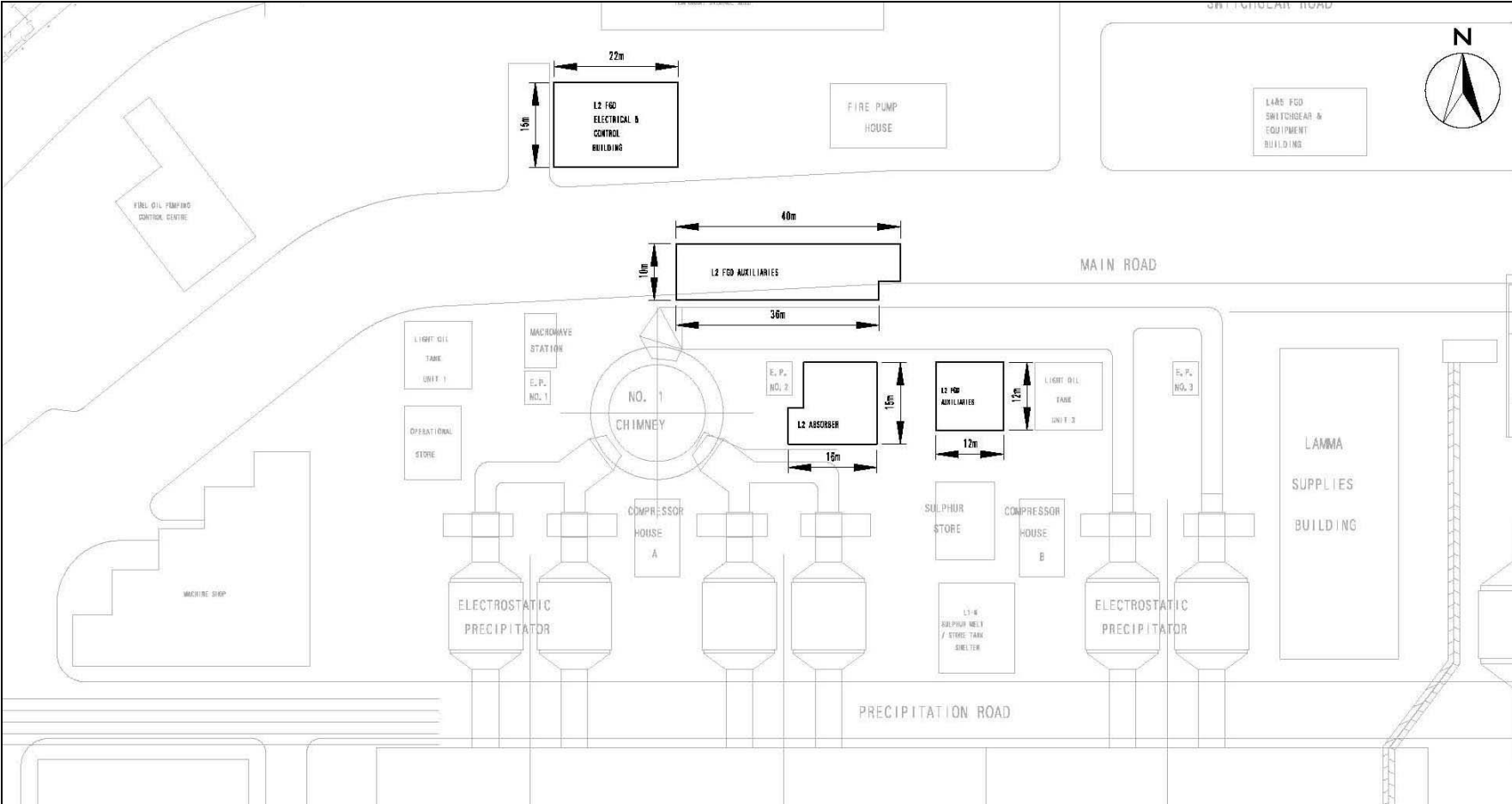


Figure 1.2b General Arrangement of L2 FGD Plant

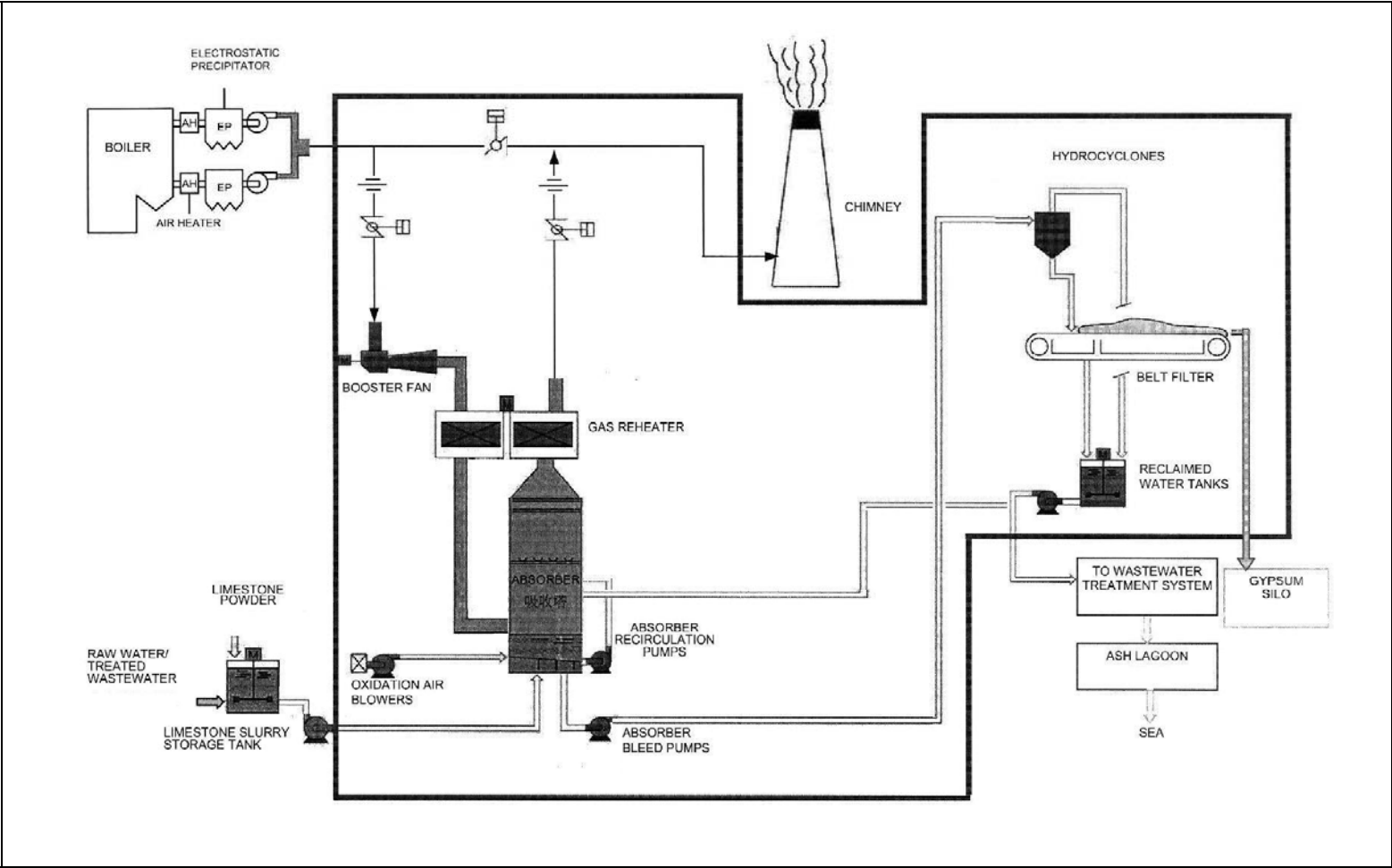


Figure 1.3 Schematic Diagram of the L2, L4 & L5 FGD Plant

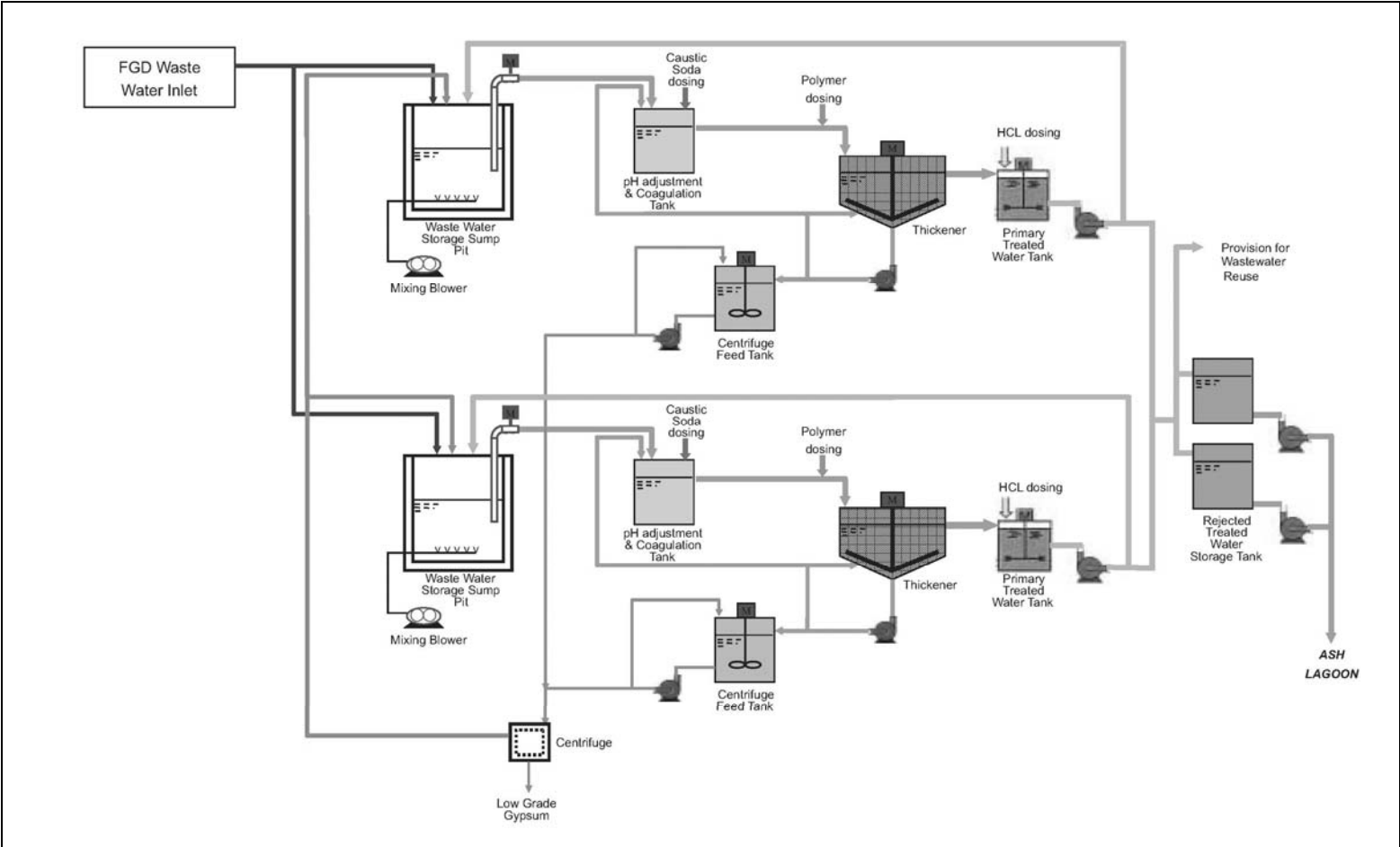


Figure 1.4 Simplified Schematic Diagram of FGD Wastewater Treatment Plant

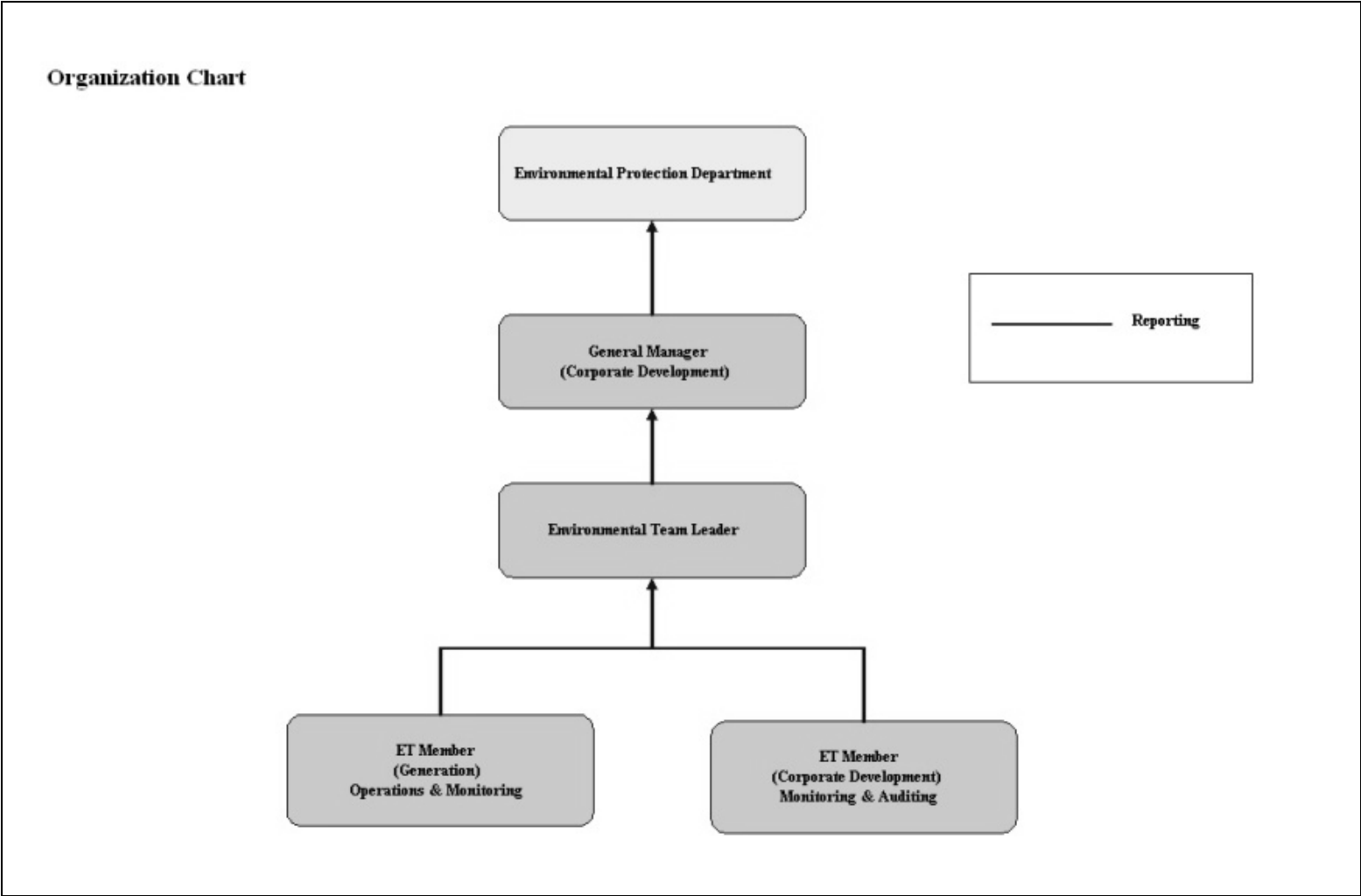


Figure 1.5 Organization Structure at Operational Phase of the Projects

2. AIR QUALITY

2.1 Monitoring Requirements

Since the Projects will bring a general air quality improvement, no additional EM&A activities are considered required, besides those already in place, such as those required by specified process licenses for the operation of the existing Lamma Power Station. In accordance with the requirements stipulated in the Specified Processes Licence issued under Air Pollution Control Ordinance, various operation parameters as stated in Table 2.1 were monitored and checked against the Action/Limit Levels shown in Appendix A.

Table 2.1 Air Quality Monitoring Parameters and Frequency

Sources of Emission	Parameter	Frequency
Steam boilers L2, L4 & L5	Particulate	Once / year
	Particulate (Opacity)	Continuous
	SO ₂	Continuous
	NO _x expressed as NO ₂ (For L4 and L5 only)	Continuous
Fugitive Dust (Coal, PFA, Limestone, gypsum)	Total Suspended Particulate	Once every six days
Chimney emissions	Ambient air	Continuous at existing ambient air monitoring stations
	SO ₂	
	NO ₂	

2.2 Summary of Results and Observations

Monitoring of various parameters as listed in Table 2.1 above was conducted during the operation of Units L2, L4 and L5 in the reporting period. A summary of monitoring data is shown in Appendix B.

No Action/Limit Level exceedance was recorded in the reporting period.

3. WATER QUALITY

3.1 Monitoring Requirements

According to the EIA Report/ Project Profile for the Projects, the current monitoring programme for the Lamma Power Station can cover the Projects and no additional EM&A measures are required besides those already in place. Hence, the EM&A work on water quality should strictly follow the relevant monitoring requirements stipulated in the discharge licence for Ash Lagoon issued under the Water Pollution Control Ordinance (WPCO).

Water quality monitoring was carried out for FGD Waste Water Treatment Plant (WWTP) in the reporting period. The parameters stated in Table 3.1 were monitored and checked against the Action/Limit Levels as given in Appendix A.

Table 3.1 Water Quality Monitoring Parameters and Frequencies

Item	Parameters	Frequencies
1	pH	Daily
2	Suspended Solids	Daily
3	Iron	Monthly
4	Barium	Monthly
5	Mercury	Monthly
6	Cadmium	Monthly
7	Cyanide	Monthly
8	Total Phosphorus	Monthly
9	Total Nitrogen	Monthly

3.2 Summary of Results and Observations

Monitoring of various parameters as listed in Table 3.1 above was carried out during the discharge of the WWTP in the reporting period. A summary of the data is shown in Appendix C.

The data recorded for the monitoring parameters were all below their corresponding Action/Limit Levels. No Action/Limit level exceedance was recorded in the reporting period. The effluent quality was generally satisfactory.

4. ENVIRONMENTAL AUDIT

4.1 Review of Environmental Monitoring Procedures

The environmental monitoring procedures were regularly reviewed by the Environmental Team. No modification to the existing monitoring procedures was recommended.

4.2 Assessment of Environmental Monitoring Results

Monitoring results for Air Quality and Water Quality

The environmental monitoring results for air quality and water quality are presented in Sections 2 and 3 respectively are summarized in Table 4.1.

Table 4.1 Summary of Action/Limit Level Exceedances on Monitoring Parameters

Item	Parameter Monitored	Monitoring Period	No. of Exceedances In		Event/Action Plan Implementation Status and Results
			Action Level	Limit Level	
Air					
1	Annual analysis of dust particulate emission rates at chimney stacks.	01/01/16-31/03/16	N.A.	0	Stack PM sampling tests for L2 and L5 were conducted in the reporting period.
2	Continuous monitoring of opacity, NOx, SO2 and CO2 in the flue gas at the chimney stacks	01/01/16-31/03/16	0	0	
3	TSP monitoring at Lamma Power Station Boundary (ie East Gate and Reservoir).	01/01/16-31/03/16	0	0	
4	Ambient SO2 & NOx monitoring at the Peak, Queen Mary Hospital, Victoria Road, Chung Hom Kok, Ap Lei Chau and	01/01/16-31/03/16	0	0	

Item	Parameter Monitored	Monitoring Period	No. of Exceedances In		Event/Action Plan Implementation Status and Results
			Action Level	Limit Level	
	Cheung Chau.				
Water					
1	pH in WWTP Effluent	01/01/16-31/03/16	0	0	
2	Suspended Solids in WWTP Effluent	01/01/16-31/03/16	0	0	
3	Iron in WWTP Effluent	01/01/16-31/03/16	0	0	
4	Barium in WWTP Effluent	01/01/16-31/03/16	0	0	
5	Mercury in WWTP Effluent	01/01/16-31/03/16	0	0	
6	Cadmium in WWTP Effluent	01/01/16-31/03/16	0	0	
7	Cyanide in WWTP Effluent	01/01/16-31/03/16	0	0	
8	Total Phosphorus in WWTP Effluent	01/01/16-31/03/16	0	0	
9	Total Nitrogen in WWTP Effluent	01/01/16-31/03/16	0	0	

Waste Management Records

The quantity of FGD gypsum and sludge collected for reuse by contractor in the reporting period are shown in Table 4.2.

Table 4.2 Amount of Gypsum and Sludge Collected for Reuse by Contractor

Period	Amount of Gypsum Collected	Amount of Sludge Collected
January 2016	4791.7 MT	0 MT
February 2016	5981.9 MT	0 MT
March 2016	2837.7 MT	0 MT

4.3 Status of Environmental Licensing and Permitting

All permits/licenses obtained as of March 2016 are summarised in Table 4.3.

Table 4.3 Summary of Environmental Licensing and Permit Status

Description	Permit / Licence No.	Valid Period		Status
		From	To	
Environmental Permit for Units L4/5 FGD Plants Retrofit	EP-248/2006	25/04/2006	-	Valid
Environmental Permit for Unit L2 FGD Plant Retrofit	EP-287/2007	02/10/2007	-	Valid
Specified Process Licence issued under APCO	L-7-002(10)	01/01/2015	31/12/2016	Valid
WPCO discharge licence for Ash Lagoon	WT00011131-2011	15/12/2011	31/12/2016	Valid

4.4 Implementation Status of Environmental Mitigation Measures

Mitigation measures detailed in the EIA Report and EP are required to be implemented. A summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in Appendix D.

4.5 Implementation Status of Event/Action Plan

A list of specific actions in the event of exceedances of the various threshold levels for specific emission and discharge sources is given in Appendix A.

As no Action/Limit level exceedance was recorded, no action has been devised.

4.6 Implementation Status of Environmental Complaint Handling Procedures

During the reporting period, there was no environmental complaint against the operation of Lamma Power Station.

Table 4.4 Environmental Complaint(s) Received

Case Reference / Date, Time Received / Date, Time Concerned	Descriptions / Actions Taken	Conclusion / Status
Nil	N/A	N/A

Table 4.5 Outstanding Environmental Complaint(s) Carried Over

Case Reference / Date, Time Received / Date, Time Concerned	Descriptions / Actions Taken	Conclusion / Status
Nil	N/A	N/A

5. FUTURE KEY ISSUES

5.1 Outage Plan for the coming 3 months

No major outage plan for the coming three months.

5.2 Key issues for the coming 3 months

Key issues to be considered in the coming 3 months include:

Air Impact

- To continuously carry out the air quality monitoring for Units L2, L4 and L5.

Water Impact

- To continuously carry out the water quality monitoring for FGD Waste Water Treatment Plant.

6. CONCLUSION

Environmental monitoring was performed as required in the reporting period from January to March 2016. All monitoring results were checked and reviewed.

No Action/Limit level exceedance on air quality parameters were recorded in the reporting period.

No Action/Limit level exceedance on water quality parameters were recorded in the reporting period.

Environmental mitigation measures recommended in the EIA Report and EP were implemented in the reporting period. No environmental complaint against the operation of Lamma Power Station was received during the reporting period. No prosecution was received for the Projects in the reporting period.

The environmental performance of the Projects was generally satisfactory.

Appendix A Event/Action Plans in Response to Exceedance of AL Levels

A.1 Air

Source of Emissions	Parameters to be Monitored	Frequency	Concentration Not to Be Exceeded	Action	Limit	Proposed Action
Steam boilers L2, L4 and L5	Particulate	once/year	50 mg/Nm ³	-	50	ET Leader informs Generation Division at action level. Maintenance initiated. Temporary load shift until pollution control equipment repaired and reinstated. Report to EPD.
	Particulate (Opacity)	continuous	40% (bihourly)	35	40	
	SO ₂	continuous	200 mg/Nm ³ (1h)	190	200	
	NO _x expressed as NO ₂ (For L4 and L5 only)	continuous	615 mg/Nm ³ (1h)	585	615	
Fugitive dust (Coal, PFA, limestone, gypsum)	TSP	Once every six days.	260 (µg/m ³) (24 hours)	-	260	Investigation of sources and additional dust suppression to be employed at Limit level. Frequency of monitoring to be increased as necessary.
Chimney emissions	Ambient air SO ₂	Continuous at existing ambient air monitoring stations	800 (µg/m ³) (1h)	-	800	ET to review data on post-hoc basis and check for possible power station contribution.
	NO ₂		300 (µg/m ³) (1h)	-	300	

A.2 Water

Source of Discharges	Parameters to be Monitored	Frequency	Concentration Not to Be Exceeded	Action	Limit	Proposed Action
FGD Wastewater Treatment Plant	pH	Daily	6-9	-	6-9	If pH exceeds limit level, consideration to be given to adjust chemical dosing. ET Leader inform Generation Division and investigation be initiated to identify and remedy cause.
	Suspended Solids	Daily	30 mg/L	25	30	
	Iron	Monthly	4 mg/L	3.6	4	For all other parameters except pH, Generation Division to be informed, frequency of monitoring to be increased, and investigations to be initiated to identify cause and remedy if concentration exceeds action level. If problem persists to exceed the limit level, ET Leader verbally informs EPD and ensures remedial actions implemented.
	Barium	Monthly	1.5 mg/L	1.3	1.5	
	Mercury	Monthly	0.005 mg/L	0.0045	0.005	
	Cadmium	Monthly	0.005 mg/L	0.0045	0.005	
	Cyanide	Monthly	0.1 mg/L	0.09	0.1	
	Total Phosphorus	Monthly	8 mg/L	7.2	8	
	Total Nitrogen	Monthly	400 mg/L	360	400	

B.2 Unit L2, L4 and L5 Stack Monitoring at Lamma Power Station

B.2.1 Monthly Summary of Stack NOx and SO2 for Unit L5

Date	Daily Maximum		
	SO2 concentration (mg/Nm3) #	NOx concentration (mg/Nm3) #	Opacity (%)
1/1/2016	132	393	26
2/1/2016	121	438	25
3/1/2016	125	463	25
4/1/2016	139	409	28
5/1/2016	92	340	22
6/1/2016	97	386	22
7/1/2016	79	394	24
8/1/2016	119	394	25
9/1/2016	96	390	23
10/1/2016	81	397	24
11/1/2016	86	450	28
12/1/2016	91	412	29
13/1/2016	85	442	26
14/1/2016	86	405	26
15/1/2016	115	410	24
16/1/2016	60	454	28
17/1/2016	30	279	65
18/1/2016	51	345	23
19/1/2016	52	394	24
20/1/2016	37	426	24
21/1/2016	40	412	23
22/1/2016	55	385	23
23/1/2016	60	391	24
24/1/2016	67	304	26
25/1/2016	48	217	25
26/1/2016	69	283	24
27/1/2016	105	321	24
28/1/2016	69	353	23
29/1/2016	63	421	23
30/1/2016	78	335	18
31/1/2016	64	331	16

Date	Daily Maximum		
	SO2 concentration (mg/Nm3) #	NOx concentration (mg/Nm3) #	Opacity (%)
1/2/2016	86	455	17
2/2/2016	73	357	17
3/2/2016	89	456	17
4/2/2016	114	443	17
5/2/2016	136	447	17
6/2/2016	120	429	17
7/2/2016	81	397	21
8/2/2016	58	452	22
9/2/2016	69	473	22
10/2/2016	69	378	26
11/2/2016	40	351	25
12/2/2016	44	326	25
13/2/2016	37	389	23
14/2/2016	45	428	23
15/2/2016	40	392	25
16/2/2016	32	425	21
17/2/2016	FGD Plant Outage	420	19
18/2/2016	FGD Plant Outage	463	17
19/2/2016	53	432	20
20/2/2016	85	314	22
21/2/2016	69	321	25
22/2/2016	69	348	21
23/2/2016	75	427	23
24/2/2016	132	410	26
25/2/2016	138	442	23
26/2/2016	113	435	25
27/2/2016	123	477	22
28/2/2016	62	396	16
29/2/2016	56	433	22

Date	Daily Maximum		
	SO2 concentration (mg/Nm3) [#]	NOx concentration (mg/Nm3) [#]	Opacity (%)
1/3/2016	64	437	22
2/3/2016	60	468	21
3/3/2016	48	394	21
4/3/2016	46	414	21
5/3/2016	61	448	19
6/3/2016	56	449	19
7/3/2016	44	425	20
8/3/2016	26	414	21
9/3/2016	22	415	19
10/3/2016	35	481	19
11/3/2016	32	421	19
12/3/2016	30	446	21
13/3/2016	34	441	21
14/3/2016	40	445	20
15/3/2016	50	424	21
16/3/2016	45	473	21
17/3/2016	35	449	20
18/3/2016	44	421	22
19/3/2016	33	447	21
20/3/2016	40	459	21
21/3/2016	49	392	24
22/3/2016	31	415	22
23/3/2016	35	456	24
24/3/2016	46	446	21
25/3/2016	39	435	23
26/3/2016	44	435	21
27/3/2016	*	*	*
28/3/2016	28	366	21
29/3/2016	38	420	23
30/3/2016	47	462	25
31/3/2016	39	426	21

Note: # - Hourly average value. Expressed as at 0°C, 101.325kPa, dry and corrected to 12% CO₂ condition.

* - Unit L5 was not on load.

B.2.2 Monthly Summary of Stack NOx and SO2 for Unit L4

Date	Daily Maximum		
	SO2 concentration (mg/Nm3) #	NOx concentration (mg/Nm3) #	Opacity (%)
1/1/2016	80	442	19
2/1/2016	106	482	19
3/1/2016	72	470	20
4/1/2016	89	521	22
5/1/2016	75	429	21
6/1/2016	74	440	20
7/1/2016	92	497	20
8/1/2016	91	489	20
9/1/2016	65	472	20
10/1/2016	64	463	19
11/1/2016	54	432	27
12/1/2016	81	471	20
13/1/2016	78	425	19
14/1/2016	73	504	24
15/1/2016	96	409	20
16/1/2016	44	451	22
17/1/2016	24	356	22
18/1/2016	41	384	30
19/1/2016	26	440	30
20/1/2016	20	494	29
21/1/2016	20	450	29
22/1/2016	17	470	30
23/1/2016	22	304	26
24/1/2016	30	377	29
25/1/2016	29	408	26
26/1/2016	48	363	27
27/1/2016	80	401	27
28/1/2016	56	394	28
29/1/2016	58	435	32
30/1/2016	38	366	31
31/1/2016	42	331	26

Date	Daily Maximum		
	SO2 concentration (mg/Nm3) [#]	NOx concentration (mg/Nm3) [#]	Opacity (%)
1/2/2016	67	397	28
2/2/2016	74	431	26
3/2/2016	71	301	19
4/2/2016	84	528	19
5/2/2016	84	442	19
6/2/2016	63	380	19
7/2/2016	56	391	22
8/2/2016	28	474	22
9/2/2016	23	440	23
10/2/2016	17	362	19
11/2/2016	47	364	29
12/2/2016	47	298	29
13/2/2016	28	457	28
14/2/2016	24	483	26
15/2/2016	29	533	27
16/2/2016	29	503	27
17/2/2016	24	467	26
18/2/2016	54	464	22
19/2/2016	49	487	26
20/2/2016	52	355	25
21/2/2016	34	302	23
22/2/2016	34	381	24
23/2/2016	93	499	25
24/2/2016	98	430	26
25/2/2016	51	408	23
26/2/2016	65	407	27
27/2/2016	84	485	24
28/2/2016	53	505	19
29/2/2016	71	259	27

Date	Daily Maximum		
	SO2 concentration (mg/Nm3) [#]	NOx concentration (mg/Nm3) [#]	Opacity (%)
1/3/2016	41	270	24
2/3/2016	74	346	25
3/3/2016	39	424	24
4/3/2016	37	365	28
5/3/2016	63	434	23
6/3/2016	19	272	19
7/3/2016	26	400	23
8/3/2016	25	282	26
9/3/2016	17	375	26
10/3/2016	24	435	22
11/3/2016	36	434	21
12/3/2016	*	*	*
13/3/2016	14	293	19
14/3/2016	39	441	21
15/3/2016	45	376	25
16/3/2016	FGD Plant Outage	395	14
17/3/2016	FGD Plant Outage	392	15
18/3/2016	FGD Plant Outage	502	17
19/3/2016	FGD Plant Outage	309	16
20/3/2016	9	436	19
21/3/2016	15	440	30
22/3/2016	30	242	21
23/3/2016	17	400	22
24/3/2016	16	461	23
25/3/2016	27	423	21
26/3/2016	17	468	18
27/3/2016	23	472	26
28/3/2016	21	393	27
29/3/2016	14	464	25
30/3/2016	21	459	25
31/3/2016	24	440	26

Note: # - Hourly average value. Expressed as at 0°C, 101.325kPa, dry and corrected to 12% CO₂ condition.

* - Unit L4 was not on load.

B.2.3 Monthly Summary of Stack SO2 for Unit L2

Date	Daily Maximum	
	SO2 concentration (mg/Nm3) #	Opacity (%)
1/1/2016	*	*
2/1/2016	*	*
3/1/2016	*	*
4/1/2016	*	*
5/1/2016	*	*
6/1/2016	*	*
7/1/2016	*	*
8/1/2016	*	*
9/1/2016	*	*
10/1/2016	*	*
11/1/2016	*	*
12/1/2016	*	*
13/1/2016	*	*
14/1/2016	*	*
15/1/2016	*	*
16/1/2016	*	*
17/1/2016	*	*
18/1/2016	*	*
19/1/2016	*	*
20/1/2016	*	*
21/1/2016	*	*
22/1/2016	*	*
23/1/2016	*	*
24/1/2016	*	*
25/1/2016	*	*
26/1/2016	*	*
27/1/2016	*	*
28/1/2016	*	*
29/1/2016	*	*
30/1/2016	*	*
31/1/2016	*	*

Date	Daily Maximum	
	SO2 concentration (mg/Nm3) [#]	Opacity (%)
1/2/2016	*	*
2/2/2016	*	*
3/2/2016	*	*
4/2/2016	*	*
5/2/2016	*	*
6/2/2016	*	*
7/2/2016	*	*
8/2/2016	*	*
9/2/2016	*	*
10/2/2016	*	*
11/2/2016	*	*
12/2/2016	*	*
13/2/2016	*	*
14/2/2016	*	*
15/2/2016	*	*
16/2/2016	*	*
17/2/2016	*	*
18/2/2016	*	*
19/2/2016	*	*
20/2/2016	*	*
21/2/2016	*	*
22/2/2016	*	*
23/2/2016	*	*
24/2/2016	*	*
25/2/2016	*	*
26/2/2016	*	*
27/2/2016	*	*
28/2/2016	*	*
29/2/2016	*	*

Date	Daily Maximum	
	SO2 concentration (mg/Nm3) [#]	Opacity (%)
1/3/2016	*	*
2/3/2016	*	*
3/3/2016	*	*
4/3/2016	*	*
5/3/2016	*	*
6/3/2016	*	*
7/3/2016	*	*
8/3/2016	*	*
9/3/2016	*	*
10/3/2016	*	*
11/3/2016	*	*
12/3/2016	*	*
13/3/2016	*	*
14/3/2016	*	*
15/3/2016	*	*
16/3/2016	*	*
17/3/2016	*	*
18/3/2016	*	*
19/3/2016	*	*
20/3/2016	*	*
21/3/2016	*	*
22/3/2016	*	*
23/3/2016	*	*
24/3/2016	*	*
25/3/2016	*	*
26/3/2016	*	*
27/3/2016	*	*
28/3/2016	*	*
29/3/2016	*	*
30/3/2016	*	*
31/3/2016	*	*

Note: # - Hourly average value. Expressed as at 0°C, 101.325kPa, dry and corrected to 12% CO₂ condition.

* - Unit L2 was not on load.

B.2.4 Summary of Annual Stack Particulate Sampling

Unit	Date	Results (mg/Nm ³)
L5	8/3/2016	8

Monitoring Equipment: APEX model XC-522-V (Manual stack sampling system)

B.3 Ambient SO₂ and NO₂ monitoring Data at Southern District and Cheung Chau

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT
MONTH: MARCH

STATION : VICTORIA PEAK
POLLUTANT : SULPHUR DIOXIDE

YEAR : 2016
UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN	
1	2	2	1	2	2	2	2	3	4	4	4	5	4	4	3	4	3	4	4	4	4	3	3	3	3	
2	2	2	3	3	2	3	3	3	4	6	5	5	5	5	3	3	3	4	3	2	3	1	1	1	3	
3	1	1	1	1	1	1	1	2	3	4	6	3	3	15	10	5	3	2	2	1	1	1	2	2	3	
4	2	2	2	1	1	1	1	2	2	2	3	2	3	2	5	4	3	3	4	2	1	1	1	2	2	
5	3	3	3	4	4	6	4	3	3	2	3	5	3	16	5	7	6	6	3	1	1	1	1	1	4	
6	0	0	1	1	0	0	1	0	1	2	18	20	21	29	28	33	101	81	16	33	27	7	2	2	18	
7	1	1	1	0	1	5	4	1	1	0	3	4	4	3	3	3	2	2	2	1	0	1	0	0	2	
8	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	
9	1	1	0	0	1	1	1	1	0	T	T	T	T	T	T	1	1	1	1	0	0	1	0	1	1	
10	1	1	1	1	1	2	2	2	2	3	2	2	2	3	3	4	3	3	3	3	2	2	2	1	2	
11	0	0	0	0	0	0	0	0	1	2	3	M	1	1	1	1	2	2	1	1	1	1	1	0	1	
12	0	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	1	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1	1	2	0	
14	1	0	1	0	0	1	2	2	7	9	6	4	3	2	3	4	11	3	2	1	1	1	0	0	3	
15	0	1	1	1	2	3	4	4	5	5	5	4	3	3	4	4	3	3	4	4	3	2	1	1	3	
16	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	0	0	0	0	1	0	
17	0	1	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	7	8	7	4	1	2
19	1	1	1	1	1	1	1	1	1	1	1	1	2	2	3	13	4	3	3	9	3	2	2	1	2	
20	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
22	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	3	6	1	0	0	0	1	
24	0	1	1	0	0	0	0	0	0	0	0	1	0	1	1	2	1	1	1	2	1	1	1	0	1	
25	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	3	3	4	9	14	11	3	
26	8	8	7	6	5	5	7	11	8	9	6	4	5	4	2	3	4	4	4	2	3	3	4	6	5	
27	6	8	5	4	4	7	10	7	5	5	3	4	5	8	9	9	12	14	12	13	17	29	19	10	9	
28	10	8	5	4	4	6	7	7	7	8	9	9	8	7	6	7	7	7	6	6	6	7	7	5	7	
29	5	5	5	5	6	7	5	4	5	5	5	5	4	4	4	5	4	3	3	3	4	4	4	4	5	
30	3	3	4	3	3	2	1	1	2	3	3	3	7	15	11	6	5	2	2	0	2	0	1	1	3	
31	3	1	5	1	1	1	0	2	2	11	23	37	27	28	33	34	43	53	128	171	314	39	17	7	41	

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----										RANGE-----		STN GEOM	PERCENT	NO. OF TIMES	
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR	24-HR	DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL		
2	1	4	1	7	11	28	38	0	-	314	0	-	41	3	99	0

- NOTES: 1. FLAGS FOR INVALID DATA :
- D: DYNAMIC CALIBRATION
 - T: TELEMETRY/DATALOGGR FAULT
 - M: MAINTENANCE OR ANALYZER FAULT
 - P: POWER FAILURE

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT
MONTH: MARCH

STATION : VICTORIA PEAK
POLLUTANT : NITROGEN DIOXIDE

YEAR : 2016
UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN
1	0	0	0	0	0	0	0	0	9	14	13	13	4	10	10	5	26	27	9	0	0	0	0	0	6
2	0	0	0	0	0	0	0	0	10	14	5	7	1	24	6	M	M	18	28	0	0	0	0	0	5
3	0	0	0	0	0	0	0	1	39	56	58	28	36	39	15	10	14	19	6	1	1	0	13	1	14
4	0	0	4	0	0	0	0	17	44	59	54	46	43	18	37	38	31	35	60	25	4	0	0	2	22
5	8	3	0	3	3	2	1	13	32	49	41	48	34	47	29	30	60	62	60	21	23	12	0	1	24
6	0	0	3	0	0	0	0	0	4	14	65	54	51	56	51	40	52	62	8	14	34	19	0	0	22
7	0	0	0	0	0	7	12	2	2	17	38	30	40	32	23	46	35	23	3	1	2	1	0	1	13
8	0	0	0	0	0	0	6	31	26	15	8	3	5	4	1	4	6	7	5	6	7	3	3	6	
9	0	0	0	2	10	1	0	11	15	T	T	T	T	T	T	8	7	8	4	6	7	15	3	2	6
10	0	M	0	0	0	0	1	14	19	31	27	25	27	24	35	37	39	38	39	35	32	32	31	23	22
11	19	13	2	2	0	0	6	26	32	34	40	M	25	26	36	48	57	58	53	32	19	17	9	13	25
12	13	7	5	2	3	3	4	7	14	15	18	19	17	26	28	27	23	19	14	3	3	4	4	0	12
13	0	0	0	0	0	0	0	0	0	1	2	2	0	1	1	3	29	58	55	22	35	41	47	40	14
14	28	3	7	7	1	1	16	21	35	39	35	29	30	39	46	51	57	44	40	29	31	23	11	7	26
15	1	0	0	0	0	0	0	4	8	12	15	11	14	21	19	22	22	19	17	12	10	6	3	2	9
16	0	0	0	0	0	0	0	2	9	22	13	29	28	45	32	22	25	49	50	38	21	12	10	13	18
17	10	0	0	0	0	0	0	1	15	19	25	14	2	6	15	7	9	14	1	1	1	1	0	0	6
18	0	0	0	0	0	0	0	0	1	1	2	2	2	2	3	0	12	4	6	20	24	20	4	1	4
19	0	0	0	0	0	0	0	0	3	13	12	5	4	2	2	11	9	5	10	46	29	1	3	0	6
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	1	4	9	9	7	0	10	1	4	2	4	0	0	0	0	0	2
22	0	0	0	0	0	0	0	0	2	6	19	11	17	5	31	29	29	14	10	3	0	0	0	5	8
23	0	0	0	0	0	0	0	0	2	3	5	5	45	47	33	13	30	58	72	85	57	22	4	1	20
24	0	M	0	0	0	0	0	3	11	6	20	33	22	35	39	39	19	18	15	33	30	22	8	10	16
25	11	4	1	0	0	0	1	10	20	21	22	25	30	17	18	21	25	49	63	69	91	115	107	88	34
26	83	80	39	29	17	1	8	23	15	21	11	0	0	0	2	17	11	0	0	13	7	0	0	1	16
27	23	91	10	0	10	17	25	8	9	10	18	18	12	12	13	31	47	34	36	71	124	164	103	14	38
28	14	2	0	0	0	0	0	0	3	2	6	0	1	0	0	0	0	0	0	2	0	5	19	5	2
29	1	0	0	0	0	0	0	7	32	39	38	20	44	20	24	53	38	25	26	4	3	0	1	17	16
30	1	0	0	0	0	0	0	32	37	49	52	57	60	75	99	107	67	61	45	27	12	11	10	0	33
31	4	0	1	0	8	13	0	5	23	58	72	87	79	90	85	92	95	99	152	138	179	22	6	0	55

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----									-----RANGE-----				STN GEOM	PERCENT	NO. OF TIMES
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR	24-HR	DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL		
13	6	16	6	46	60	90	106	0	-	179	0	-	55	4	99	0

NOTES: 1. FLAGS FOR INVALID DATA :
D: DYNAMIC CALIBRATION
T: TELEMETRY/DATALOGGR FAULT
M: MAINTENANCE OR ANALYZER FAULT
P: POWER FAILURE

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT

STATION : CHUNG HOM KOK ZONE SUBSTATION
POLLUTANT : SULPHUR DIOXIDE

MONTH: MARCH

YEAR : 2016

UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN
1	2	2	1	1	2	2	2	2	3	3	3	4	3	3	3	3	3	3	3	4	4	4	4	3	3
2	3	2	3	3	3	3	2	2	3	4	5	5	5	5	3	2	3	3	2	2	3	3	2	2	3
3	1	1	1	2	2	2	2	3	2	2	3	2	2	2	2	2	1	2	2	1	4	8	6	5	3
4	6	5	3	4	3	3	3	3	2	2	2	2	1	1	1	2	2	4	3	2	2	3	4	11	3
5	8	10	7	7	10	9	4	2	3	4	4	3	2	1	1	2	1	1	1	1	3	3	2	1	4
6	1	2	2	1	2	2	1	2	24	40	92	59	52	30	32	27	44	51	19	54	33	13	5	7	25
7	7	5	4	2	6	13	6	3	1	5	14	6	5	6	7	3	7	6	2	1	1	1	1	0	5
8	1	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	2	1
9	2	1	2	1	1	1	1	2	2	3	5	8	6	3	2	3	3	2	1	1	1	1	1	0	2
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
11	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	3	2	2	2
12	2	2	2	2	2	3	2	3	3	3	4	4	3	2	2	2	2	2	1	1	1	2	2	1	2
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	0	1	0	0	0	0
14	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	3	1	1	0	0	0	0	0	0
15	0	0	1	1	1	3	3	5	4	4	3	3	2	3	3	2	2	2	3	1	1	0	0	1	2
16	1	0	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1
17	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0	1	0	0	0	1	0
19	1	0	0	1	0	0	0	0	1	1	2	4	4	5	5	5	5	5	3	1	1	1	3	1	2
20	1	2	1	1	0	0	0	0	1	1	1	1	1	1	1	1	2	0	0	1	1	1	2	2	1
21	2	2	1	2	1	1	1	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0
24	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	1	1	1	2	2	2	2	3	3	3	3	3	3	5	3	3	7	23	16	7	4
26	7	7	6	7	6	7	9	6	6	5	6	8	8	6	5	4	6	5	4	4	6	10	8	5	6
27	4	4	4	4	4	6	6	5	4	4	3	3	3	4	4	4	17	33	12	11	15	13	14	9	8
28	8	6	4	3	5	5	6	6	6	7	7	8	7	6	5	5	4	3	4	5	5	4	5	4	5
29	4	3	4	5	5	4	4	4	4	4	D	4	4	4	4	4	3	2	2	3	4	3	4	5	4
30	6	6	5	5	3	2	2	4	4	4	3	4	5	5	3	2	1	1	2	3	2	2	3	1	3
31	1	1	1	1	1	3	2	3	3	54	82	31	29	60	46	55	38	38	26	29	13	25	15	11	24

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----										RANGE-----		STN GEOM	PERCENT	NO. OF TIMES	
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR	24-HR	DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL		
3	2	4	2	6	12	33	52	0	-	92	0	-	25	3	100	0

- NOTES: 1. FLAGS FOR INVALID DATA :
- D: DYNAMIC CALIBRATION
 - T: TELEMETRY/DATALOGGR FAULT
 - M: MAINTENANCE OR ANALYZER FAULT
 - P: POWER FAILURE

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT

STATION : CHUNG HOM KOK ZONE SUBSTATION
POLLUTANT : NITROGEN DIOXIDE

MONTH: MARCH

YEAR : 2016

UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN
1	6	7	5	5	5	6	6	7	7	6	5	9	7	8	12	11	13	13	10	13	10	9	6	6	8
2	3	3	4	3	3	5	4	6	5	6	6	5	6	11	9	11	8	11	6	7	10	7	5	5	6
3	2	3	3	2	2	2	3	7	13	13	8	8	7	9	11	12	16	16	19	5	8	11	9	10	8
4	10	7	6	5	4	4	4	6	13	15	13	6	7	7	6	11	14	16	12	6	7	5	6	22	9
5	14	16	8	6	11	10	7	5	10	14	6	10	13	9	12	17	12	5	7	28	32	32	10	9	13
6	3	11	17	9	10	9	5	25	65	70	76	68	68	51	51	67	89	95	56	93	61	29	16	15	44
7	18	11	4	0	5	25	10	10	9	37	40	21	15	16	20	10	17	21	4	3	3	5	3	5	13
8	4	3	4	3	4	3	4	6	7	7	9	10	9	8	12	11	13	18	18	22	19	10	17	25	10
9	20	M	11	6	8	9	4	12	16	19	22	29	23	20	16	22	31	21	15	12	14	8	4	3	15
10	3	3	2	2	1	5	7	10	10	11	16	27	27	19	18	22	36	36	39	37	32	30	18	16	18
11	16	9	7	6	6	8	11	14	13	10	15	15	12	14	17	20	31	40	24	14	12	14	12	11	15
12	11	11	10	9	9	9	9	10	10	9	11	11	11	10	11	12	11	12	11	10	10	13	11	9	10
13	8	7	8	8	7	6	7	7	8	9	10	10	10	14	22	28	55	65	70	70	69	68	67	57	29
14	45	17	9	8	7	8	11	23	22	13	10	9	11	14	15	26	34	17	16	15	13	14	8	6	15
15	7	7	7	7	7	7	7	10	10	9	10	8	8	9	11	11	10	11	11	9	11	9	8	7	9
16	8	5	4	4	3	4	5	6	6	6	6	9	9	10	10	15	14	9	8	7	7	7	7	8	7
17	6	8	8	7	6	7	6	9	8	8	9	7	7	10	12	13	15	14	10	10	9	7	6	7	9
18	6	5	6	7	8	8	12	18	18	15	17	18	19	29	28	36	40	32	27	27	25	22	24	25	20
19	17	12	13	11	7	5	9	17	23	25	23	20	16	18	23	27	28	39	32	35	37	13	20	19	20
20	17	20	13	17	10	5	6	5	6	7	9	8	7	5	6	6	9	5	4	6	6	6	7	8	8
21	9	9	8	7	5	5	5	5	4	6	7	6	6	8	9	9	5	6	7	7	6	6	5	4	6
22	4	6	5	4	6	5	4	5	5	8	7	8	7	7	6	9	10	6	7	6	6	11	6	3	6
23	2	M	1	0	0	0	0	1	1	4	10	8	23	49	52	43	37	44	52	49	21	12	1	8	18
24	7	2	2	2	4	2	4	5	7	8	5	7	8	15	14	18	11	8	8	14	18	14	6	11	8
25	11	10	8	6	7	4	5	11	11	13	14	17	22	32	33	26	34	49	34	33	31	49	93	42	25
26	18	29	23	9	7	12	20	18	16	13	10	12	12	13	12	11	15	18	7	7	8	12	9	9	13
27	6	7	7	5	8	8	7	6	5	7	9	12	9	10	11	13	33	72	33	22	28	39	22	13	16
28	12	10	9	7	7	8	10	11	10	12	12	11	10	12	12	14	12	13	10	9	12	11	14	10	11
29	9	7	6	8	8	5	5	8	10	14	D	8	7	7	11	9	7	8	7	8	7	5	5	7	8
30	6	7	6	6	6	4	6	10	9	8	9	13	14	14	12	17	20	26	31	37	28	22	31	25	15
31	20	17	34	24	15	39	32	41	39	65	88	58	51	67	79	68	51	52	53	46	32	54	49	39	46

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----										RANGE-----		STN GEOM	PERCENT	NO. OF TIMES	
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR		24-HR		DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL
11	10	15	10	32	49	68	71	0	-	95	6	-	46	2	100	0

NOTES: 1. FLAGS FOR INVALID DATA :
D: DYNAMIC CALIBRATION
T: TELEMETRY/DATALOGGR FAULT
M: MAINTENANCE OR ANALYZER FAULT
P: POWER FAILURE

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT

STATION : VICTORIA ROAD SUBSTATION
POLLUTANT : SULPHUR DIOXIDE

MONTH: MARCH

YEAR : 2016

UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN	
1	2	1	1	1	1	1	1	1	2	3	3	3	3	3	3	2	3	2	2	2	2	2	2	2	2	
2	1	1	2	1	1	M	1	1	2	3	3	3	3	2	2	1	1	1	1	1	1	1	1	1	2	
3	1	1	3	4	6	6	8	19	33	29	27	31	32	15	20	14	8	20	16	6	5	9	11	12	14	
4	13	16	16	12	11	15	21	28	70	53	50	55	36	26	19	10	17	13	10	11	21	9	13	17	23	
5	12	19	13	14	15	19	12	15	20	26	21	20	29	25	19	21	17	21	26	26	22	14	14	9	19	
6	8	12	18	11	10	8	10	14	19	32	40	42	31	29	22	18	27	17	21	18	23	10	7	5	19	
7	4	4	4	4	5	13	9	6	12	49	39	14	10	7	5	4	3	3	2	1	0	0	0	1	8	
8	0	1	0	1	0	0	3	1	0	0	1	2	5	6	4	4	3	4	4	4	8	18	21	15	4	
9	11	13	9	10	10	9	10	7	7	5	4	3	3	2	2	2	2	2	1	0	0	0	0	1	5	
10	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1
11	0	0	0	0	0	0	0	0	1	3	7	7	6	4	2	7	3	2	1	1	0	0	0	0	1	2
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1
13	0	0	0	0	0	1	2	4	6	5	5	9	9	9	7	6	5	6	4	4	3	4	4	4	4	4
14	4	3	2	1	1	1	1	1	3	3	3	2	4	11	15	7	4	3	2	1	1	1	0	1	3	
15	0	0	0	1	1	2	2	2	3	3	3	2	2	2	2	2	1	1	1	2	1	0	0	1	1	
16	1	1	1	1	1	3	1	1	2	2	3	4	5	9	10	5	5	11	15	14	17	12	6	7	6	
17	7	4	3	3	3	4	6	7	3	2	2	2	1	1	1	1	1	2	1	1	1	1	1	1	1	3
18	0	0	0	1	0	0	3	3	4	2	2	7	16	10	4	3	2	10	19	14	11	11	7	9	6	
19	9	9	13	22	19	13	9	8	9	6	5	4	4	4	4	5	4	3	3	9	7	3	3	1	7	
20	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
21	0	0	1	1	1	0	1	1	1	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	1	1	0	0	0	0	0	0	1	0
23	8	8	6	11	12	11	10	11	20	21	21	13	6	5	8	7	7	10	11	13	16	7	4	3	10	
24	2	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
25	0	0	1	0	1	1	1	1	1	2	2	2	3	3	2	2	2	4	10	5	7	11	10	12	3	
26	11	8	8	7	10	5	4	7	5	9	6	4	5	4	3	3	6	4	3	2	2	2	2	6	5	
27	4	4	3	3	3	4	5	4	3	3	3	3	3	9	3	10	9	12	10	6	6	8	11	8	6	
28	6	7	6	3	3	3	3	4	4	5	5	5	5	4	4	4	4	4	3	3	3	3	2	2	4	
29	2	2	4	3	2	3	3	7	16	16	14	10	14	12	9	6	9	5	1	1	1	3	4	2	6	
30	2	2	3	2	3	5	10	9	6	13	14	9	25	20	24	20	30	22	18	25	16	12	11	5	13	
31	5	5	7	5	4	6	16	17	28	38	38	35	32	25	34	33	28	22	26	21	14	13	14	8	20	

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----										RANGE-----		STN GEOM	PERCENT	NO. OF TIMES	
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR		24-HR		DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL
4	3	6	3	18	25	32	39	0	-	70	0	-	23	3	100	0

- NOTES: 1. FLAGS FOR INVALID DATA :
- D: DYNAMIC CALIBRATION
 - T: TELEMETRY/DATALOGGR FAULT
 - M: MAINTENANCE OR ANALYZER FAULT
 - P: POWER FAILURE

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT

STATION : VICTORIA ROAD SUBSTATION
POLLUTANT : NITROGEN DIOXIDE

MONTH: MARCH

YEAR : 2016
UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN
1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	M	M	18	29	29	23	20	16	14	7	7
2	3	1	1	1	2	M	7	14	20	18	14	11	7	13	12	10	7	13	30	17	12	9	8	10	10
3	7	18	51	36	46	43	45	59	54	46	42	48	50	23	27	20	16	49	77	59	63	58	58	60	44
4	54	50	37	25	14	38	54	66	67	60	62	64	58	46	40	17	38	45	57	60	58	34	44	62	48
5	40	55	38	37	38	44	21	41	41	42	40	39	45	38	50	48	48	49	56	59	M	55	54	46	45
6	37	33	33	34	35	28	25	35	48	39	47	45	49	47	38	36	52	50	56	56	56	33	26	36	41
7	22	8	4	2	4	26	18	28	41	54	55	36	27	12	14	14	12	11	7	5	3	2	2	7	17
8	1	0	0	3	0	1	26	16	15	19	17	11	11	14	15	15	17	23	17	18	41	47	50	45	18
9	41	32	25	35	31	29	26	33	29	29	20	18	15	17	19	18	16	15	9	4	2	6	1	5	20
10	2	0	0	2	0	1	5	12	21	22	18	19	20	15	21	28	28	32	30	28	26	19	24	16	16
11	15	13	8	5	4	5	11	18	26	29	28	27	25	26	29	38	42	45	43	32	20	22	20	17	23
12	15	13	8	3	3	3	6	7	11	10	10	12	11	15	15	16	17	15	12	10	7	6	4	4	10
13	1	3	1	0	1	15	17	28	33	31	38	41	41	39	41	42	41	42	43	44	42	38	37	33	29
14	30	24	12	4	3	4	11	19	29	29	25	24	26	31	35	38	41	34	30	28	24	22	12	7	23
15	5	2	1	0	0	2	7	12	13	11	13	11	14	17	17	21	19	18	20	19	17	15	12	9	11
16	6	3	2	1	1	10	14	18	29	32	35	37	41	47	51	43	45	57	59	57	59	54	44	45	33
17	43	32	23	21	17	24	34	37	17	9	5	7	3	5	7	10	11	40	18	5	3	4	19	6	17
18	3	4	6	6	1	7	31	25	36	30	18	36	39	36	31	28	27	44	47	45	40	36	36	31	27
19	30	26	25	23	23	21	21	29	36	27	24	18	13	13	12	20	16	21	29	36	M	15	17	12	22
20	6	4	0	0	0	1	0	0	1	1	1	1	2	3	1	1	3	2	0	0	0	0	0	0	1
21	0	0	0	0	0	0	3	9	19	30	27	12	14	7	9	9	7	12	10	10	3	2	0	0	8
22	0	0	0	0	0	0	2	3	4	4	5	6	14	22	15	27	14	18	7	3	1	1	2	2	6
23	39	38	33	39	39	34	33	40	42	42	47	40	42	43	49	48	44	43	43	50	48	32	16	8	39
24	6	2	0	1	0	0	2	9	12	9	18	20	14	27	34	27	18	16	22	26	22	21	13	6	14
25	8	8	4	2	1	1	7	17	18	16	20	23	28	25	23	21	30	45	55	46	52	58	70	65	27
26	59	64	66	44	36	11	13	26	22	24	19	7	9	7	6	7	16	13	23	26	39	27	35	26	26
27	15	28	26	12	7	10	11	10	12	14	15	15	10	15	6	20	24	36	39	41	70	68	89	61	27
28	38	33	16	4	4	4	7	8	10	9	9	11	9	8	8	7	7	11	15	13	10	14	15	15	12
29	14	5	10	6	6	14	20	46	46	47	42	45	48	45	36	40	53	48	35	26	31	24	25	10	30
30	6	5	12	12	14	21	43	45	32	58	50	35	49	48	68	80	82	78	79	82	74	62	57	39	47
31	38	41	51	27	31	38	48	50	55	60	59	55	52	50	65	70	49	47	55	50	63	46	46	37	49

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----										-----RANGE-----				STN GEOM	PERCENT	NO. OF TIMES
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR		24-HR		DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL	
17	20	24	20	50	58	66	72	0	-	89	1	-	49	3	99	0	

- NOTES: 1. FLAGS FOR INVALID DATA :
- D: DYNAMIC CALIBRATION
 - T: TELEMETRY/DATALOGGR FAULT
 - M: MAINTENANCE OR ANALYZER FAULT
 - P: POWER FAILURE

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT
MONTH: MARCH

STATION : POK FU LAM
POLLUTANT : SULPHUR DIOXIDE

YEAR : 2016
UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN
1	3	2	3	2	2	3	3	4	7	6	6	5	6	5	6	5	5	5	5	6	5	4	4	4	4
2	4	4	4	4	3	3	3	4	9	8	7	7	6	5	4	4	4	4	4	3	3	2	2	1	4
3	1	1	6	6	10	5	5	19	47	55	48	45	44	30	15	13	15	24	27	18	10	19	14	11	20
4	11	10	5	2	1	11	25	33	92	89	61	55	44	39	27	15	28	50	34	27	56	24	21	22	33
5	47	33	20	16	23	17	17	18	33	34	14	29	39	27	21	30	20	30	33	35	25	14	17	8	25
6	6	10	12	6	5	5	7	6	13	30	60	77	40	42	26	19	39	33	20	22	25	5	3	1	21
7	1	1	1	1	1	12	7	2	26	64	73	25	14	5	4	10	12	3	2	1	0	0	0	4	11
8	0	0	0	5	4	0	3	11	2	2	1	0	0	0	0	M	0	0	0	4	5	5	5	16	3
9	8	19	10	10	9	9	14	12	17	9	4	2	2	1	0	3	1	1	0	0	0	0	0	0	5
10	1	0	0	0	0	0	1	1	1	1	0	0	1	0	0	1	1	1	0	0	0	0	0	0	0
11	0	1	1	1	1	1	1	1	3	6	8	9	11	7	4	10	4	3	3	2	2	2	2	1	4
12	1	1	3	3	2	2	2	2	2	2	3	3	3	2	1	2	1	1	0	0	0	1	1	1	2
13	0	0	1	0	0	0	0	2	11	9	8	16	14	20	12	9	6	7	4	4	3	4	5	4	6
14	5	3	1	0	0	0	1	1	6	4	3	2	3	11	18	4	3	2	0	0	0	0	0	0	3
15	0	0	0	1	2	3	3	4	6	6	6	4	3	2	3	3	2	2	3	3	3	1	0	1	3
16	0	0	0	0	0	0	0	1	1	3	2	10	5	4	5	2	4	16	13	11	14	15	6	8	5
17	8	5	3	4	5	8	11	12	9	13	12	14	13	19	4	3	3	9	6	7	3	4	15	2	8
18	0	1	3	1	0	2	7	9	7	3	3	23	44	19	9	3	2	12	29	20	18	24	12	14	11
19	17	14	36	49	33	24	5	3	10	19	9	5	4	6	9	8	5	5	4	16	7	1	3	0	12
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	1	0	1	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0
22	0	1	0	1	1	1	0	1	0	0	1	10	3	11	3	3	2	1	1	2	1	2	2	2	2
23	11	14	8	17	18	20	13	16	30	37	55	31	6	3	8	8	13	12	12	15	3	6	3	1	15
24	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0
25	0	1	1	1	1	1	2	2	3	4	5	6	5	5	5	5	5	6	5	5	8	13	19	15	5
26	15	11	9	10	8	7	7	12	11	12	9	5	6	5	4	5	9	6	5	4	3	3	4	12	8
27	7	5	9	7	5	6	10	8	5	5	4	4	5	16	7	15	11	15	17	11	10	15	16	9	9
28	8	7	4	3	3	4	5	6	7	6	8	8	7	6	6	6	6	6	5	5	5	5	5	4	6
29	7	6	9	4	4	7	7	15	17	26	37	23	29	10	11	13	20	15	11	6	3	4	6	4	12
30	9	4	4	3	4	8	23	19	23	32	25	16	17	28	34	44	30	21	13	14	6	12	7	6	17
31	15	9	8	6	7	6	15	21	42	M	68	65	64	34	56	42	40	31	40	26	32	27	22	12	30

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----								-----RANGE-----				STN GEOM	PERCENT	NO. OF TIMES	
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR	24-HR	DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL		
6	5	9	5	25	35	51	63	0	-	92	0	-	33	3	100	0

NOTES: 1. FLAGS FOR INVALID DATA :
D: DYNAMIC CALIBRATION
T: TELEMETRY/DATALOGGR FAULT
M: MAINTENANCE OR ANALYZER FAULT
P: POWER FAILURE

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT
MONTH: MARCH

STATION : POK FU LAM
POLLUTANT : NITROGEN DIOXIDE

YEAR : 2016
UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN
1	11	12	11	9	9	10	15	28	39	39	37	36	29	32	37	27	37	53	46	30	32	23	20	17	27
2	12	10	9	8	8	9	11	25	40	38	34	32	32	32	29	28	32	35	59	43	32	17	16	33	26
3	14	9	50	30	54	24	41	80	73	72	67	66	65	51	26	28	40	69	114	120	107	111	104	101	63
4	96	64	32	10	8	54	83	84	90	90	83	84	76	68	60	38	55	80	93	93	98	68	62	88	69
5	83	84	59	48	61	53	42	55	61	61	46	65	70	58	68	79	64	78	82	82	79	69	63	57	65
6	59	68	66	49	52	52	59	51	57	62	74	77	68	70	57	51	77	79	87	78	72	13	14	14	59
7	10	6	3	1	3	30	23	15	55	74	81	69	57	18	19	59	51	20	12	9	8	9	6	31	28
8	4	3	4	21	20	6	23	56	29	26	17	13	12	11	14	M	22	19	14	18	83	86	85	83	29
9	42	66	35	60	55	55	56	55	57	49	29	23	14	19	16	22	18	19	14	11	11	20	13	12	32
10	13	8	6	4	5	8	17	37	49	47	42	43	42	38	44	48	52	57	57	53	45	42	47	35	35
11	41	35	26	21	22	23	30	43	55	56	54	51	50	49	54	71	78	79	77	68	39	36	32	28	47
12	27	19	20	19	15	14	18	30	42	47	49	47	44	44	44	45	42	39	38	27	18	19	16	14	31
13	12	M	15	16	14	16	20	41	62	57	59	74	70	70	72	72	74	77	78	78	74	69	67	59	54
14	54	46	28	15	13	15	29	44	50	48	45	42	43	54	64	66	69	65	39	37	41	34	25	24	41
15	19	11	10	10	10	12	19	31	35	40	40	39	40	38	39	38	45	41	37	33	36	29	23	20	29
16	20	14	11	10	9	9	12	26	39	62	52	78	68	75	84	66	66	96	102	102	98	98	82	83	57
17	81	59	41	39	35	40	56	65	67	66	52	70	66	53	22	20	37	76	71	58	26	45	76	18	52
18	8	16	28	16	11	19	51	63	51	23	29	68	72	53	51	30	35	83	85	68	70	75	68	61	47
19	57	48	48	57	46	51	21	28	54	59	45	32	21	21	37	38	33	50	51	74	52	15	22	11	40
20	8	6	4	5	6	9	7	7	8	10	12	10	11	9	11	12	12	11	9	8	7	11	12	9	9
21	8	8	7	7	6	7	12	22	49	62	51	26	34	21	28	20	19	15	16	19	13	14	11	6	20
22	7	7	7	6	6	8	9	12	17	18	24	29	58	36	48	50	46	39	36	28	25	16	21	27	24
23	51	60	49	65	63	61	55	69	78	81	84	87	88	76	86	90	92	91	118	102	44	50	16	13	70
24	13	13	10	9	10	9	14	26	33	34	29	33	47	49	59	51	42	41	58	61	59	45	42	23	34
25	35	25	21	23	16	15	21	37	46	47	46	47	56	53	44	46	60	83	84	78	83	96	131	114	54
26	125	123	112	60	37	39	35	43	35	35	27	19	14	13	14	17	37	32	43	51	70	69	37	102	50
27	75	M	75	50	33	34	25	20	25	27	26	24	22	32	17	35	29	43	75	114	106	121	140	43	52
28	37	22	15	10	11	11	14	19	20	20	21	17	19	14	12	12	18	19	27	32	21	18	35	34	20
29	32	20	25	12	17	20	37	78	70	92	86	78	89	60	63	80	103	109	86	64	32	27	30	33	56
30	42	13	13	11	14	26	78	85	71	106	82	65	72	89	102	145	142	145	136	124	106	109	84	67	80
31	80	84	89	63	80	72	90	91	101	M	114	102	102	82	95	94	71	69	104	80	127	90	86	58	88

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----										RANGE-----		STN GEOM	PERCENT	NO. OF TIMES	
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR		24-HR		DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL
34	40	45	40	84	98	114	125	1	-	145	9	-	88	2	99	0

- NOTES: 1. FLAGS FOR INVALID DATA :
- D: DYNAMIC CALIBRATION
 - T: TELEMETRY/DATALOGGR FAULT
 - M: MAINTENANCE OR ANALYZER FAULT
 - P: POWER FAILURE

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT
MONTH: MARCH

STATION : AP LEI CHAU
POLLUTANT : SULPHUR DIOXIDE

YEAR : 2016
UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN
1	7	10	7	9	8	7	8	10	7	2	1	6	7	8	8	7	8	7	3	3	7	8	8	6	7
2	7	8	8	8	8	8	7	7	5	2	7	8	9	8	8	7	6	5	4	0	2	6	5	3	6
3	3	3	3	4	4	3	3	4	13	92	57	33	18	7	5	6	6	14	5	1	4	7	7	15	13
4	13	9	6	4	4	3	4	5	11	36	44	17	16	16	4	3	5	5	3	3	3	0	3	5	9
5	10	11	10	8	6	9	7	5	5	9	6	11	103	29	10	23	44	47	36	24	40	70	60	25	25
6	12	21	38	19	18	68	17	21	25	35	81	35	30	31	47	27	51	25	45	72	51	17	7	8	33
7	12	8	10	6	16	30	15	8	9	18	23	11	7	6	6	5	4	5	3	2	2	2	3	1	9
8	2	3	1	1	2	1	2	2	1	2	3	3	3	3	2	1	3	2	1	2	2	3	5	4	2
9	4	4	4	5	3	4	3	3	4	3	4	7	6	5	4	6	4	3	3	2	2	2	1	1	4
10	1	2	0	1	1	1	1	1	3	3	4	3	3	7	4	4	3	4	5	6	5	4	5	5	3
11	3	3	3	3	2	3	3	3	6	3	16	10	2	1	2	11	8	6	7	6	6	6	4	3	5
12	3	5	5	5	4	5	5	6	6	5	5	M	1	4	4	3	3	3	4	4	5	4	2	4	4
13	2	2	1	1	1	2	2	1	2	4	4	3	1	1	3	14	10	11	5	4	5	7	6	8	4
14	10	9	7	2	5	5	5	7	8	7	6	6	10	20	24	13	7	5	3	4	4	4	3	4	7
15	4	3	3	4	6	7	7	7	9	8	7	5	4	3	6	7	7	7	8	6	5	4	4	1	6
16	2	2	2	2	2	3	2	3	2	2	2	4	4	5	4	4	6	7	5	4	3	3	2	4	3
17	6	4	5	6	4	5	6	6	5	4	4	6	6	4	4	4	4	6	4	5	4	4	4	4	5
18	3	4	4	4	4	5	5	5	4	5	5	7	6	7	6	5	4	4	10	5	6	6	5	4	5
19	4	6	6	7	8	5	5	6	7	6	6	5	8	10	6	6	17	5	4	11	8	9	11	12	7
20	12	8	7	6	5	5	5	4	5	6	6	5	6	5	5	4	7	6	3	4	6	6	6	2	6
21	3	3	3	3	2	3	3	2	3	2	2	4	2	4	4	4	1	0	4	2	3	2	1	1	3
22	2	2	3	2	3	1	1	2	3	2	4	4	3	4	2	4	4	2	2	1	4	3	3	2	3
23	3	3	2	3	2	4	3	4	9	25	13	8	5	6	13	8	16	43	34	19	8	6	5	4	10
24	4	3	3	3	4	2	3	4	3	3	3	2	2	3	2	3	3	6	3	3	4	4	4	3	3
25	4	5	4	3	4	4	5	5	6	5	3	2	4	6	4	8	9	29	28	14	47	38	30	36	13
26	34	25	27	42	18	11	13	12	3	4	10	10	11	9	7	9	8	7	6	2	3	6	10	12	12
27	13	10	8	8	9	10	14	11	4	7	8	10	10	7	7	38	18	38	22	12	11	15	24	9	13
28	10	10	8	7	7	9	10	11	7	8	11	10	10	9	8	9	9	6	4	5	7	8	6	5	8
29	5	5	3	4	5	5	5	3	5	19	26	22	23	16	4	D	D	0	0	0	0	0	0	0	7
30	0	0	0	0	0	0	0	0	0	0	10	1	21	21	22	42	50	24	19	25	4	13	40	5	12
31	4	2	9	7	14	44	27	29	56	93	75	42	50	89	42	53	39	31	37	52	30	25	21	22	37

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----										RANGE-----		STN GEOM	PERCENT	NO. OF TIMES	
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR	24-HR	DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL		
6	5	9	5	22	37	51	69	0	-	103	2	-	37	2	100	0

- NOTES: 1. FLAGS FOR INVALID DATA :
- D: DYNAMIC CALIBRATION
 - T: TELEMETRY/DATALOGGR FAULT
 - M: MAINTENANCE OR ANALYZER FAULT
 - P: POWER FAILURE

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT
MONTH: MARCH

STATION : AP LEI CHAU
POLLUTANT : NITROGEN DIOXIDE

YEAR : 2016
UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN
1	6	5	3	3	3	3	3	4	7	8	6	8	6	5	5	5	5	8	11	15	17	13	9	5	7
2	4	2	2	2	1	1	2	7	12	11	8	5	2	5	5	4	6	4	6	10	11	4	6	20	6
3	7	10	7	6	3	5	14	31	44	86	73	49	32	7	6	5	3	13	26	9	10	10	27	60	23
4	45	55	21	22	16	10	34	53	59	84	65	35	38	43	1	0	1	4	14	24	8	2	7	18	27
5	35	35	34	19	5	10	15	27	33	30	21	30	82	43	20	34	71	70	85	94	92	97	98	66	48
6	35	77	80	72	79	81	66	65	67	69	73	52	54	51	57	60	77	68	90	92	73	39	6	44	64
7	49	12	9	6	17	32	42	30	21	31	33	24	13	7	7	5	5	6	2	0	0	0	0	0	15
8	0	0	0	0	0	3	9	13	5	11	0	1	0	0	0	0	0	0	0	0	0	6	44	46	6
9	9	M	6	21	18	7	20	13	6	4	2	12	5	7	9	9	8	5	3	0	3	12	5	5	8
10	4	2	0	0	0	4	12	24	35	37	38	37	33	31	40	42	48	50	48	50	45	46	42	33	29
11	28	22	16	18	16	15	27	35	43	47	51	49	34	29	53	64	57	72	71	48	32	30	26	25	38
12	23	17	10	10	9	11	12	13	17	18	19	M	16	18	25	27	24	22	19	12	12	13	13	10	16
13	9	7	5	6	4	5	12	15	11	8	3	6	15	20	43	45	68	70	66	55	69	64	62	53	30
14	49	36	24	19	12	13	27	37	43	45	38	32	41	52	53	57	55	53	37	31	36	28	16	8	35
15	7	8	6	5	4	4	12	11	10	13	12	10	14	16	17	21	22	22	25	20	19	12	13	10	13
16	9	11	4	3	3	4	11	17	25	23	25	28	20	36	39	32	49	60	49	32	18	13	13	15	22
17	12	8	7	5	3	6	12	20	19	16	14	8	5	4	4	5	5	12	4	3	8	2	0	0	8
18	0	0	0	0	0	0	0	7	12	5	9	3	5	9	4	2	1	2	21	22	21	19	5	7	6
19	8	23	17	5	9	6	10	7	9	4	0	0	1	4	3	9	13	2	4	45	23	15	12	15	10
20	12	9	2	3	4	5	2	3	6	7	9	8	8	6	5	6	8	7	2	1	1	1	5	7	5
21	7	5	4	6	4	4	7	9	10	11	16	13	15	7	13	9	14	18	13	11	4	5	4	1	9
22	0	0	1	0	1	3	6	10	12	13	13	16	16	17	16	22	17	20	15	11	7	8	11	10	10
23	12	M	3	2	1	4	14	37	50	80	37	23	52	62	68	56	58	77	92	100	68	17	12	11	41
24	11	3	3	2	2	2	4	10	23	11	20	22	18	23	30	32	19	19	20	46	40	41	22	24	19
25	31	22	17	11	11	7	15	21	25	26	29	32	36	39	34	44	46	81	76	39	89	103	120	131	45
26	129	123	121	116	54	19	25	28	22	17	14	7	7	5	7	7	8	9	7	17	24	27	30	52	36
27	91	100	21	16	25	23	37	34	13	16	17	20	18	8	7	53	28	57	43	41	72	89	158	52	43
28	33	23	12	8	8	7	7	12	13	11	16	9	10	9	10	10	11	9	11	34	24	27	31	17	15
29	18	8	6	8	9	9	16	27	49	63	72	73	92	46	34	D	D	33	21	14	12	17	11	5	29
30	5	6	5	4	5	6	21	36	13	31	77	85	106	79	97	133	143	129	140	132	112	126	137	92	72
31	48	35	83	82	84	102	95	94	96	109	95	72	79	92	75	73	70	67	75	80	114	86	106	99	84

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----										RANGE-----				STN GEOM	PERCENT	NO. OF TIMES
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR		24-HR		DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL	
16	14	26	14	72	92	112	129	0	-	158	5	-	84	3	99	0	

- NOTES: 1. FLAGS FOR INVALID DATA :
- D: DYNAMIC CALIBRATION
 - T: TELEMETRY/DATALOGGR FAULT
 - M: MAINTENANCE OR ANALYZER FAULT
 - P: POWER FAILURE

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT
MONTH: MARCH

STATION : CHEUNG CHAU
POLLUTANT : SULPHUR DIOXIDE

YEAR : 2016
UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN
1	7	6	5	4	4	6	7	8	13	9	8	7	8	6	6	6	5	5	6	5	6	8	7	7	7
2	5	8	7	7	7	6	6	5	7	8	8	8	8	7	6	M	5	5	4	3	3	4	4	4	6
3	5	4	4	4	4	4	5	5	11	13	12	9	8	8	10	15	10	14	11	9	6	5	6	6	8
4	8	7	6	6	10	11	10	11	11	16	18	12	11	9	6	8	8	11	7	6	4	3	4	7	9
5	12	9	9	9	8	9	15	11	11	12	15	19	14	11	13	17	20	14	12	14	13	15	12	17	13
6	24	19	11	8	10	11	15	22	12	15	22	43	83	60	42	50	29	10	11	14	13	11	9	6	23
7	7	11	9	8	7	10	10	11	13	13	20	16	11	9	8	10	7	10	7	4	4	4	3	3	9
8	3	2	1	1	3	2	3	2	1	3	2	2	4	3	6	5	4	3	3	2	3	6	13	9	4
9	13	13	9	8	6	6	8	6	6	5	7	14	20	10	8	15	11	6	5	3	2	2	2	2	8
10	3	2	0	0	0	0	2	2	0	1	1	0	0	1	1	1	1	1	1	1	0	0	0	1	1
11	0	0	0	1	1	0	1	1	1	2	2	3	3	3	3	3	3	3	2	2	2	4	3	4	2
12	3	5	6	5	4	3	4	4	4	5	7	12	16	12	5	4	4	3	4	6	9	11	8	5	6
13	3	2	2	2	2	2	3	2	3	3	3	3	5	4	5	3	7	6	2	4	9	9	7	7	4
14	6	4	2	2	2	2	2	2	3	4	4	3	3	3	3	5	2	2	5	5	4	9	5	3	4
15	2	2	2	3	3	5	6	6	12	9	8	7	6	5	5	4	5	5	4	6	5	5	3	3	5
16	2	2	3	2	2	2	2	2	3	4	5	5	5	5	4	3	4	4	4	4	5	4	2	2	3
17	1	1	1	1	1	1	3	1	2	3	3	3	3	3	2	2	2	3	3	2	2	2	2	1	2
18	1	3	4	4	3	4	5	5	6	7	6	8	9	16	18	10	7	7	4	10	27	15	13	12	9
19	16	15	9	8	11	17	11	10	14	16	18	13	14	12	13	13	11	11	9	6	5	24	32	19	14
20	17	17	12	8	4	5	3	3	3	4	3	3	4	4	5	6	4	6	5	2	3	3	4	4	6
21	4	4	4	4	5	3	4	3	2	2	3	3	2	3	4	4	3	2	3	2	2	3	3	1	3
22	1	1	1	1	1	2	2	2	3	2	3	2	3	2	3	4	6	3	3	3	2	3	3	3	3
23	5	4	3	3	3	3	3	3	5	9	8	7	10	6	5	6	15	20	15	11	14	15	7	4	8
24	3	1	1	1	1	1	1	1	1	1	1	1	2	2	3	3	2	1	1	1	1	1	1	2	1
25	1	1	1	1	2	2	2	2	3	5	6	6	5	6	8	6	7	8	6	10	15	15	8	11	6
26	9	6	8	8	12	10	11	13	17	13	18	13	13	10	9	8	12	11	11	10	7	5	5	6	10
27	7	7	13	10	10	10	14	14	14	8	7	6	7	7	13	16	17	13	14	14	11	10	7	8	11
28	8	13	11	6	7	8	8	9	10	11	10	10	10	10	10	9	8	7	6	5	7	8	7	8	9
29	10	9	8	6	6	7	12	13	12	11	10	11	10	12	12	8	6	8	6	9	7	6	6	10	9
30	10	8	8	7	6	6	6	11	16	11	17	16	10	7	9	23	14	9	12	13	12	10	12	14	11
31	14	11	11	11	9	9	12	18	19	20	39	52	68	47	30	30	29	25	7	9	7	7	5	5	21

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----										RANGE-----		STN GEOM	PERCENT	NO. OF TIMES	
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR		24-HR		DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL
5	6	7	6	14	17	25	41	0	-	83	1	-	23	2	100	0

NOTES: 1. FLAGS FOR INVALID DATA :
D: DYNAMIC CALIBRATION
T: TELEMETRY/DATALOGGR FAULT
M: MAINTENANCE OR ANALYZER FAULT
P: POWER FAILURE

THE HONGKONG ELECTRIC COMPANY, LTD.
AIR QUALITY DATA MONTHLY TIME SERIES REPORT
MONTH: MARCH

STATION : CHEUNG CHAU
POLLUTANT : NITROGEN DIOXIDE

YEAR : 2016
UNIT : MICROGRAMS/CUBIC METER

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	MEAN
1	27	25	27	21	27	32	29	32	27	26	19	15	16	8	13	9	9	12	14	13	25	24	23	21	21
2	17	23	28	26	30	27	20	15	20	33	28	13	14	16	13	M	16	12	7	8	18	46	67	79	25
3	81	67	57	79	94	91	92	89	92	99	69	33	18	21	27	33	34	51	41	38	31	101	109	54	63
4	85	70	51	50	100	114	113	107	97	107	93	58	64	49	26	32	23	43	24	28	16	10	25	100	62
5	119	81	77	73	64	62	94	85	84	87	113	100	75	76	108	63	91	97	112	122	98	95	89	91	90
6	104	99	65	60	88	83	87	94	63	60	69	84	103	94	81	113	75	33	25	60	93	85	28	27	74
7	37	36	56	60	41	42	71	67	76	65	52	M	21	22	24	29	19	29	30	14	26	29	34	56	41
8	26	9	14	9	23	24	42	13	9	31	11	6	11	7	19	19	13	14	20	36	75	77	106	94	30
9	89	M	70	65	67	64	73	61	43	24	21	31	42	43	25	34	36	30	45	27	16	19	20	26	42
10	28	17	16	12	15	33	48	41	33	37	33	29	28	24	26	30	42	42	52	52	40	30	26	24	32
11	21	16	12	12	11	13	17	18	29	38	42	43	45	49	61	74	76	80	73	67	68	66	63	53	44
12	54	56	56	44	31	34	42	31	27	35	40	47	52	52	57	63	76	77	62	36	45	48	51	34	48
13	27	26	34	24	29	35	42	40	40	21	21	33	79	73	83	80	84	82	78	86	82	80	75	67	55
14	61	51	32	20	19	19	24	27	27	45	39	37	39	44	48	56	53	59	83	79	79	76	71	33	47
15	41	45	35	34	11	30	26	21	34	35	22	29	31	31	31	28	34	32	28	74	71	35	48	37	35
16	32	30	35	19	18	30	12	32	31	45	60	66	72	75	74	77	105	105	101	111	103	93	75	79	62
17	71	51	28	35	34	40	46	25	32	39	35	26	24	21	15	20	74	92	90	85	46	25	38	15	42
18	33	62	65	65	50	54	65	68	46	25	25	68	60	80	78	29	46	75	63	87	106	101	94	83	64
19	89	86	75	74	72	70	66	55	56	62	55	47	47	44	48	43	42	50	64	53	44	61	61	55	59
20	52	46	52	30	18	17	12	15	13	15	15	17	19	32	37	38	20	39	24	10	12	20	25	26	25
21	25	20	18	24	35	18	33	30	31	26	49	30	30	23	32	46	70	63	79	36	21	30	36	13	34
22	8	14	30	22	15	37	30	33	36	38	39	32	29	70	68	82	40	54	56	34	30	19	29	24	36
23	49	M	31	32	37	45	67	70	83	100	91	94	99	89	88	76	73	95	104	109	117	107	39	29	75
24	22	13	19	10	7	11	10	34	53	29	36	29	32	73	59	58	41	40	61	52	44	48	49	47	37
25	30	26	22	14	14	17	19	22	30	43	40	41	61	64	74	70	65	73	118	84	65	64	118	137	55
26	115	102	86	93	88	81	87	86	69	62	74	27	15	12	15	19	23	22	28	25	45	93	58	132	61
27	131	76	137	139	91	34	83	65	49	38	27	24	27	16	18	20	26	23	29	49	139	112	106	168	68
28	157	146	132	20	19	19	19	18	19	21	24	26	17	37	24	18	12	12	14	15	19	35	93	67	41
29	99	72	33	29	30	39	98	102	95	105	92	58	36	28	38	29	25	29	33	139	118	112	87	65	66
30	47	28	52	32	28	59	85	82	77	83	87	77	100	83	96	166	147	122	164	179	173	165	164	158	102
31	151	137	141	140	112	115	116	117	121	112	98	74	85	60	51	51	52	56	30	32	40	36	31	42	83

MONTHLY STATISTICS:

GEOM	ARITH-----PERCENTILES-----										RANGE-----		STN GEOM	PERCENT	NO. OF TIMES	
MEAN	MEDIAN	MEAN	50	90	95	98	99	1-HR		24-HR		DEVIATION	VALID DATA	ABOVE	LIMIT	LEVEL
42	42	52	42	99	113	139	158	6	-	179	21	-	102	2	99	0

- NOTES: 1. FLAGS FOR INVALID DATA :
- D: DYNAMIC CALIBRATION
 - T: TELEMETRY/DATALOGGR FAULT
 - M: MAINTENANCE OR ANALYZER FAULT
 - P: POWER FAILURE

Appendix C Summary Results on Water Quality Monitoring

LAMMA POWER STATION FGD WASTEWATER TREATMENT PLANT EFFLUENT DISCHARGE TO ASH LAGOON SUSPENDED SOLIDS AND PH

Period : January – March 2016

Week Ending	No. of Samples	Suspended Solids, mg/L			pH		
		Maximum	Minimum	Average	Maximum	Minimum	Average
02/01/16	5*	18	11	15	8.2	8.1	8.1
09/01/16	4*	17	11	13	8.2	8.0	8.1
16/01/16	4*	16	10	13	8.2	8.0	8.1
23/01/16	2*	15	12	14	8.1	8.0	8.1
30/01/16	4*	20	12	16	8.1	8.0	8.1
06/02/16	4*	22	14	17	8.1	8.0	8.1
13/02/16	2*	17	11	14	8.0	8.0	8.0
20/02/16	3*	20	16	18	8.2	8.1	8.2
27/02/16	4*	16	12	14	8.1	8.0	8.1
05/03/16	3*	13	12	12	8.1	8.0	8.0
12/03/16	5*	22	16	19	8.2	8.0	8.1
19/03/16	4*	20	15	17	8.1	8.0	8.1
26/03/16	3*	22	16	19	8.2	8.0	8.1

Remark :

* - No sampling for the remaining day(s) of the week / no sampling due to no discharge

LAMMA POWER STATION
FGD WASTEWATER TREATMENT PLANT
EFFLUENT DISCHARGE TO ASH LAGOON
TRACE METAL, TOTAL PHOSPHORUS
AND TOTAL NITROGEN ANALYSIS

Period : January – March 2016

Sampling date		6/1/2016	5/2/2016	8/3/2016
Barium,	ug/L	<150	<150	<150
Mercury,	ug/L	<0.5	<0.5	<0.5
Cadmium,	ug/L	2	4	2
Iron,	ug/L	<400	<400	<400
Total Phosphorous,	mg/L	<0.8	<0.8	<0.8
Total Nitrogen,	mg/L	104	98	39
Cyanide,	mg/L	0.01	<0.01	0.02

Remark:

According to the WPCO Ash Lagoon Discharge Licence, contents at exact levels of trace metals below 1/10 th of the WPCO Licence permitted limits will not be reported. When the concentration of a metal exceeds 1/10 th of the limit, the exact value of the metal concentration will be reported.

Appendix D Summary of EMIS

EM&A Log Ref.	Mitigation Measures	Implementation Status
	GENERAL	
A1	No other process, except the Wet Limestone-Gypsum process used in the FGD plants of the coal-fired Units L6, L7 and L8 within the Lamma Power Station, shall be used in the FGD plants for the projects unless otherwise agreed by EPD.	Complied
	WATER QUALITY	
B1	All wastewater arising from the operation of the projects shall be collected and directed to the existing wastewater treatment plant within the Lamma Power Station for treatment.	Complied
B2	The operational plant effluent from the FGD plants should be reused as much as possible in order to minimise discharge to the WWTP.	Complied
B3	Maintenance of the WWTP should be performed regularly to ensure the effluent from the WWTP would not exceed the current requirements stipulated in the WPCO licence for Ash Lagoon.	Complied
	WASTE	
C1	No gypsum or sludge arising from the operation of the projects shall be disposed of anywhere. All gypsum and sludge shall be collected and reused.	Complied
	NOISE	
D1	Equipment including the Absorber Recirculation Pump, Oxidation Air Blower, Booster Fan and Booster Fan Motor of the FGD plants shall be acoustically insulated and the Gas-Gas Heater (untreated side) of the FGD plants shall be provided with reinforced lagging to reduce the noise impact.	Complied