

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



**Lamma Power Station Extension
Construction Phase
Monthly Environmental Monitoring & Audit Report**

March 2019

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



ENVIRONMENTAL IMPACT ASSESSMENT (EIA) ORDINANCE, CAP. 499

ENVIRONMENTAL PERMIT NO. EP-071/2000/C

**LAMMA POWER STATION EXTENSION
ENVIRONMENTAL MONITORING & AUDIT PROGRAMME
AT CONSTRUCTION PHASE**

Report Title	Lamma Power Station Extension – Unit L10 & L11 Monthly EM&A Report (March 2019)
Date	11 April 2019
Certified by	 <i>for</i> (Mr. IP Tat-Yan, Environmental Team Leader)
Verified by	 Mr. Y T Tang (AECOM Asia Company Limited, Independent Environmental Checker)

TABLE OF CONTENT

EXECUTIVE SUMMARY

- 1. INTRODUCTION 1**
 - 1.1 Background 1
 - 1.2 Project Organisation 1
 - 1.3 Construction Works undertaken during the Reporting Month 1
 - 1.4 Summary of EM&A Requirements 4
- 2. AIR QUALITY 7**
 - 2.1 Monitoring Requirements 7
 - 2.2 Monitoring Locations 7
 - 2.3 Monitoring Equipment 7
 - 2.4 Monitoring Parameters, Frequency and Duration 7
 - 2.5 Monitoring Procedures and Calibration Details 8
 - 2.6 Results and Observations 9
- 3. NOISE..... 11**
 - 3.1 Monitoring Requirements 11
 - 3.2 Monitoring Locations 11
 - 3.3 Monitoring Equipment 11
 - 3.4 Monitoring Parameters, Frequency and Duration 11
 - 3.5 Monitoring Procedures and Calibration Details 12
 - 3.6 Results and Observations 12
- 4. ENVIRONMENTAL AUDIT 14**
 - 4.1 Review of Environmental Monitoring Procedures 14
 - 4.2 Assessment of Environmental Monitoring Results 14
 - 4.3 Waste Management 14
 - 4.4 Site Environmental Audit 15
 - 4.5 Status of Environmental Licensing and Permitting 15
 - 4.6 Implementation Status of Environmental Mitigation Measures 16
 - 4.7 Implementation Status of Event/Action Plans 16
 - 4.8 Implementation Status of Environmental Complaint Handling Procedures 16
- 5. FUTURE KEY ISSUES 18**
 - 5.1 Key Issues for the Coming Month 18
 - 5.2 Monitoring Schedules for the Next 3 Months 19
 - 5.3 Construction Program for the Next 3 Months 19
- 6. CONCLUSION 20**

LIST OF TABLES

Table 1.1	Construction Activities and Their Corresponding Environmental Mitigation Measures
Table 2.1	Air Quality Monitoring Locations
Table 2.2	Air Quality Monitoring Equipment
Table 2.3	Air Quality Monitoring Parameter, Duration and Frequency
Table 3.1	Noise Monitoring Equipment
Table 3.2	Noise Monitoring Duration and Parameter
Table 4.1	Summary of AL Level Exceedances on Monitoring Parameters
Table 4.2	Estimated Amounts of Waste in March 2019
Table 4.3	Summary of Environmental Licensing and Permit Status
Table 4.4	Environmental Complaints Received in March 2019
Table 4.5	Outstanding Environmental Complaints Carried Over

LIST OF FIGURES

Figure 1.1	Layout of Work Site
Figure 2.1	Location of Air Quality Monitoring Stations
Figure 3.1	Location of Noise Monitoring Stations

APPENDICES

Appendix A	Organization Chart
Appendix B	Action and Limit Levels for Air Quality and Noise
Appendix C	Environmental Monitoring Schedule
Appendix D	Air Quality Monitoring Results for March 2019
Appendix E	Noise Monitoring Results for March 2019
Appendix F	The QA/QC Procedures and Results
Appendix G	Event/Action Plans
Appendix H	Site Audit Summary
Appendix I	Summary of EMIS
Appendix J	Tentative Construction Programme
Appendix K	Monthly Waste Flow Table for March 2019

EXECUTIVE SUMMARY

This is the 107th monthly Environmental Monitoring and Audit (EM&A) report for the Project “Construction of Lamma Power Station Extension” prepared by the Environmental Team (ET). This report presents the results of impact monitoring on air quality and noise for the said project in March 2019.

The reclamation and submarine pipeline works were completed with the first gas-fired combined cycle unit (viz. Unit L9) commissioned in October 2006, working currently on base load operation. To cope with the scheduled retirement of the existing units at Lamma Power Station, the second gas-fired combined cycle unit (viz. Unit L10) is planned for commercial operation in early 2020 and the associated construction work commenced in February 2016.

In September 2016, the Government approved HK Electric to construct the third combined cycle gas-fired generating unit (L11) to implement the 2020 Fuel Mix Target. L11 is planned for commercial operation in 2022 and the associated construction work commenced in November 2016.

Air and noise monitoring were performed. The results were checked against the established Action/Limit (AL) levels. An on-site audit was conducted once per week. The implementation status of the environmental mitigation measures, Event/Action Plan and environmental complaint handling procedures were also checked.

Construction Activities Undertaken

Construction activities for Lamma Extension during the reporting month are tabulated as follows:

Item	Construction Activities
Unit L10 Civil and Building Works	Main Station Building, Urea Plant and Store Area (trench excavation and backfilling, , formwork, steel fixing and concreting), and cable trench
Unit L10 Mechanical Erection	Condenser installation, HRSG installation and turbine block installation
Unit L10 Electrical, Instrumentation & Control Erection	Cable installation
Unit L11 Civil and Building Works	Ground Treatment, 275kV Station Building Extension Works, Main Building Station and CW pipe excavation

Environmental Monitoring Works

All monitoring work at designated stations was performed as scheduled satisfactorily.

Air Quality

No exceedance of Action/Limit levels on 1-hour TSP and 24-hour TSP for air quality was recorded in the month.

Noise

Construction work for Lamma Extension was carried out during the restricted hours including evening-time, holidays and night-time under valid Construction Noise Permit. No exceedance of Action and Limit levels for noise arising from the construction of Lamma Extension was recorded in the month.

Site Environmental Audit

EPD officials from Regional Office (South) visited Lamma Power Station on 21/3/2019. EPD inspected the Lamma Extension Construction Site. There was no adverse comment from EPD regarding the construction site.

Site audits were carried out on a weekly basis to monitor environmental issues on the construction site. The site conditions were generally satisfactory.

Environmental Licensing and Permitting

Description	Permit No.	Valid Period		Issued To	Date of Issuance
		From	To		
Varied Environmental Permit	EP-071/2000/C	18/05/05	-	HK Electric	18/05/05
Construction Noise Permit	GW-RS0789-18	05/09/18	02/03/19	Contractor	03/09/18
Construction Noise Permit	GW-RS1173-18	01/01/19	30/06/19	Contractor	14/12/18
Construction Noise Permit	GW-RS0210-19	18/03/19	14/09/19	Contractor	14/03/19
WPCO Discharge Licence	WT00027316-2017	01/03/17	31/03/22	Contractor	01/03/17
Registration of Chemical Waste Producer	WPN5213-912-P2781-22	22/02/16	-	Contractor	22/02/16
Waste Disposal Billing Account	Account No.: 7026035	06/10/16	-	Contractor	06/12/16
Waste Disposal Billing Account	Account No.: 7026793	28/12/16	-	Contractor	28/12/16
Waste Disposal Billing Account	Account No.: 7027632	20/04/17	-	Contractor	20/04/17
Waste Disposal Billing Account	Account No.: 7031135	21/06/18	-	Contractor	21/06/18

Implementation Status of Environmental Mitigation Measures

Environmental mitigation measures for the construction activities as recommended in the EM&A manual were implemented in the reporting month.

Environmental Complaints

No complaint against the construction activities was received in the reporting month.

Future Key Issues

The future key issues to be considered in the coming month are as follows:

Unit L10 Civil and Building Works

- to continue monitoring the noise level during construction;

- to continue executing the preventive measures for avoiding noise exceedance and keep monitoring/ reviewing the performance;
- to monitor and review the sufficiency of the dust suppression measures provided and increase the resources accordingly if necessary;
- to treat wastewater in sedimentation pit and tanks before discharge and to ensure compliance with the WPCO discharge licence already obtained.

Unit L10 Mechanical Erection

- to continue monitoring the noise level during construction and to ensure compliance with the CNP's already obtained;
- to continue executing the preventive measures for avoiding noise exceedance and keep monitoring/ reviewing the performance;
- to monitor and review the sufficiency of the dust suppression measures provided and increase the resources accordingly if necessary;

Unit L10 Electrical, Instrumentation & Control Erection

- to continue monitoring the noise level during construction and to ensure compliance with the CNP's already obtained;
- to continue executing the preventive measures for avoiding noise exceedance and keep monitoring/ reviewing the performance;
- to monitor and review the sufficiency of the dust suppression measures provided and increase the resources accordingly if necessary;

Unit L11 Civil and Building Works

- to continue monitoring the noise level during construction and to ensure compliance with the CNP's already obtained;
- to continue executing the preventive measures for avoiding noise exceedance and keep monitoring/ reviewing the performance;
- to monitor and review the sufficiency of the dust suppression measures provided and increase the resources accordingly if necessary;
- to treat wastewater in sedimentation pit and tanks for reuse on water spraying.

Concluding Remarks

The environmental performance of the project was generally satisfactory.

1. INTRODUCTION

1.1 Background

The Environmental Team (hereinafter called the “ET”) was formed within the Hongkong Electric Co. Ltd (HEC) to undertake Environmental Monitoring and Audit for “Construction of Lamma Power Station Extension” (hereinafter called the “Project”). Under the requirements of Section 6 of Environmental Permit EP-071/2000/C, an EM&A programme for impact environmental monitoring set out in the EM&A Manual (Construction Phase) is required to be implemented. In accordance with the EM&A Manual, environmental monitoring of air quality, noise and water quality and regular environmental audits are required for the Project. With the completion of reclamation and submarine pipeline works, no further marine water quality monitoring would be required.

The Project involves the construction of a gas-fired power station employing combined cycled gas turbine technology, forming an extension to the existing Lamma Power Station. The key elements of the Project including the construction activities associated with the transmission system and submarine gas pipeline are outlined as follows.

- dredging and reclamation to form approximately 22 hectares of usable area;
- construction of six 300MW class gas-fired combined cycle units;
- construction of a gas receiving station;
- construction of a transmission system linking the Lamma Extension to load centres on Hong Kong Island;
- laying of a gas pipeline for the supply of natural gas to the new power station

This report summarizes the environmental monitoring and audit work for the Project for the month of March 2019.

1.2 Project Organisation

An Environmental Management Committee (EMC) has been set up in HEC to oversee the Project. The management structure includes the following:

- Environmental Protection Department (The Authority);
- Environmental Manager (The Chairman of the Environmental Management Committee);
- Engineer;
- Independent Environmental Checker (IEC);
- Environmental Team (ET);
- Contractor.

The project organisation chart for the construction EM&A programme is shown in [Appendix A](#).

1.3 Construction Works undertaken during the Reporting Month

Construction activities for Unit L10 civil and building works were carried out for Main Station Building, Urea Plant and Store Area (trench excavation and backfilling, formwork, steel fixing and concreting), and for Cable Trench. Construction activities for Unit L10 mechanical erection were condenser installation, HRSG installation and turbine block installation. Construction activity for Unit L10 electrical, instrumentation & control erection was cable installation. Construction activities for Unit L11 civil and building works were ground treatment works,

275kV station building extension works, Main Station Building and CW pipe excavation. Layout plan for construction site is shown in [Figure 1.1](#).

The main construction activities carried out during the reporting month and the corresponding environmental mitigation measures are summarized in [Table 1.1](#). The implementation of major mitigation measures in the month is provided in [Appendix I](#).

Table 1.1 Construction Activities and Their Corresponding Environmental Mitigation Measures

Item	Construction Activities	Environmental Mitigation Measures
Unit L10 Civil and Building Works		
1.	Main Station Building, Urea Plant and Store Area (trench excavation and backfilling, formwork, steel fixing and concreting)	<p>Air</p> <ul style="list-style-type: none"> - All regulated machine attached with valid exception/approval NRMM labels. - Water truck was used for water spraying of the haul road. - Water spraying for concrete breaking of pile head. - Excavated slope covered with cement or tarpaulin. - Backfilled surface was compacted. - Wheel washing facilities was provided. - Provision of shelter with three sides and top cover for fendolite mixer and fendolite stock should be covered. <p>Noise</p> <ul style="list-style-type: none"> - Works conducted during holiday should comply with the valid CNP. <p>Wastewater</p> <ul style="list-style-type: none"> - Wastewater should be treated in sedimentation pit and tanks before discharge. Solution should be added to speed up the sedimentation process. Sediment in pit and tanks must be removed regularly. <p>Waste Management</p> <ul style="list-style-type: none"> - Excavated soil was temporary stored for backfilling. - Scrape metal will be recycled. - Timber will be reused as much as possible.

Item	Construction Activities	Environmental Mitigation Measures
3.	Cable Trench	<p>Air</p> <ul style="list-style-type: none"> - All regulated machine attached with valid exception/approval NRMM labels. - Water spraying for road surface breaking - Soil stock covered with tarpaulin. <p>Wastewater</p> <ul style="list-style-type: none"> - Wastewater should be treated in sedimentation pit and tanks before discharge. Solution should be added to speed up the sedimentation process. Sediment in pit and tanks must be removed regularly. <p>Waste Management</p> <ul style="list-style-type: none"> - Excavated soil was temporary stored for backfilling. - Scrape metal will be recycled.
Unit L10 Mechanical Erection		
4.	Condenser installation HRSG installation Turbine block installation	<p>Air</p> <ul style="list-style-type: none"> - Dust suppression in the main haul road. <p>Noise</p> <ul style="list-style-type: none"> - General noise mitigation measures employed at all work sites throughout the construction phase. <p>Waste Management</p> <ul style="list-style-type: none"> - Waste Management Plan submitted and implemented.
Unit L10 Electrical, Instrumentation & Control Erection		
5.	Cable installation	<p>Air</p> <ul style="list-style-type: none"> - Dust suppression in the main haul road. <p>Noise</p> <ul style="list-style-type: none"> - General noise mitigation measures employed at all work sites throughout the construction phase. <p>Waste Management</p> <ul style="list-style-type: none"> - Waste Management Plan submitted and implemented.
Unit L11 Civil and Building Works		
7.	Ground Treatment Works	<p>Air</p> <ul style="list-style-type: none"> - All regulated machine attached with valid

Item	Construction Activities	Environmental Mitigation Measures
		<p>exception/approval NRMM labels.</p> <ul style="list-style-type: none"> - Water truck was used for water spraying. - Excavated slope and soil rock covered with cement or tarpaulin. - Wheel washing facility was provided. <p>Noise</p> <ul style="list-style-type: none"> - CNP should be applied if works to be conduct during restricted hours. <p>Wastewater</p> <ul style="list-style-type: none"> - Wastewater should be treated in sedimentation tanks for reuse on water spraying. <p>Waste Management</p> <ul style="list-style-type: none"> - Excavated soil was temporary stored for backfilling. - Scrape metal will be recycled. - Timber will be reused as much as possible.
8.	275kV Station Building Extension Works	<p>Air</p> <ul style="list-style-type: none"> - All regulated machine attached with valid exception/approval NRMM labels. <p>Waste Management</p> <ul style="list-style-type: none"> - Scrape metal will be recycled. - Timber will be reused as much as possible. - Chemical waste should be collected by licensed collector
9	Main Station Building and CW Pipe Excavation	<p>Air</p> <ul style="list-style-type: none"> - All regulated machine attached with valid exception/approval NRMM labels. - Water truck and water sprinkler system was used. - Water spraying for concrete breaking of pile head. - Wheel washing facility was provided. <p>Wastewater</p> <ul style="list-style-type: none"> - Wastewater should be treated in sedimentation tanks for reuse on water spraying. <p>Waste Management</p> <ul style="list-style-type: none"> - Excavated soil was temporary stored for backfilling. - Scrape metal will be recycled. - Timber will be reused as much as possible.

1.4 Summary of EM&A Requirements

The detailed EM&A monitoring work for air quality and noise are described in Sections 2 and 3 respectively. Regular environmental site audits for air quality, noise, water quality and waste management were carried out.

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

- Environmental monitoring results;
- Waste Management Records;
- Weekly site audit results;
- The status of environmental licensing and permits for the Project;
- The implementation status of environmental protection and pollution control/ mitigation measures.

Future key issues will be reported in Section 5 of this report.

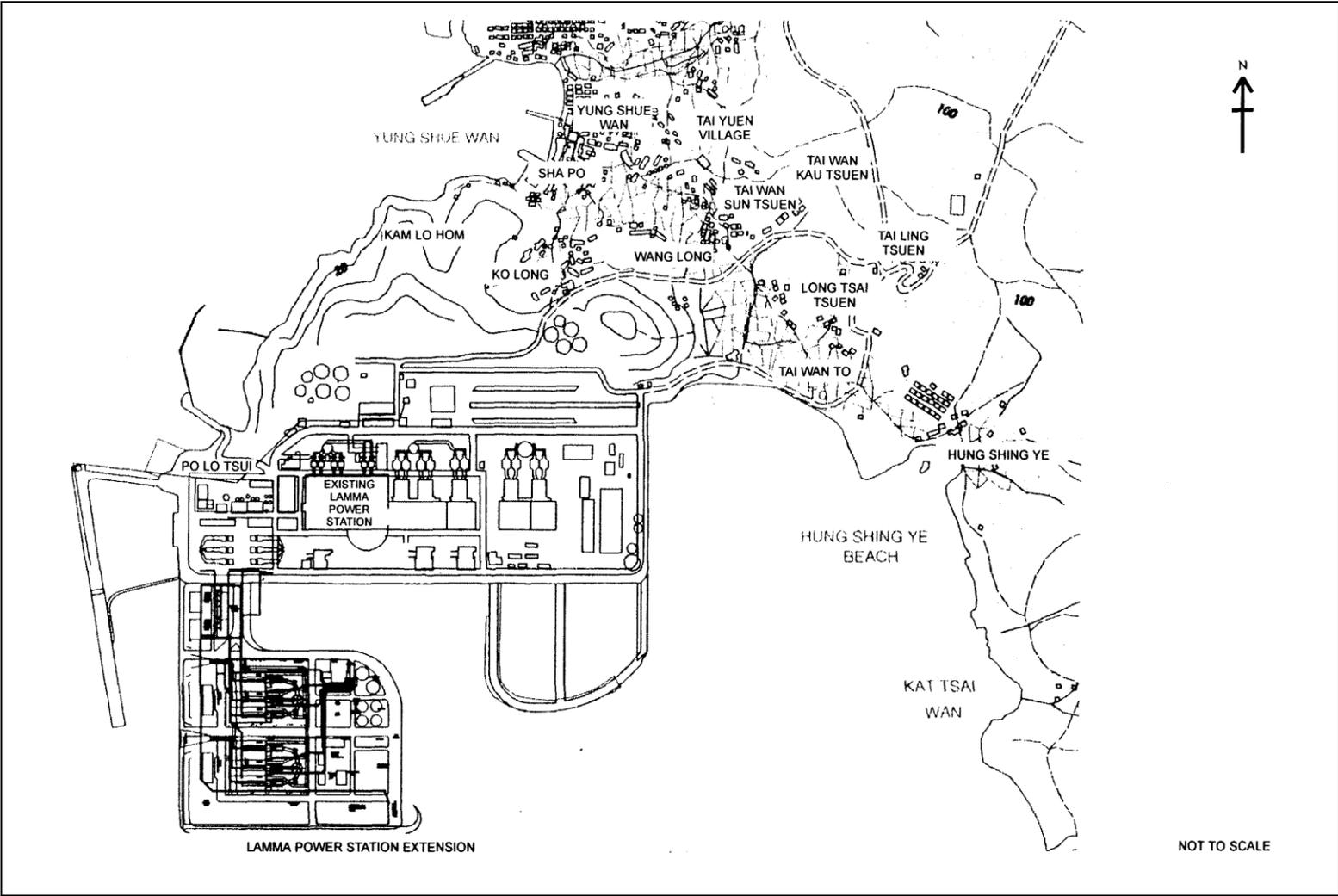


Figure 1.1 Layout of Work Site

2. AIR QUALITY

2.1 Monitoring Requirements

1-hour and 24-hour TSP monitoring at agreed frequencies were conducted to monitor air quality. The impact monitoring data were checked against the Action/Limit Levels as determined in the Baseline Monitoring Report (Construction Phase). [Appendix B](#) shows the established Action/Limit Levels for Air Quality.

2.2 Monitoring Locations

Three dust monitoring locations were selected for 1-hour TSP sampling (AM1, AM2 & AM3) while four monitoring locations were selected for 24-hour TSP sampling (AM1, AM2, AM3 and AM4). [Table 2.1](#) tabulates the monitoring stations. The locations of the monitoring stations are shown in [Figure 2.1](#).

Table 2.1 Air Quality Monitoring Locations

Location I.D.	Description
AM1	Reservoir
AM2	East Gate
AM3	Ash Lagoon
AM4	Tai Yuen Village

2.3 Monitoring Equipment

It is agreed with EPD that continuous 24-hour TSP air quality monitoring would be performed using TEOM continuous dust monitor and the MINIVOL Portable Sampler at AM1,2&3 and AM4 respectively. TEOM continuous dust monitors were used to carry out 1-hour TSP monitoring at AM1, AM2 and AM3. [Table 2.2](#) summarises the equipment used in dust monitoring.

Table 2.2 Air Quality Monitoring Equipment

Equipment	Model and Make
<i>24-hour sampling:</i>	
Continuous TSP Dust Meter	TEOM continuous dust monitor Thermo Scientific
MINIVOL Portable Sampler	AIRMETRICS
<i>1-hour sampling:</i>	
Continuous TSP Dust Meter	TEOM continuous dust monitor Thermo Scientific

2.4 Monitoring Parameters, Frequency and Duration

[Table 2.3](#) summarises the monitoring parameters, duration and frequency of air quality monitoring. The monitoring schedule for the reporting month is shown in [Appendix C](#).

Table 2.3 Air Quality Monitoring Parameter, Duration and Frequency

Monitoring Stations	Parameter	Duration	Frequency
AM1	1-hour TSP	1	3 hourly samples every 6 days
	24-hour TSP	24	Once every 6 days
AM2	1-hour TSP	1	3 hourly samples every 6 days
	24-hour TSP	24	Once every 6 days
AM3	1-hour TSP	1	3 hourly samples every 6 days
	24-hour TSP	24	Once every 6 days
AM4	24-hour TSP	24	Once every 6 days

2.5 Monitoring Procedures and Calibration Details

MINIVOL (24- hour TSP Monitoring):

Preparation of Filter Papers

- Visual inspection of filter papers was carried out to ensure that there were no pinholes, tears and creases;
- The filter papers were then labeled before sampling.
- The filter papers were equilibrated at room temperature and relative humidity < 50% for at least 24 hours before weighing.

Field Monitoring

- During collection of the sampled filter paper, the information on the elapse timer was logged. Site observations around the monitoring stations, which might have affected the monitoring results, were also recorded. Major pollution sources, if any, would be identified and reported.
- The post-sampling filter papers were removed carefully from the filter holder and folded to avoid loss of fibres or dust particles from the filter papers;
- The filter holder and its surrounding were cleaned;
- A pre-weighed blank filter paper for the next sampling was put in place and aligned carefully. The filter holder was then tightened firmly to avoid leakage;
- The programmable timer was set for the next 24 hrs sampling period;
- The post-sampling filter papers were equilibrated at room temperature and relative humidity < 50% for at least 24 hours before weighing.

TEOM continuous dust monitor (24- hour TSP and 1- hour TSP Monitoring):

- The following parameters of the TEOM model dust meters are regularly checked to ensure proper functionality:
 - Operation Mode;
 - Frequency of the tapered element;
 - Main flow;
 - Bypass flow.

Maintenance & Calibration

- The monitoring equipment and their accessories are maintained in good working conditions.

- Monitoring equipment is calibrated at monthly intervals. Calibration details are shown in [Appendix F](#).

2.6 Results and Observations

All dust monitoring works were conducted on schedule. All monitoring data and graphical presentation of the monitoring results are provided in [Appendix D](#). Key findings and observations are provided below:

1-hour TSP

No exceedance of 1-hour TSP Action/Limit Level was recorded in the month.

24-hour TSP

No exceedance of 24-hour TSP Action/Limit Level was recorded in the month.

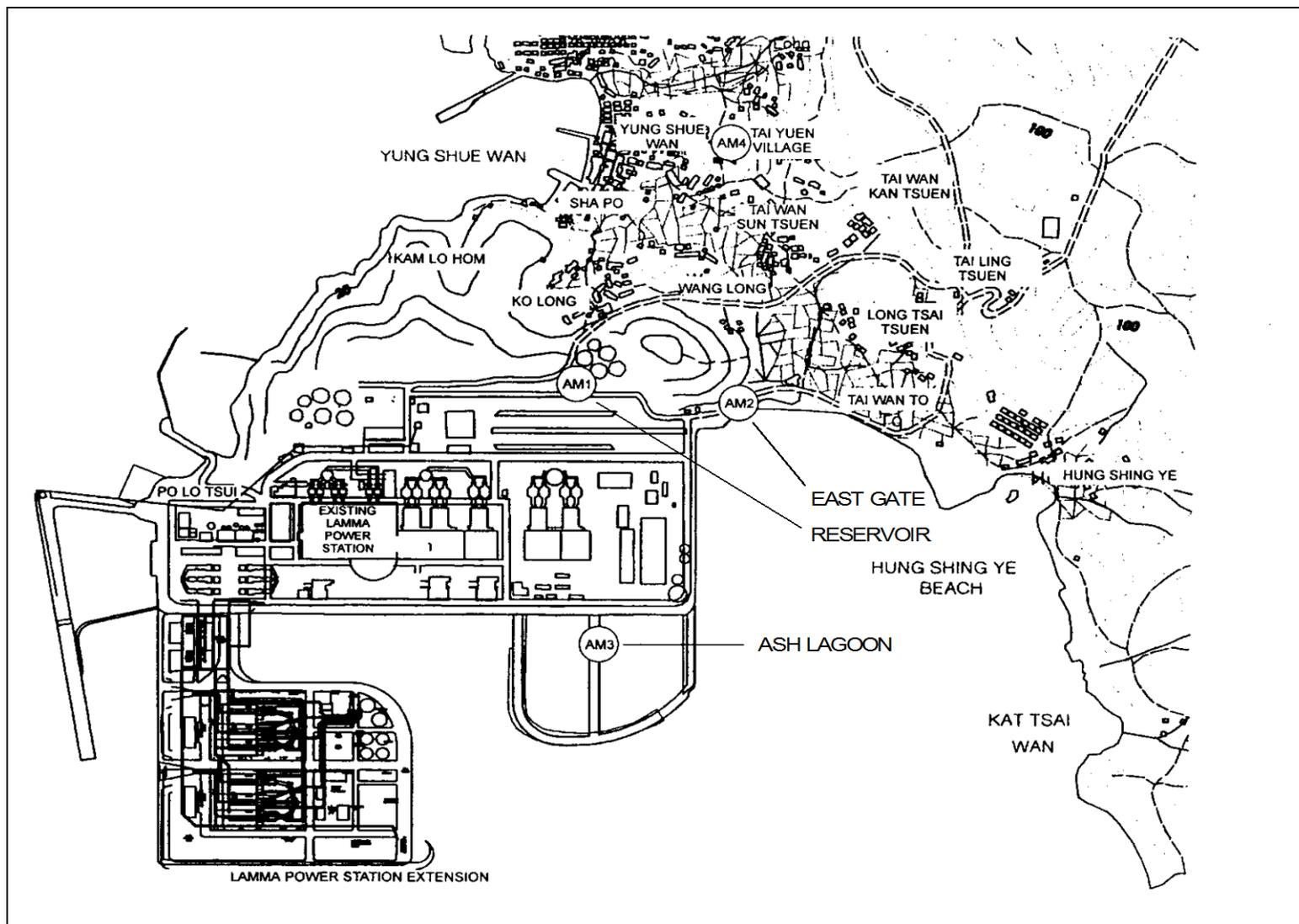


Figure 2.1 Location of Air Quality Monitoring Stations

3. NOISE

3.1 Monitoring Requirements

Continuous noise alarm monitoring at Ash Lagoon/Ching Lam were carried out to calculate the noise contributed by the construction activities at the two critical NSR's, viz. Long Tsai Tsuen/Hung Shing Ye and the school within the village of Tai Wan San Tsuen. The impact monitoring data for construction noise were checked against the limit levels specified in the EM&A Manual. With the availability of the construction noise permits, impact monitoring for the construction work during the restricted hours was also carried out. Section 3 presents the details of the construction noise permits.

The impact noise monitoring data were checked against the limit levels specified in the EM&A Manual. [Appendix B](#) shows the established Action/Limit Levels for noise.

3.2 Monitoring Locations

In accordance with the EM&A manual, the identified noise monitoring locations of Ash Lagoon and Ching Lam are shown in [Figure 3.1](#).

3.3 Monitoring Equipment

The sound level meters used for noise monitoring complied with International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1). The noise monitoring equipment used is shown in [Table 3.1](#).

Table 3.1 Noise Monitoring Equipment

Equipment	Model
Sound level meters	B&K 2250
Sound level calibrator	B&K 4231

3.4 Monitoring Parameters, Frequency and Duration

Continuous alarm monitoring was carried out at Ash Lagoon and Ching Lam. The measurement duration and parameter of noise monitoring were presented in [Table 3.2](#) as follows:

Table 3.2 Noise Monitoring Duration and Parameter

Location	Time Period	Frequency	Parameter
----------	-------------	-----------	-----------

Ash Lagoon	Day-time: 0700-1900 hrs on normal weekdays	Day-time: 30 minutes	30-min L_{Aeq}
	Evening-time & holidays: 0700-2300 hrs on holidays; and 1900-2300 hrs on all other days	Evening-time & holidays: 5 minutes	5-min L_{Aeq}
Ching Lam	Night-time: 2300-0700 hrs of next day	Night-time: 5 minutes	5-min L_{Aeq}

3.5 Monitoring Procedures and Calibration Details

Monitoring Procedures

Continuous Noise Monitoring for Lamma Extension Construction

The measured noise levels (MNL's) were collected at the noise alarm monitoring stations at Ash Lagoon and Ching Lam. The notional background noise levels (viz. baseline noise data at Ash Lagoon and Ching Lam) were applied to correct the corresponding MNL's in 30-min/5-min L_{Aeq} .

A wind speed sensor was installed at Station Building Rooftop. The wind speed signal was used to determine whether the data from Ash Lagoon and Ching Lam noise alarm monitoring stations were affected. The instantaneous data was discarded in case the instantaneous wind speed exceeded 10 m/s. The 30-min/5-min L_{Aeq} was considered valid only if the amount of valid data was equal to or above 70%.

Equipment Calibration

The sound level meters and calibrators were verified by the manufacturer or accredited laboratory. With the endorsement of the Independent Environmental Checker, the enhancement of calibration of sound level meter at the noise monitoring stations was implemented. The monthly manual on-site calibration using sound level calibrator was replaced by the daily auto charge injection calibration function of the sound level meter. For additional quality assurance, manual on-site calibration would still be conducted for the noise monitoring stations once every 6 months. The manual on-site calibration for Ching Lam noise monitoring station was carried out in March 2019 while that for Ash Lagoon noise monitoring station was scheduled in July 2019 respectively.

3.6 Results and Observations

Continuous noise monitoring was conducted at the two monitoring stations at Ash Lagoon and Ching Lam.

All monitoring results and their graphical presentations are provided in [Appendix E](#). No exceedance of noise Action/Limit Level was recorded in the month.

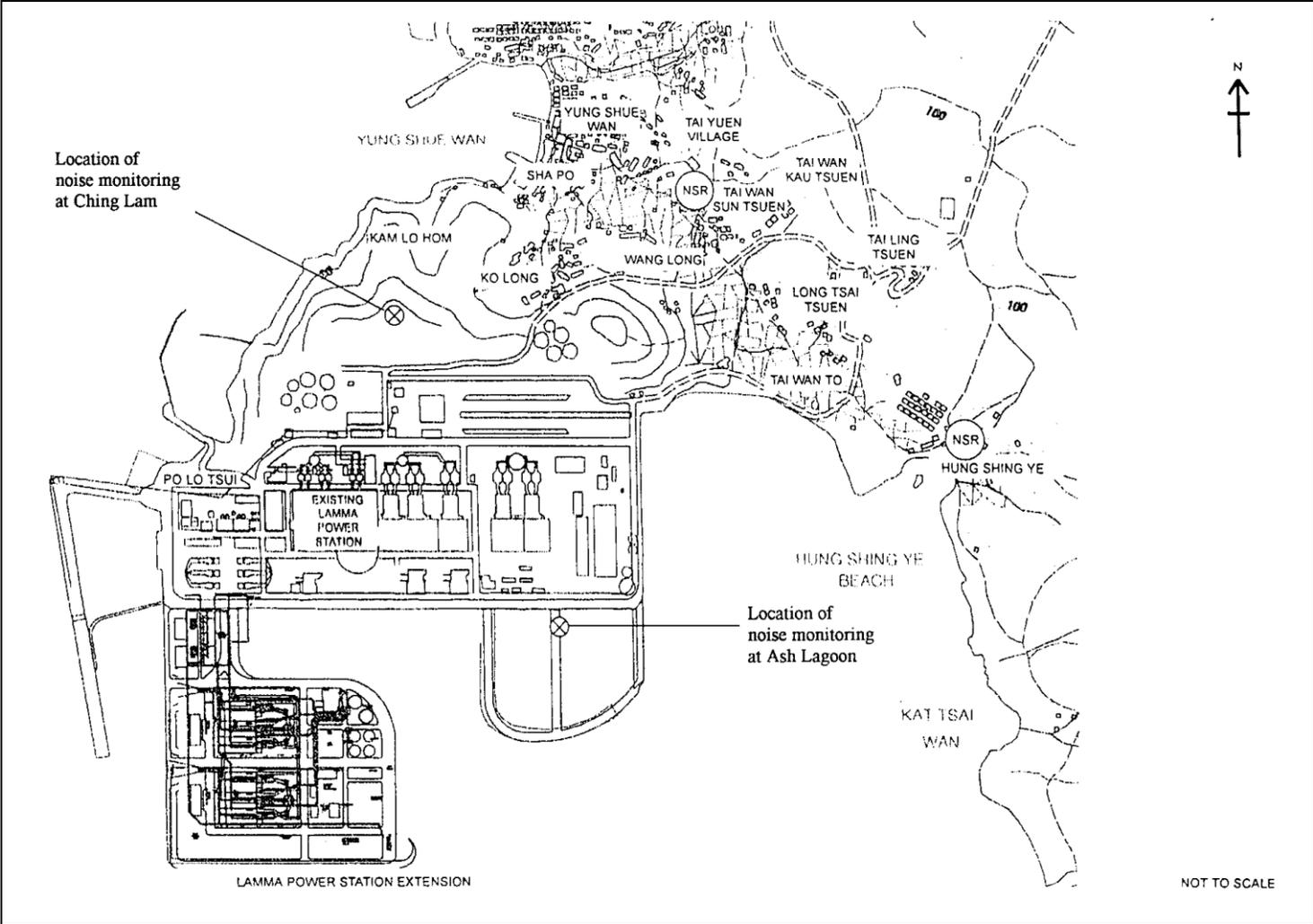


Figure 3.1 Location of Noise Monitoring Stations

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 Noise

The environmental monitoring results for Air Quality and Noise in the reporting month presented in Sections 2 and 3 respectively are summarized in [Table 4.1](#).

Table 4.1 Summary of AL 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	Ambient TSP (24-hour)	01/03/19-31/03/19	0	0	
2	Ambient TSP (1-hour)	01/03/19-31/03/19	0	0	
Noise					
1	Noise level at the critical NSR's predicted by the noise alarm monitoring system	01/03/19-31/03/19	0	0	

4.3 Waste Management

Wastes generated from this Project include inert construction and demolition (C&D) materials and non-inert C&D materials. Inert C&D materials comprise excavated materials and broken concrete. Non-inert C&D materials comprise general refuse, metals and paper/ cardboard packaging, plastics, chemical waste, etc.

Inert C&D material and non-inert C&D material disposed of in March 2019 are shown in [Table 4.2](#).

Table 4.2 Estimated Amounts of Waste in March 2019

Total Inert C&D Waste Materials	Non-inert C&D Materials		
	C&D Materials Recycled	C&D Waste Disposed of at Landfill	Chemical Waste

0 Tonnes	12.05 Tonnes	0 Tonnes	0 Litres
----------	--------------	----------	----------

The monthly waste flow tables prepared by the contractors are attached in [Appendix K](#)

4.4 Site Environmental Audit

EPD officials from Regional Office (South) visited Lamma Power Station on 21/3/2019. EPD inspected the Lamma Extension Construction Site. There was no adverse comment from EPD regarding the construction site.

Site audits were carried out by ET on a weekly basis to monitor environmental issues at the construction sites to ensure that all mitigation measures were implemented timely and properly. The site audit findings for the reporting month are summarized in [Appendix H](#). The site conditions were generally satisfactory. All required mitigation measures were implemented.

4.5 Status of Environmental Licensing and Permitting

All permits/licenses obtained for the project are summarised in [Table 4.3](#).

Table 4.3 Summary of Environmental Licensing and Permit Status

Description	Permit No.	Valid Period		Highlights	Status
		From	To		
Varied Environmental Permit	EP-071/2000/C	18/05/05	-	The whole construction work site	Valid
Construction Noise Permit	GW-RS0789-18	05/09/18	02/03/19	Civil and Building Works for Unit L10. Operation of PME during restricted hours	Valid up to 02/03/19
Construction Noise Permit	GW-RS1173-18	01/01/19	30/06/19	Power Block Facilities works for Unit L10. Operation of PME during restricted hours	Valid
Construction Noise Permit	GW-RS0210-19	18/03/19	14/09/19	Civil and Building Works for Unit L11. Operation of PME during restricted hours	Valid
WPCO Discharge Licence#	WT00027316-2017	01/03/17	31/03/22	Civil and Building Works for Unit L10	Valid
Registration of Chemical Waste Producer	WPN5213-912-P2781-22	22/02/16	-	Civil and Building Works for Unit L10	Valid

Description	Permit No.	Valid Period		Highlights	Status
		From	To		
Waste Disposal Billing Account	Account No.: 7026035	06/10/16	-	Civil and Building Works for Unit L10	Valid
Waste Disposal Billing Account	Account No.: 7026793	28/12/16	-	Foundation works for Unit L11	Valid
Waste Disposal Billing Account	Account No.: 7027632	20/04/17	-	E&M Erection of Power Block Facilities	Valid
Waste Disposal Billing Account	Account No.: 7031135	21/06/18	-	Civil and Building Works for Unit L11	Valid

Notes: # - Water quality monitoring was carried out in January 2019 and the result of which had been reported under a separate cover by the contractor.

4.6 Implementation Status of Environmental Mitigation Measures

Mitigation measures detailed in the permits and the EM&A Manual (Construction Phase) are required to be implemented. An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in [Appendix I](#).

4.7 Implementation Status of Event/Action Plans

The Event/Action Plans extracted from the EM&A Manual (Construction Phase) are presented in [Appendix G](#).

4.8 Implementation Status of Environmental Complaint Handling Procedures

In March 2019, no complaint against the construction activities was received.

Table 4.4 Environmental Complaints Received in March 2019

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

Table 4.5 Outstanding Environmental Complaints 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 Key Issues for the Coming Month

Key issues to be considered in the coming month include:

Unit L10 Civil and Building Works

Noise Impact

- To continue monitoring the noise level during construction.
- To continue executing the preventive measures for avoiding noise exceedance and keep monitoring/ reviewing the noise performance.

Air Impact

- To monitor and review the sufficiency of the dust suppression measures provided and increase the resources accordingly if necessary.

Water Impact

- To treat wastewater in sedimentation pit and tanks before discharge and to ensure compliance in accordance with the WPCO discharge licence already obtained.

Unit L10 Mechanical Erection

Noise Impact

- To continue monitoring the noise level during construction and to ensure compliance with the CNP's already obtained.
- To continue executing the preventive measures for avoiding noise exceedance and keep monitoring/ reviewing the noise performance.

Air Impact

- To monitor and review the sufficiency of the dust suppression measures provided and increase the resources accordingly if necessary.

Unit L10 Electrical, Instrumentation & Control Erection

Noise Impact

- To continue monitoring the noise level during construction and to ensure compliance with the CNP's already obtained.
- To continue executing the preventive measures for avoiding noise exceedance and keep monitoring/ reviewing the noise performance.

Air Impact

- To monitor and review the sufficiency of the dust suppression measures provided and increase the resources accordingly if necessary.

Unit L11 Civil and Building Works

Noise Impact

- To continue monitoring the noise level during construction and to ensure compliance with the CNP's already obtained.
- To continue executing the preventive measures for avoiding noise exceedance and keep monitoring/ reviewing the noise performance.

Air Impact

- To monitor and review the sufficiency of the dust suppression measures provided and increase the resources accordingly if necessary.

Water Impact

- To treat wastewater in sedimentation pit and tanks for reuse on water spraying.

5.2 Monitoring Schedules for the Next 3 Months

The tentative environmental monitoring schedules for the next 3 months are shown in [Appendix C](#).

5.3 Construction Program for the Next 3 Months

The tentative construction programs for the next 3 months are shown in [Appendix J](#).

6. CONCLUSION

All monitoring work at designated stations was performed as scheduled satisfactorily. The environmental monitoring works and site inspection were performed as scheduled in the reporting month. All monitoring results were checked and reviewed.

No Action/Limit level exceedance on 1-hour and 24-hour TSP level was recorded in the reporting month.

No Action/Limit level exceedance on noise was recorded in the reporting month.

Environmental mitigation measures recommended in the EM&A manual for the construction activities were implemented in the reporting month. No complaint against the construction activities was received in the reporting month. No prosecution was received for this Project in the reporting period.

The environmental performance of the Project was generally satisfactory.

Appendix A Organization Chart

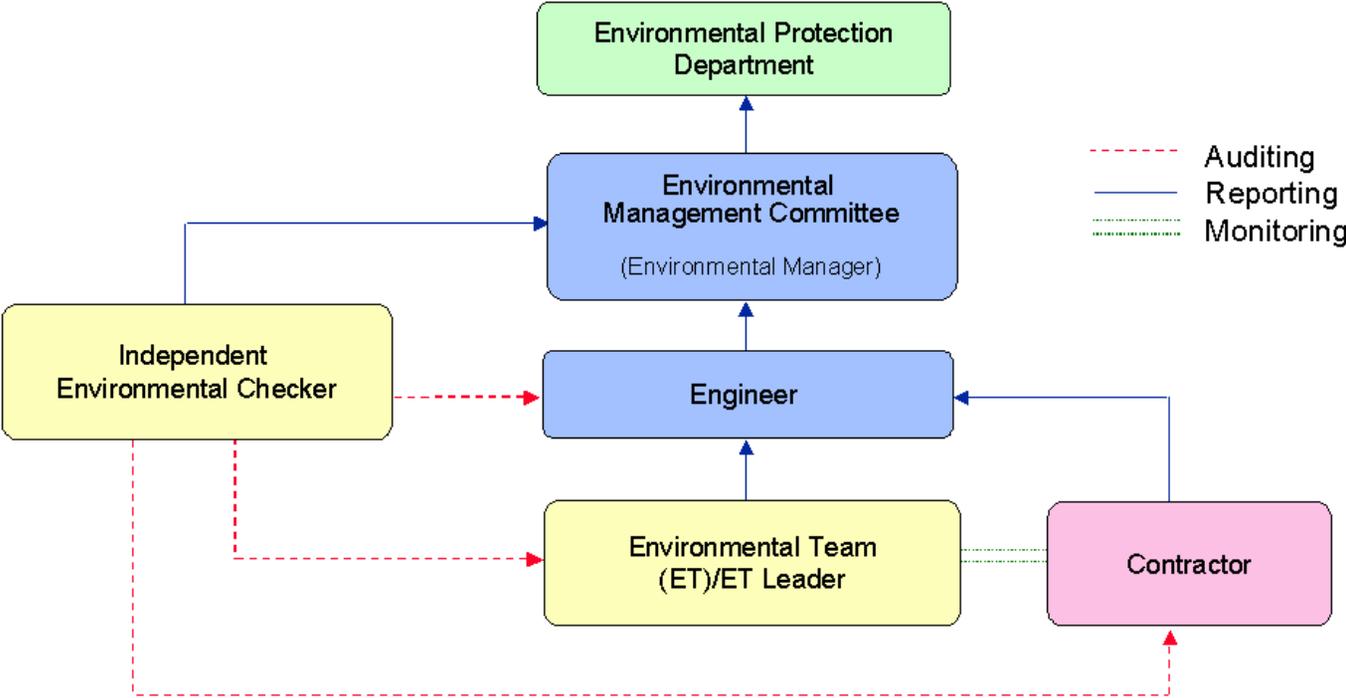


Figure A.1 Organisation of EM&A Programme at Construction Phase

Appendix B Action and Limit Levels for Air Quality and Noise Monitoring

B.1. Air

Table B.1 Action and Limit Levels for 1-hour and 24-hour TSP

	Action Level, $\mu\text{g}/\text{m}^3$	Limit Level, $\mu\text{g}/\text{m}^3$
1-hour TSP*	340	500
24-hour TSP	190	260

* No Action/Limit Level for 1-hour TSP is applied to AM4 where no real time dust monitor is installed.

B.2. Noise

Table B.2 AL Levels for Construction Noise (Other than Percussive Piling)

Parameters	Action	Limit
Noise Levels at the NSR's at Long Tsai Tsuen/Hung Shing Ye and school within the village of Tai Wan San Tsuen predicted by the noise alarm monitoring system	When one or more documented complaints are received	a. 75 dB(A) in $L_{Aeq,30 \text{ min}}$ (07:00-19:00 hrs on normal weekdays) (Note 1)
Manual noise monitoring at the nearest Pak Kok Tsui residences to cable landing points N4 and N5		b. subject to statutory control under the Noise Control Ordinance (07:00-23:00 hrs on holidays and 19:00-23:00 hrs on all other days). Set to 60 dB(A) in $L_{Aeq,5 \text{ min}}$ c. subject to statutory control under the Noise Control Ordinance (23:00-07:00 hrs of next day). Set to 45 dB(A) in $L_{Aeq,5 \text{ min}}$
Note:		
1. For educational institution, the limit level shall be 70 dB(A), reduced to 65 dB(A) during examination periods.		

Appendix C Environmental Monitoring Schedule

Table C.1 Monitoring schedule for 24hr and 1hr TSP monitoring for Lamma Extension Construction (March 2019 to June 2019)

24hr TSP Monitoring	1hr TSP Monitoring
01/March/2019	01/March/2019 1500hr to 1800hr
07/March/2019	07/March/2019 1500hr to 1800hr
13/March/2019	13/March/2019 1500hr to 1800hr
19/March/2019	19/March/2019 1500hr to 1800hr
25/March/2019	25/March/2019 1500hr to 1800hr
31/March/2019	31/March/2019 1500hr to 1800hr
06/April/2019	06/April/2019 1500hr to 1800hr
12/April/2019	12/April/2019 1500hr to 1800hr
18/April/2019	18/April/2019 1500hr to 1800hr
24/April/2019	24/April/2019 1500hr to 1800hr
30/April/2019	30/April/2019 1500hr to 1800hr
06/May/2019	06/May/2019 1500hr to 1800hr
12/May/2019	12/May/2019 1500hr to 1800hr
18/May/2019	18/May/2019 1500hr to 1800hr
24/May/2019	24/May/2019 1500hr to 1800hr
30/May/2019	30/May/2019 1500hr to 1800hr
5/June/2019	5/June/2019 1500hr to 1800hr
11/June/2019	11/June/2019 1500hr to 1800hr
17/June/2019	17/June/2019 1500hr to 1800hr
23/June/2019	23/June/2019 1500hr to 1800hr
29/June/2019	29/June/2019 1500hr to 1800hr

APPENDIX D AIR QUALITY MONITORING RESULTS

Site: Lamma Power Station Extension

Month: March 2019

24 hour TSP Measurement:-

Date	TSP concentration ($\mu\text{g}/\text{m}^3$)				Weather Information (From Hong Kong Observatory)		
	Reservoir (AM1)	East Gate (AM2)	Ash Lagoon (AM3)	Tai Yuen Village (AM4)	Mean Wind Speed (km/hr)	Prevailing Wind Dir. ($^{\circ}$)	Mean R.H. (%)
1/3/2019	31	57	29	21	30.6	060	89
7/3/2019	8	45	11	7	39.5	040	93
13/3/2019	52	64	49	33	30	050	71
19/3/2019	37	66	36	24	9	100	84
25/3/2019	32	17	25	33	19.1	060	85
31/3/2019	45	39	44	31	44.3	070	85

1 hour TSP Measurement:-

Date	Time	TSP concentration ($\mu\text{g}/\text{m}^3$)		
		Reservoir (AM1)	East Gate (AM2)	Ash Lagoon (AM3)
1/3/2019	15:00 - 15:59	31	62	30
	16:00 - 16:59	33	62	33
	17:00 - 17:59	38	58	37
7/3/2019	15:00 - 15:59	9	19	16
	16:00 - 16:59	14	19	11
	17:00 - 17:59	9	26	4
13/3/2019	15:00 - 15:59	65	106	57
	16:00 - 16:59	62	132	51
	17:00 - 17:59	56	113	49
19/3/2019	15:00 - 15:59	32	51	28
	16:00 - 16:59	35	54	29
	17:00 - 17:59	35	54	30
25/3/2019	15:00 - 15:59	33	51	27
	16:00 - 16:59	39	54	30
	17:00 - 17:59	46	54	33
31/3/2019	15:00 - 15:59	68	47	68
	16:00 - 16:59	77	44	68
	17:00 - 17:59	69	42	68

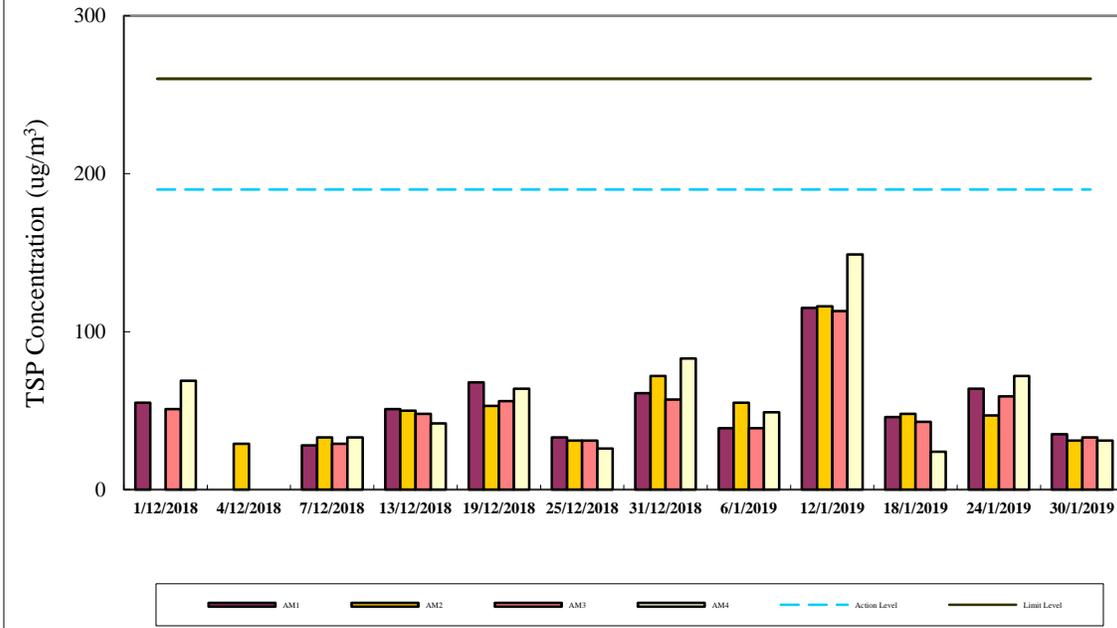
	1-hr TSP ($\mu\text{g}/\text{m}^3$)	24-hr TSP ($\mu\text{g}/\text{m}^3$)
Action Level	340	190
Limit Level	500	260

Calibration: Calibration details are shown in appendix F.

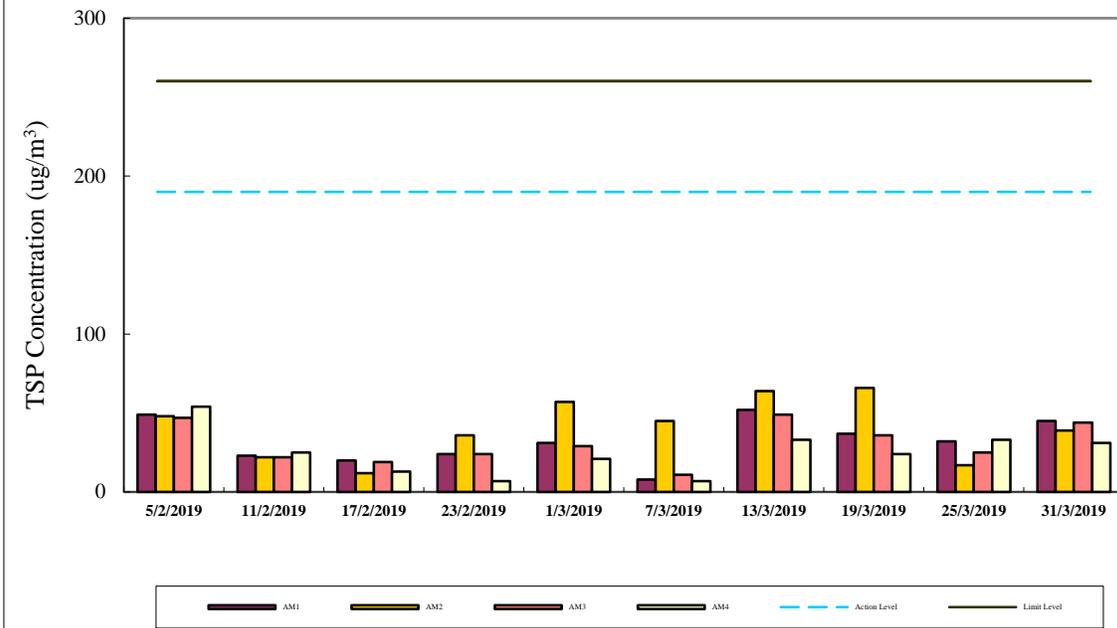
Equipment used:

Location	1-hr TSP	24-hr TSP
Reservoir, East Gate and Ash Lagoon	TEOM	TEOM
Tai Yuen Village	-	MINIVOL Portable Sampler

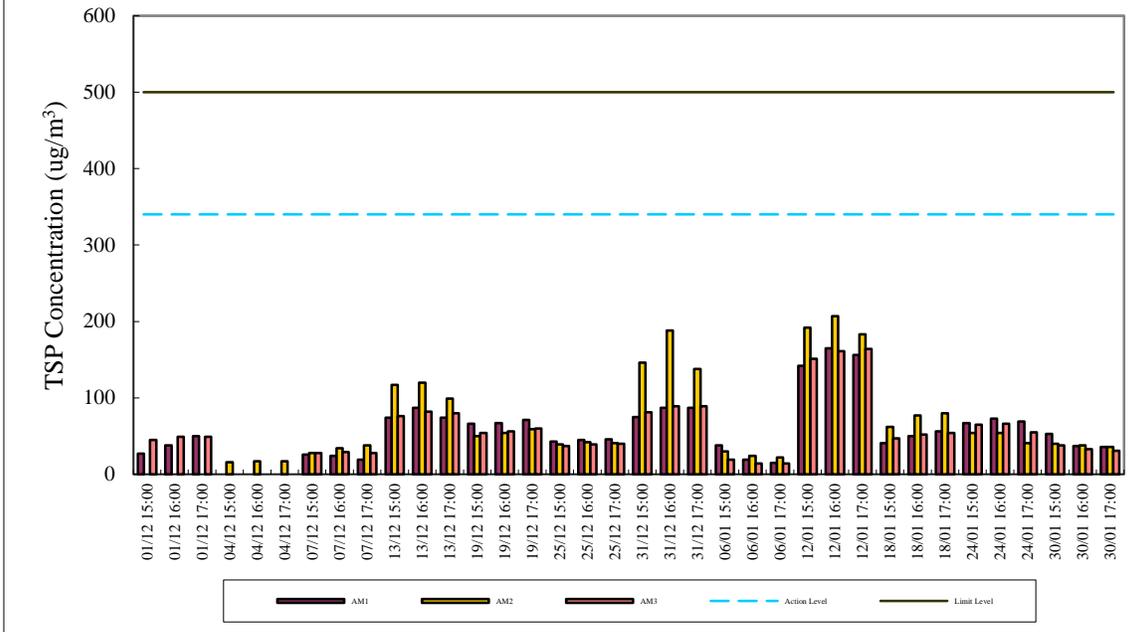
24-hr TSP Air Monitoring Data (December 2018 - January 2019)



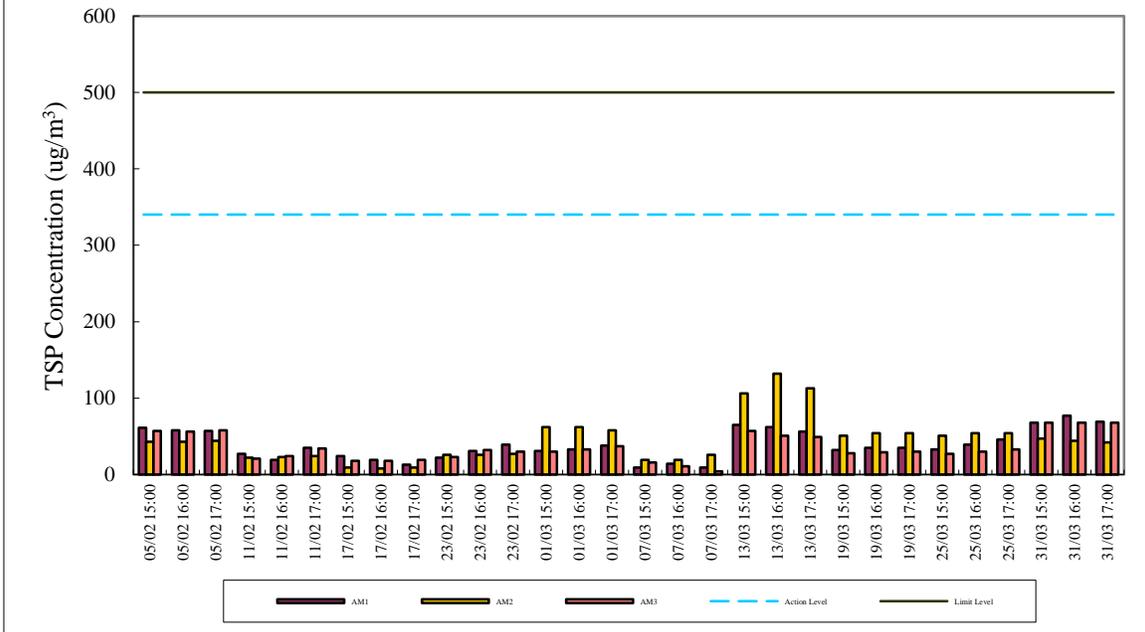
24-hr TSP Air Monitoring Data (February 2019 - March 2019)



1-hr TSP Air Monitoring Data (December 2018 - January 2019)



1-hr TSP Air Monitoring Data (February 2019 - March 2019)



Appendix E

Continuous Noise Monitoring Results for March 2019

Site: Lamma Power Station Extension Construction
 Measurement Location: Ash Lagoon and Ching Lam
 Measurement Parameter: 30-min Leq (07:00-19:00 hrs on normal weekdays)
 5-min Leq (07:00-23:00 hrs on holidays and
 19:00-23:00 hrs on all other days, and 23:00-
 07:00 hrs of next day)
 Noise Equipment: B&K 2250 sound level meters and B&K 4231 sound
 level calibrator
 Lab. Calibration Date: B&K 2250 sound level meters - 21/06/2018 (Ash Lagoon)
 02/11/2017 (Ching Lam)
 B&K 4231 calibrator - 14/10/2018

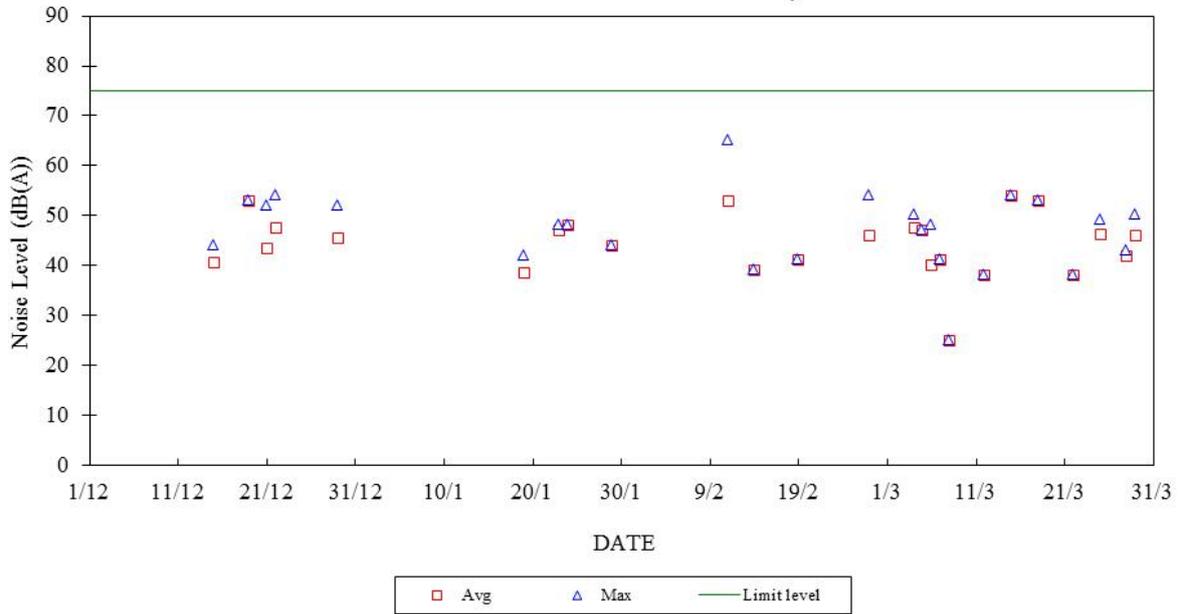
Date	Time	Calculated Noise Level at NSR at Long Tsai Tsuen/Hung Shing Ye (dB(A))		Limit Noise Level (dB(A))	Calculated Noise Level at NSR at the school within Tai Wan San Tsuen (dB(A))		Limit Noise Level (dB(A))
		Max	Avg		Max	Avg	
01/03/2019	07:00-19:00	---	---	75	41	35	70
01/03/2019	19:00-23:00	---	---	60	53	41	60
01/03/2019	23:00-07:00	36	36	45	45	39	45
02/03/2019	07:00-19:00	---	---	75	42	40	70
02/03/2019	19:00-23:00	---	---	60	48	44	60
02/03/2019	23:00-07:00	39	39	45	45	41	45
03/03/2019	07:00-23:00	60	42	60	56	39	60
03/03/2019	23:00-07:00	38	31	45	45	38	45
04/03/2019	07:00-19:00	50	48	75	44	37	70
04/03/2019	19:00-23:00	42	39	60	46	38	60
04/03/2019	23:00-07:00	45	40	45	45	37	45
05/03/2019	07:00-19:00	47	47	75	40	35	70
05/03/2019	19:00-23:00	---	---	60	42	37	60
05/03/2019	23:00-07:00	37	34	45	44	41	45
06/03/2019	07:00-19:00	48	40	75	42	35	70
06/03/2019	19:00-23:00	---	---	60	40	37	60
06/03/2019	23:00-07:00	34	28	45	41	34	45
07/03/2019	07:00-19:00	41	41	75	47	45	70
07/03/2019	19:00-23:00	41	37	60	44	39	60
07/03/2019	23:00-07:00	40	33	45	43	34	45
08/03/2019	07:00-19:00	25	25	75	57	38	70
08/03/2019	19:00-23:00	45	38	60	41	35	60
08/03/2019	23:00-07:00	44	36	45	44	34	45
09/03/2019	07:00-19:00	---	---	75	46	38	70
09/03/2019	19:00-23:00	37	26	60	49	39	60
09/03/2019	23:00-07:00	45	32	45	44	38	45
10/03/2019	07:00-23:00	54	41	60	49	36	60
10/03/2019	23:00-07:00	41	33	45	42	38	45
11/03/2019	07:00-19:00	---	---	75	46	40	70
11/03/2019	19:00-23:00	29	28	60	47	42	60
11/03/2019	23:00-07:00	39	33	45	44	40	45
12/03/2019	07:00-19:00	38	38	75	47	40	70
12/03/2019	19:00-23:00	---	---	60	48	45	60
12/03/2019	23:00-07:00	25	25	45	44	41	45
13/03/2019	07:00-19:00	---	---	75	45	38	70
13/03/2019	19:00-23:00	40	34	60	45	36	60

13/03/2019	23:00-07:00	42	33	45	44	34	45
14/03/2019	07:00-19:00	---	---	75	45	39	70
14/03/2019	19:00-23:00	---	---	60	41	37	60
14/03/2019	23:00-07:00	28	28	45	40	37	45
15/03/2019	07:00-19:00	54	54	75	47	38	70
15/03/2019	19:00-23:00	---	---	60	41	36	60
15/03/2019	23:00-07:00	23	22	45	44	35	45
16/03/2019	07:00-19:00	---	---	75	37	32	70
16/03/2019	19:00-23:00	---	---	60	41	38	60
16/03/2019	23:00-07:00	42	33	45	41	36	45
17/03/2019	07:00-23:00	47	40	60	47	37	60
17/03/2019	23:00-07:00	43	37	45	44	37	45
18/03/2019	07:00-19:00	53	53	75	44	38	70
18/03/2019	19:00-23:00	---	---	60	43	37	60
18/03/2019	23:00-07:00	39	31	45	42	37	45
19/03/2019	07:00-19:00	---	---	75	45	38	70
19/03/2019	19:00-23:00	---	---	60	41	37	60
19/03/2019	23:00-07:00	45	40	45	42	36	45
20/03/2019	07:00-19:00	---	---	75	45	38	70
20/03/2019	19:00-23:00	31	31	60	40	36	60
20/03/2019	23:00-07:00	42	37	45	44	39	45
21/03/2019	07:00-19:00	---	---	75	43	42	70
21/03/2019	19:00-23:00	42	35	60	41	36	60
21/03/2019	23:00-07:00	41	40	45	41	32	45
22/03/2019	07:00-19:00	38	38	75	41	31	70
22/03/2019	19:00-23:00	---	---	60	49	40	60
22/03/2019	23:00-07:00	43	35	45	42	35	45
23/03/2019	07:00-19:00	---	---	75	43	37	70
23/03/2019	19:00-23:00	---	---	60	47	38	60
23/03/2019	23:00-07:00	45	44	45	42	38	45
24/03/2019	07:00-23:00	59	39	60	43	37	60
24/03/2019	23:00-07:00	44	36	45	44	39	45
25/03/2019	07:00-19:00	49	46	75	48	38	70
25/03/2019	19:00-23:00	---	---	60	49	41	60
25/03/2019	23:00-07:00	35	24	45	44	40	45
26/03/2019	07:00-19:00	---	---	75	46	42	70
26/03/2019	19:00-23:00	---	---	60	42	38	60
26/03/2019	23:00-07:00	45	36	45	44	40	45
27/03/2019	07:00-19:00	---	---	75	53	38	70
27/03/2019	19:00-23:00	---	---	60	45	42	60
27/03/2019	23:00-07:00	---	---	45	43	37	45
28/03/2019	07:00-19:00	43	42	75	43	38	70
28/03/2019	19:00-23:00	---	---	60	47	37	60
28/03/2019	23:00-07:00	32	32	45	43	38	45
29/03/2019	07:00-19:00	50	46	75	45	38	70
29/03/2019	19:00-23:00	40	40	60	42	38	60
29/03/2019	23:00-07:00	35	28	45	44	34	45
30/03/2019	07:00-19:00	---	---	75	44	39	70
30/03/2019	19:00-23:00	---	---	60	41	38	60
30/03/2019	23:00-07:00	44	36	45	45	39	45
31/03/2019	07:00-23:00	48	37	60	50	36	60
31/03/2019	23:00-07:00	44	37	45	45	36	45

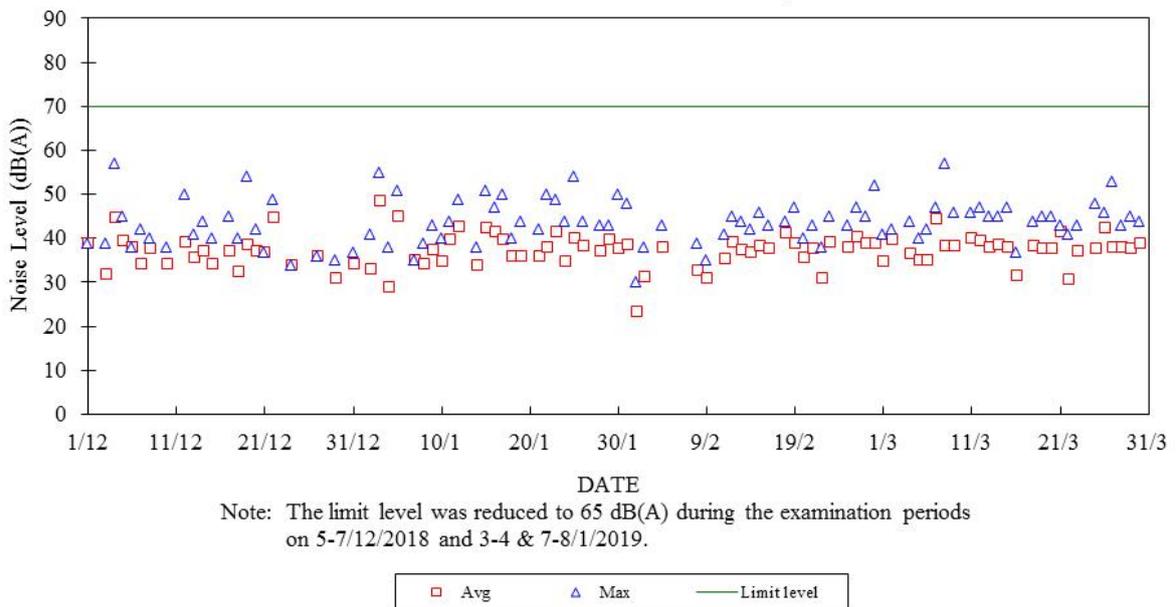
Note:

- a. "----" represents the measured noise monitoring data lower than the established notional background level/discarded under strong wind.
- b. Continuous noise monitoring was carried out at holidays & evening-time (07:00-23:00 hrs on holidays and 19:00-23:00 hrs on all other days) and night-time (23:00-07:00 hrs of next day) under construction noise permit.

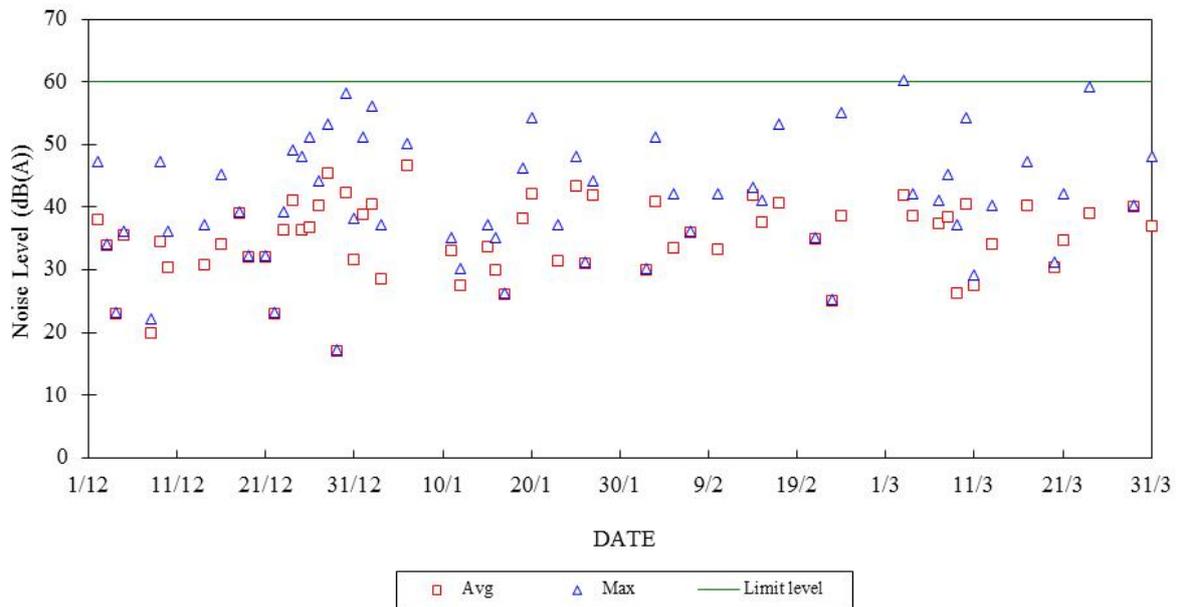
Construction Noise Monitoring in December 2018 - March 2019
 NSR at Long Tsai Tsuen/Hung Shing Ye
 07:00-19:00 hrs on Normal Weekdays



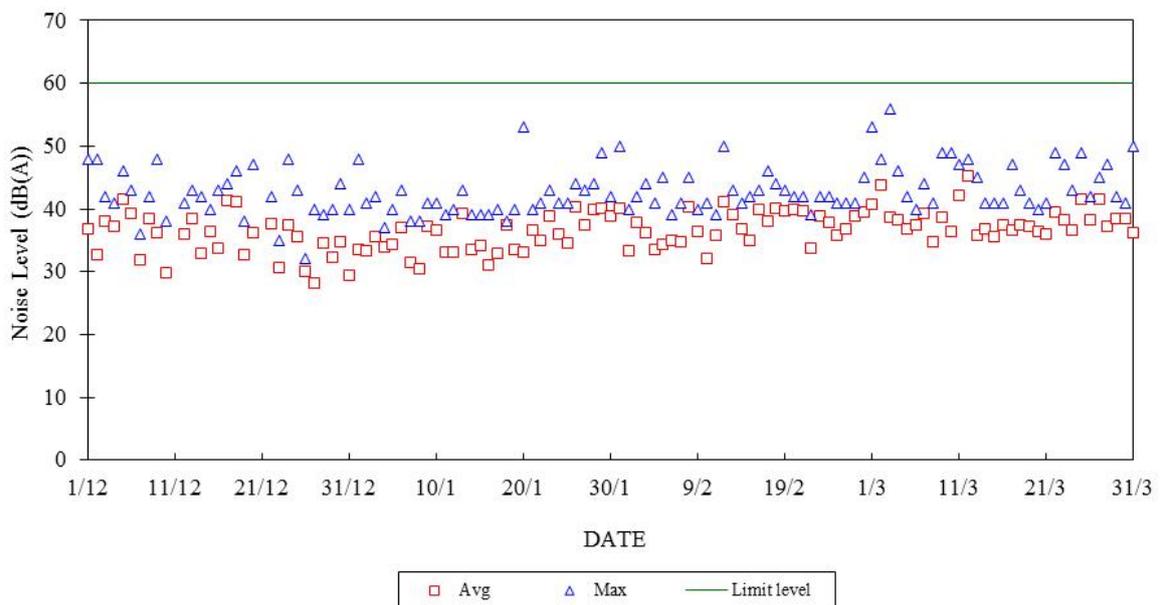
Construction Noise Monitoring in December 2018 - March 2019
 NSR at School within Tai Wan San Tsuen
 07:00-19:00 hrs on Normal Weekdays



Construction Noise Monitoring in December 2018 - March 2019
 NSR at Long Tsai Tsuen/Hung Shing Ye
 07:00-23:00 hrs on Holidays and 19:00-23:00 hrs on All Other Days



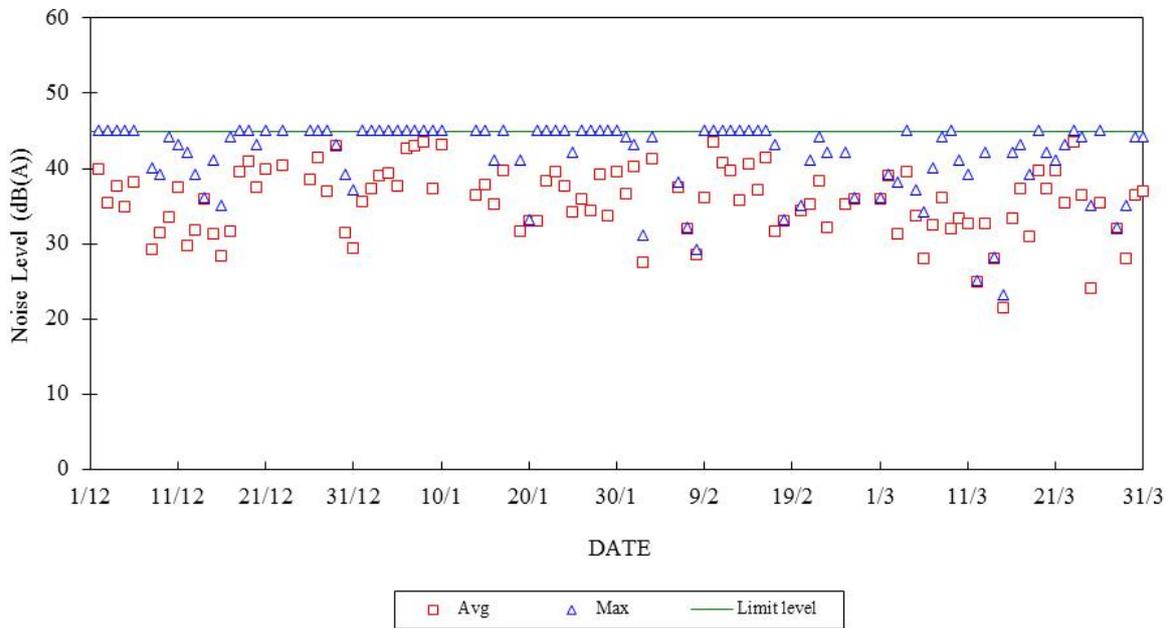
Construction Noise Monitoring in December 2018 - March 2019
 NSR at School within Tai Wan San Tsuen
 07:00-23:00 hrs on Holidays and 19:00-23:00 hrs on All Other Days



Construction Noise Monitoring in December 2018 - March 2019

NSR at Long Tsai Tsuen/Hung Shing Ye

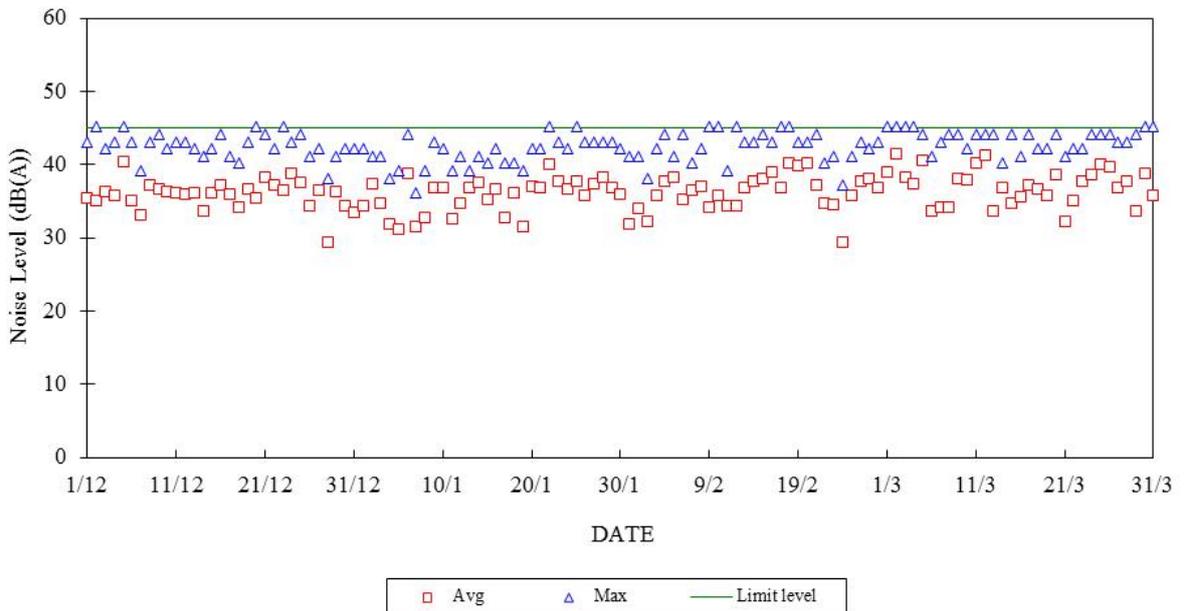
23:00-07:00 hrs of Next Day



Construction Noise Monitoring in December 2018 - March 2019

NSR at School within Tai Wan San Tsuen

23:00-07:00 hrs of Next Day



Appendix F

The QA/QC Procedures and Results

The Hongkong Electric Co., Ltd.
Lamma Power Station Extension
Noise Monitoring Station
Site Visit Log Sheet

Location: Ching Lam

Date/Time	Staff Attended
21/03/2019 / 11:00	WM Tam / TL Chu

Equipment	Serial No.
B&K 2250	3008903

1. Calibration

Acoustic calibrator: B&K 4231 (S/N: 2343406)

Noise level measured in calibration: 93.6 (94 ±1.0 dBA)

2. Weather Conditions

a. Fine

b. Calm

3. Beacon

Function normally: Yes

4. Remark/Observation

N/A

Prepared by: WM Tam

Checked by: TL Chu

The Hongkong Electric Co., Ltd.
Mini Volume Air Sampler Site Visit Log Sheet

Attendance Log

Site Name: Tai Yuen Village (AM4)

Date/Time	Staff Name
15/03/2019 / 10:00	WM Tam

Equipment / Item

Equipment / Item	Serial No. / No.
MINIVOL	5580
Used filter paper no.	MQ04
New filter paper no.	MQ05

Type of filter: Glass-fibre

- I. Calibration is performed by using Drycal DC-2 Flow Calibrator
5 std. L/min set point is recommended

Before: 5.033
After: 5.033

- II. General Services

1. Clean Rotameter: Yes
2. Clean / Replace Pump Valves: No
3. Clean / Replace Pump Diaphragms: No
4. Clean Impaction Inlet: Yes
5. Replace Timer Battery Every 6 months: No
6. Replace Inlet Filter: Yes

Remarks

N/A

Conducted by: WM Tam

Checked by: SM Hon

The Hongkong Electric Co., Ltd.
Lamma Power Station Extension
TEOM Continuous Dust Monitor
Data Quality Assurance Log Sheet

Month: March

Year: 2019

Reservoir (AM1)				
Date	Frequency (Hz) (240 - 275)	Operation Mode (Mode 4)	Main Flow (l/min) (2.70 - 3.30)	Bypass Flow (l/min) (12.30 - 15.04)
01/03/2019	271.160	4	3.07	13.98
07/03/2019	269.019	4	3.08	14.03
13/03/2019	268.707	4	3.02	13.78
19/03/2019	268.030	4	2.98	13.59
25/03/2019	267.710	4	3.04	13.87
31/03/2019	267.272	4	3.05	13.91

East Gate (AM2)				
Date	Frequency (Hz) (240 - 275)	Operation Mode (Mode 4)	Main Flow (l/min) (2.70 - 3.30)	Bypass Flow (l/min) (12.30 - 15.04)
01/03/2019	258.680	4	2.78	13.96
07/03/2019	259.312	4	3.10	14.12
13/03/2019	258.868	4	2.86	13.97
19/03/2019	258.436	4	2.82	13.92
25/03/2019	259.417	4	2.95	13.98
31/03/2019	260.046	4	3.06	13.96

Ash Lagoon (AM3)				
Date	Frequency (Hz) (240 - 275)	Operation Mode (Mode 4)	Main Flow (l/min) (2.70 - 3.30)	Bypass Flow (l/min) (12.30 - 15.04)
01/03/2019	258.132	4	3.00	13.67
07/03/2019	257.776	4	3.00	13.67
13/03/2019	257.482	4	3.00	13.67
19/03/2019	256.858	4	3.00	13.67
25/03/2019	256.586	4	3.00	13.67
31/03/2019	255.628	4	3.00	13.67

Maintenance Record			
	Reservoir	East Gate	Ash Lagoon
TEOM Filter Exchange	✓	✓	✓
Clean TSP Inlet	✓	✓	✓
Replace flow in-line filter	✓	✓	✓
Pump Repair	x	x	x
Leak Check	✓	✓	✓
Flow audit	✓	✓	✓
Flow Controller Calibration	x	x	x
A/C filter cleaning	✓	✓	✓

Remarks:

N/A

Prepared by: HY Chan

Checked by: HY Ho

The Hongkong Electric Co., Ltd.
Lamma Power Station Extension
Noise Monitoring Station
Daily Calibration Record

Date	Location: Ash Lagoon	
	Calibration Results	Deviation from Reference (dB)
01/03/2019	Passed	-0.06
02/03/2019	Passed	-0.02
03/03/2019	Passed	-0.05
04/03/2019	Passed	-0.03
05/03/2019	Passed	-0.02
06/03/2019	Passed	-0.04
07/03/2019	Passed	-0.07
08/03/2019	Passed	-0.02
09/03/2019	Passed	-0.09
10/03/2019	Passed	-0.11
11/03/2019	Passed	-0.07
12/03/2019	Passed	-0.03
13/03/2019	Passed	-0.03
14/03/2019	Passed	-0.06
15/03/2019	Passed	-0.06
16/03/2019	Passed	-0.07
17/03/2019	Passed	-0.04
18/03/2019	Passed	-0.06
19/03/2019	Passed	-0.03
20/03/2019	Passed	-0.04
21/03/2019	Passed	-0.01
22/03/2019	Passed	-0.01
23/03/2019	Passed	-0.09
24/03/2019	Passed	-0.11
25/03/2019	Passed	-0.02
26/03/2019	Passed	-0.04
27/03/2019	Passed	-0.02
28/03/2019	Passed	-0.02
29/03/2019	Passed	-0.04
30/03/2019	Passed	-0.02
31/03/2019	Passed	-0.02

Remarks:

1. The B&K sound level meter at the noise monitoring station has an advanced feature of internal calibration checking (viz. Charge Injection Calibration (CIC)). CIC is a B&K patented method for in situ verification of the integrity of the entire sound measurement chain (including microphone, preamplifier and cabling).
2. The acceptance criterion of deviation from reference is ± 0.5 dB.

Appendix G Event/Action Plans

Table G.1 Event and Action Plans for Air Quality

Event	Monitoring		Action	
	ET Leader	IEC	Engineer	Contractor
Action Level				
Exceedance of one sample	Identify source Inform Engineer and IEC verbally Repeat measurement to confirm finding	Check monitoring data submitted by ET and advise Engineer.	Notify Contractor Checking monitoring data and contractor's working methods	Rectify any unacceptable practice amend any working methods if appropriate
Exceedance of two or more consecutive samples	Identify source Inform Engineer and IEC verbally Repeat measurement to confirm finding Increase monitoring frequency Discuss with Engineer and Contractor on remedial actions required If exceedance continues, arrange meeting with Engineer If exceedance stops, discontinue additional monitoring	Check monitoring data submitted by ET and advise Engineer. Provide feedback to the Engineer on the remedial actions proposed by the ET / Contractor Advise Engineer on the effectiveness of the proposed remedial measures Verify the implementation of the remedial measures	Confirm receipt of notification of failure in writing Notify contractor Checking monitoring data and contractor's working methods Discuss proposed remedial actions with the ET and Contractor Ensure remedial actions properly implemented	Submit proposals for remedial actions to Engineer within 3 working days of notifications Implement the agreed proposals Amend proposal if appropriate
Limit level				
Exceedance of one sample	Repeat measurement to confirm finding. Identify the source(s) of the impact. If the exceedance is found to be valid and due to the Construction works, verbally advise the Contractor, Engineer and IEC, and inform the EPD of the exceedance, as soon as practicable. Increase monitoring frequency to daily Assess the effectiveness of the contractor's remedial actions and keep Engineer, IEC and EPD informed of the results	Check monitoring data submitted by ET and advise Engineer Provide feedback to the Engineer on the remedial actions proposed by the ET / Contractor Advise Engineer on the effectiveness of the proposed remedial measures Verify the implementation of the remedial measures	Confirm receipt of notification of failure in writing Notify Contractor Checking monitoring data and Contractor's working method Discuss with ET and Contractor on remedial actions to be provided Ensure remedial measures properly implemented	Take immediate action to avoid further exceedance Submit proposals for remedial actions to Engineer within 3 working days of notifications Implement the agreed proposals Amend proposal if appropriate
Exceedance of two or more	Identify source	Provide feedback to the Engineer on the remedial actions proposed by the	Confirm receipt of notification of	Take immediate action to

Event	Monitoring			Action		
	ET Leader	IEC	Engineer	Contractor		
consecutive samples	<p>If the exceedance is found to be valid and due to the construction works, verbally advise the Contractor, Engineer and IEC, and inform the EPD of the exceedance as soon as practicable.</p> <p>Repeat measurement to confirm finding</p> <p>Increase monitoring frequency to daily</p> <p>Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented</p> <p>Arrange meeting with Engineer and Contractor to discuss the remedial actions to be taken</p> <p>If exceedance stops, discontinue additional monitoring</p>	<p>ET / Contractor</p> <p>Advise Engineer on the effectiveness of the proposed remedial measures</p> <p>Verify the implementation of the remedial measures</p>	<p>failure in writing</p> <p>Checking monitoring data and Contractor's working methods</p> <p>Notify Contractor</p> <p>Discuss proposed remedial actions with ET and Contractor</p> <p>Ensure remedial measures properly implemented</p> <p>If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop the portion of work until the exceedance is abated</p>	<p>avoid further exceedance</p> <p>Submit proposals for remedial actions to Engineer within 3 working days of notifications</p> <p>Implement the agreed proposals</p> <p>Resubmit proposals if problem still not under control</p> <p>Stop the relevant portion of works as determined by the Engineer until the exceedance is abated</p>		

Table G.2 Event and Action Plans for Construction Noise

Exceedance	ET Leader	IEC	Engineer	Contractor
Action Level	Undertake noise measurement/check monitoring data to establish validity of complaint.	Review the analysed results submitted by the ET.	Notify Contractor of the complaint if proven.	Submit proposals for remedial actions to Engineer.
	If the complaint is valid, inform Engineer and IEC verbally.	Review the remedial measures proposed by the Contractor and advise the Engineer and ET accordingly.	Check Contractor's working methods and advise IEC and ET accordingly.	Amend proposals if required by the Engineer.
	Identify the source(s) of the noise.	Verify the implementation of the remedial measures.	Remind the Contractor of his contractual obligations and discuss remedial actions.	Implement the remedial actions immediately upon instruction from the Engineer.
	Discuss remedial actions required with Contractor and Engineer.		Keep the Contractor informed of the efficacy of remedial actions.	Liaise with the Engineer to optimise the effectiveness of the agreed mitigation.
	Increase manual monitoring frequency to assess efficacy of remedial measures.			
	If exceedance continues, review implementation of appropriate mitigation measures.			
Limit Level	Repeat manual measurement/check monitoring data to confirm findings.	Agree potential remedial actions with Engineer, ET and Contractor.	Notify Contractor of exceedance.	Take immediate action to avoid further exceedance.
	Identify the source(s) of the impact. If the exceedance is found to be valid and due to the Construction works, verbally advise the Contractor, Engineer and IEC, and inform the EPD of the exceedance, as soon as practicable.	Review Contractor's remedial actions / measures to ensure their effectiveness and advise the Engineer and ET accordingly.	Check Contractor's working methods and advise IEC and ET accordingly. Discuss with Contractor the remedial actions to be implemented.	Submit proposals for remedial actions to Engineer. Amend proposals if required by the Engineer.
	Discuss remedial actions required with Engineer.	Verify the implementation of the remedial measures	Keep the Contractor informed of the efficacy of remedial actions. If the exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop the portion of work until the exceedance is abated	Implement remedial actions immediately upon instruction from the Engineer. If the exceedance continues, consider what portion of the work is responsible and, as instructed by the Engineer, stop the portion of work until the exceedance is abated
	Increase manual monitoring frequency to assess efficacy of remedial measures.			

Table G.3 Event and Action Plans for Water Quality

Exceedance	ET Leader	IEC	Engineer	Contractor
Action level exceeded on one sampling day	Verbally inform the Contractor, and IEC. Repeat in-situ measurement to confirm findings; Identify source(s) of impact; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measures with Engineer and Contractor; Repeat measurement on next day of exceedance.	Provide feedback to the Engineer on the remedial actions proposed by the ET / Contractor Advise Engineer on the effectiveness of the proposed remedial measures Verify the implementation of the remedial measures	Discuss with Contractor the proposed mitigation measures; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures.	Inform the Engineer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Propose and discuss mitigation measures with Engineer; Implement the agreed mitigation measures.
Action level exceeded on more than one consecutive sampling day	Repeat in-situ measurements to confirm findings; Identify source(s) of impact; Inform Contractor and IEC; Check monitoring data, all plant, equipment and Contractor's working methods; Discuss mitigation measure with Engineer and Contractor; Ensure mitigation measures are implemented; Prepare to increase the monitoring frequency to daily; Repeat measurement on next day of exceedance.	Provide feedback to the Engineer on the remedial actions proposed by the ET / Contractor Advise Engineer on the effectiveness of the proposed remedial measures Verify the implementation of the remedial measures	Discuss with ET and Contractor on the proposed mitigation measures; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the implemented mitigation measures.	Inform the Engineer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Propose mitigation measures to Engineer within 3 working days and discuss with ET and Engineer; Implement the agreed mitigation measures.
Limit level exceeded on one sampling day	Verbally inform the Contractor, IEC and the EPD of the exceedance; Repeat in-situ measurement to confirm findings; Identify source(s) of impact; Check monitoring data, all plant,	Provide feedback to the Engineer on the remedial actions proposed by the ET / Contractor Advise Engineer on the effectiveness of the proposed remedial measures Verify the implementation of the remedial measures	Discuss with Contractor on the proposed mitigation measures; Request Contractor to critically review the working methods; Make agreement on the mitigation measures to be implemented; Assess the effectiveness of the	Inform the Engineer and confirm notification of the non-compliance in writing; Rectify unacceptable practice; Check all plant and equipment; Consider changes of working methods; Propose mitigation measures to Engineer

Exceedance	ET Leader	IEC	Engineer	Contractor
	<p>equipment and Contractor's working methods;</p> <p>Discuss mitigation measure with Engineer and Contractor;</p> <p>Ensure mitigation measures are implemented;</p> <p>Increase the monitoring frequency to daily until no exceedance of Limit level.</p>		<p>implemented mitigation measures.</p>	<p>within 3 working days and discuss with Engineer;</p> <p>Implement the agreed mitigation measures.</p>
<p>Limit level exceeded by more than one consecutive sampling day</p>	<p>Repeat in-situ measurement to confirm findings;</p> <p>Identify source(s) of impact;</p> <p>Inform Contractor, IEC and EPD;</p> <p>Check monitoring data, all plant, equipment and Contractor's working methods;</p> <p>Discuss mitigation measure with Engineer and Contractor;</p> <p>Ensure mitigation measures are implemented;</p> <p>Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</p>	<p>Provide feedback to the Engineer on the remedial actions proposed by the ET / Contractor</p> <p>Advise Engineer on the effectiveness of the proposed remedial measures</p> <p>Verify the implementation of the remedial measures</p>	<p>Discuss with Contractor on the proposed mitigation measures;</p> <p>Request Contractor to critically review the working methods;</p> <p>Make agreement on the mitigation measures to be implemented;</p> <p>Assess the effectiveness of the implemented mitigation measures;</p> <p>Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine works until no exceedance of the Limit Level.</p>	<p>Inform the Engineer and confirm notification of the non-compliance in writing;</p> <p>Rectify unacceptable practice;</p> <p>Check all plant and equipment; Consider changes of working methods;</p> <p>Propose mitigation measures to Engineer within 3 working days and discuss with Engineer;</p> <p>Implement the agreed mitigation measures..</p> <p>As directed by the Engineer, to slow down or to stop all or part of the marine work</p>

Appendix H Summary of Site Audit Findings

L10 Civil & Building Superstructure Work

Dates of Inspection: 05/03/2019, 12/03/2019, 19/03/2019 and 26/03/2019

Summary of Findings

General

- No environmental deficiency identified.

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

L10 Mechanical, Electrical, Instrumentation & Control Erection Work

Dates of Inspection: 01/03/2019, 08/03/2019, 15/03/2019, 22/03/2019 and 29/03/2019.

Summary of Findings

General

- No environmental deficiency identified.

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

L11 Civil & Building Superstructure Work

Dates of Inspection: 05/03/2019, 12/03/2019, 19/03/2019 and 26/03/2019.

Summary of Findings

General

- No environmental deficiency identified.

Air Quality

- No environmental deficiency identified.

Noise

- No environmental deficiency identified.

Water Quality

- No environmental deficiency identified.

Waste Management

- No environmental deficiency identified.

Summary of EMIS

Power Station – (Part B of EIA Report)

Construction Phase Mitigation Measures and their Implementation

EM&A Log Ref.	Mitigation Measures	Implementation Status
	AIR QUALITY	
A1	For general construction works, the dust control measures stipulated under the Air Pollution Control (Construction Dust) Regulation shall be complied with, such as: <ul style="list-style-type: none"> the haul roads shall be sprayed with water to keep the entire road surface wet. the load carried by vehicle shall be covered by impervious sheeting to ensure no leakage of dusty materials from the vehicle. the heights from which fill materials are dropped shall be controlled to a practical level to minimise the fugitive dust arising from unloading. 	C C C
A2	For the concrete batching plant, the following control measures are recommended: <ul style="list-style-type: none"> loading, unloading, handling, transfer or storage of any dusty materials shall be carried out in a totally enclosed system. The materials which may generate airborne dust emissions shall be wetted by water spray system. All receiving hoppers shall be enclosed on three sides up to 3m above unloading point. All conveyor transfer points shall be totally enclosed. 	N/A N/A N/A N/A
	WATER QUALITY	
B1	Silt curtains shall be installed on the eastern, southern and north western sides of the reclamation site during dredging for the reclamation construction. This is a required mitigation measure for the construction works and shall be implemented prior to the commencement of bulk dredging. **	N/A
B3	As a necessary operational constraint combined bulk dredging and sand filling for site formation shall not be permitted at any time. In addition, sand filling for site platform shall take place behind constructed sea walls which pierce the water surface. **	N/A
B4	HEC shall ensure design to divert all storm drains away from Hung Shing Ye Bay. **	N/A
B5	Sand fill for the rubble mound seawalls shall be placed by controlled pumping down the trailer arm. **	N/A
B6	EM&A shall confirm the acceptability of any impacts during construction and should any unacceptable impacts be found then one or more of the following mitigation measures shall be implemented: ** <ul style="list-style-type: none"> reducing the number of dredgers working at any one time; reducing the rate of working of the dredgers; temporary suspension of operations; phasing of the works so that dredging / filling is only undertaken at certain stages of the tidal cycle. 	N/A

EM&A Log Ref.	Mitigation Measures	Implementation Status
WASTE MANAGEMENT		
E1	HEC to submit a Waste Management Plan for the construction phase to EPD. The Plan shall be verified by the IEC and shall describe the arrangements for avoidance, reuse, recovery and recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities and shall take into account the recommendations of the EIA report.	C
<i>Dredging Waste</i>		
E2	All vessels for marine transportation of dredged sediment shall be fitted with tight fitting seals to their bottom openings to prevent leakage of materials. In addition, loading of barges and hoppers shall be controlled to prevent splashing of dredged material into the surrounding water, and barges or hoppers should under no circumstances be filled to a level which shall cause the overflowing of materials or polluted water during loading or transportation**	N/A
<i>Storage, Collection and Transport of Waste</i>		
E3	<ul style="list-style-type: none"> • Minimise windblown litter and dust during transportation by either covering trucks or transporting wastes in enclosed containers. 	C
	<ul style="list-style-type: none"> • Obtain the necessary waste disposal permits from the appropriate authorities, if they are required, in accordance with the Waste Disposal Ordinance (Cap.354), Waste Disposal (Chemical Waste) (General) Regulation (Cap.354), the Crown Land Ordinance (Cap 28), Dumping at Sea Ordinance (Cap 466) and Work Branch Technical Circular No. 22/92, Marine Disposal of Dredged Mud. 	C
	<ul style="list-style-type: none"> • Disposal of waste at Licensed sites; 	C
	<ul style="list-style-type: none"> • Develop procedures such as a ticketing system to facilitate tracking of marine mud and chemical waste, and to ensure that illegal disposal does not occur; 	C
	<ul style="list-style-type: none"> • Segregate and sort the waste materials into 3 categories: <ul style="list-style-type: none"> • public fill (e.g. concrete and rubble) for re-use on-site or disposal at a public filling area; • re-use and/or recycling waste (e.g. steel and other metals); • waste which cannot be re-used and/or recycled (e.g. wood, glass and plastic) for landfill disposal. • The sorting process shall be carefully monitored to avoid missing of the 3 categories. Different types of wastes shall be stockpiled and stored in different containers or skips to enhance re-use or recycling of materials and their proper disposal. • Maintain records of the quantities of wastes generated and disposed off-site for each category of waste. 	C
E4	Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, shall be handled in accordance with the Code of Practice on the Packaging, Handling and Storage of Chemical Wastes	C
LAND CONTAMINATION		
F1	No land Contamination mitigation measures are required during the construction phase.	N/A
MARINE ECOLOGY		

EM&A Log Ref.	Mitigation Measures	Implementation Status
G1	All percussive piling works shall be conducted on reclaimed land to avoid noise impact to marine mammals**	N/A
G2	All construction related vessels shall approach the extension site from the north and via the East Lamma Channel to avoid disturbance to the finless porpoise**	N/A
G3	Rubble mound seawall to the south and west edges of the reclamation to enhance recolonisation of marine organisms**	N/A
G4	Artificial Reefs of a volume not less than 400 m ³ shall be deployed in a location to be decided upon consultation with the Director of Agriculture and Fisheries to serve the purpose of an Additional Habitat Enhancement Measure.**	N/A
FISHERIES		
H1	No Fisheries-specific mitigation measures are required during the construction phase.	N/A
RISK ASSESSMENT		
I1	No risk mitigation measures are required during the construction phase.	N/A

Remarks:

- ** - No dredging and reclamation work would be involved for L10 & L11 construction
- C - Compliance with mitigation measure
- NC - Non-compliance with mitigation measure
- N/A - Not Applicable

16/8002 Outstanding Work Programme

16-8002 OS Work Prog (23Mar19).mpp

26/03/19

ID	Task Name	Duration	Start	Finish	Apr '19	May '19	Jun '19
1	16/8002 Unit 10 Outstanding Work Programme	322 days	01/12/18	28/10/19	[Summary bar]		
2	Superstructure	246 days	01/12/18	13/08/19	[Summary bar]		
3	Upper Roof	107 days	01/12/18	27/03/19	[Summary bar]		
4	Tiling works	30 days	01/12/18	01/01/19	[Task bar]		
5	Remaining Waterproofing + screed + touch up	14 days	16/01/19	29/01/19	[Task bar]		
6	Finishing for lift machine room except defer works	21 days	02/01/19	22/01/19	[Task bar]		
7	Installation remaining handrails & hatch doors & catladder	21 days	23/01/19	20/02/19	[Task bar]		
8	Miscellaneous work & cleaning after plant erection clearance	35 days	21/02/19	27/03/19	[Task bar]		
9	5/F	125 days	09/01/19	21/05/19	[Summary bar]		
10	Complete Vent fan support @ rooflight	35 days	15/01/19	26/02/19	[Task bar]		
11	Installation of internal enclosure @ rooflight	14 days	27/02/19	12/03/19	[Task bar]		
12	Removal of scaffold insider Rooflights	30 days	01/04/19	30/04/19	[Task bar]		
13	Complete & touch up rooflights façade	10 days	01/05/19	10/05/19	[Task bar]		
14	Remaing Waterproofing + screed	21 days	09/01/19	29/01/19	[Task bar]		
15	Touch up painting & floor joints	21 days	30/01/19	27/02/19	[Task bar]		
16	Construction of defer RC wall & feature at north of Air filter Inlet	45 days	07/04/19	21/05/19	[Task bar]		
17	Complete pump room for FS installation	21 days	30/01/19	27/02/19	[Task bar]		
18	Complete Air Filter Plant Room	21 days	28/02/19	20/03/19	[Task bar]		
19	Installation of GRS Water Tanks & Plumbing works	30 days	21/03/19	19/04/19	[Task bar]		
20	Installation of Stainless Steel Pole	7 days	13/04/19	19/04/19	[Task bar]		
21	Touch up remaining metal works	14 days	28/02/19	13/03/19	[Task bar]		
22	Miscellaneous work & cleaning after plant erection clearance	14 days	08/05/19	21/05/19	[Task bar]		
23	4/F	101 days	21/01/19	09/05/19	[Summary bar]		
24	Installation of grating & handrail to overhead crane walkway	45 days	21/01/19	15/03/19	[Task bar]		
25	TDK remove scaffolding for step installation	0 days	15/03/19	15/03/19	[Task bar]		
26	Installation of steps & Handrail to overhead crane walkway	14 days	15/03/19	28/03/19	[Task bar]		
27	Touch up remaining metal works	14 days	29/03/19	11/04/19	[Task bar]		
28	Touch up painting	14 days	12/04/19	25/04/19	[Task bar]		
29	Miscellaneous work & cleaning after plant erection clearance	14 days	26/04/19	09/05/19	[Task bar]		
30	3/F	105 days	01/03/19	13/06/19	[Summary bar]		
31	Delivery and Installation of fire proof window (Re-work)	70 days	01/03/19	09/05/19	[Task bar]		
32	Finishing touching up works at viewing gallery	14 days	10/05/19	23/05/19	[Task bar]		
33	Touch up remaining metal works	14 days	10/05/19	23/05/19	[Task bar]		
34	Touch up painting at other areas	7 days	24/05/19	30/05/19	[Task bar]		
35	Miscellaneous work & cleaning after plant erection clearance	14 days	31/05/19	13/06/19	[Task bar]		
36	2/F	42 days	08/03/19	18/04/19	[Summary bar]		
37	Installation of grating & handrail to overhead crane walkway	21 days	08/03/19	28/03/19	[Task bar]		
38	Miscellaneous work & cleaning after plant erection clearance	21 days	29/03/19	18/04/19	[Task bar]		
39	1/F	66 days	15/01/19	29/03/19	[Summary bar]		
40	Complete IBP installation and return site from TDK	0 days	15/01/19	15/01/19	[Task bar]		

16-8002 OS Work Prog (23Mar19)

Critical Split [Dotted line icon] Task

[Hatched bar icon] Split

[Dotted line icon] Milestone

Summary [Summary bar icon]

16/8002 Outstanding Work Programme

16-8002 OS Work Prog (23Mar19).mpp

26/03/19

ID	Task Name	Duration	Start	Finish	Apr '19	May '19	Jun '19
41	Durasteel steel partition and cat ladder installation at Loading Bay	35 days	15/01/19	26/02/19	cat ladder installation at Loading Bay		
42	Touch up remaining metal works	21 days	16/02/19	08/03/19	metal works		
43	Miscellaneous work & cleaning after plant erection clearance	21 days	09/03/19	29/03/19	Miscellaneous work & cleaning after plant erection clearance		
44	M/F +12.15mPD Maintenance Platform	44 days	01/07/19	13/08/19			01 Jul '19
45	Plant erection clearance	0 days	01/07/19	01/07/19			
46	Floor Screeding	14 days	01/07/19	14/07/19			
47	Miscellaneous work & cleaning	30 days	15/07/19	13/08/19			
48	G/F	220 days	01/12/18	18/07/19			
49	RC slabs at remaining rooms	21 days	15/12/18	06/01/19			
50	Toilets finishing Works	21 days	07/01/19	27/01/19			
51	Installation of Shutter at South	14 days	14/01/19	27/01/19			
52	Lube Oil RC Walls	21 days	01/12/18	21/12/18			
53	Remaining RC entrance lobbies (NE & E)	14 days	22/12/18	06/01/19			
54	Return Condenser from Plant ejection	0 days	06/03/19	06/03/19	Plant ejection		
55	Remaining Floor slabs at Condenser Area	21 days	06/03/19	26/03/19	Remaining Floor slabs at Condenser Area		
56	Modify GL G-H/6 Bracing	10 days	24/02/19	06/03/19			
57	Return Unloading Bay from Plant ejection (G.L G~H)	0 days	15/03/19	15/03/19	Return Unloading Bay from Plant ejection (G.L G~H)		
58	On-Grade slab at Unloading Bay (G.L. G~H)	14 days	15/03/19	28/03/19	On-Grade slab at Unloading Bay (G.L. G~H)		
59	Erection of Shutter at East	6 days	22/03/19	27/03/19	Erection of Shutter at East		
60	Scaffold erection + Defer Cladding at East elevation	30 days	15/03/19	13/04/19	Scaffold erection + Defer Cladding at East elevation		
61	RC external walls at East Elevation + Tiling	45 days	15/03/19	28/04/19	RC external walls at East Elevation + Tiling		
62	TDK scaffold removal @ G/F	0 days	01/05/19	01/05/19	TDK scaffold removal @ G/F		
63	Installation GRP tank above meter room incl. plumbing system	21 days	01/05/19	21/05/19	Installation GRP tank above meter room		
64	Install remaining Steel & metalwork and drainage channel covers	30 days	01/05/19	30/05/19	Install remaining Steel & metalwork		
65	Touch up remaining metal works	14 days	31/05/19	13/06/19	Touch up remaining metal works		
66	Touch up painting	30 days	31/05/19	29/06/19	Touch up painting		
67	Return Unloading Bay from Plant ejection (G.L F~G)	0 days	10/06/19	10/06/19	Return Unloading Bay from Plant ejection (G.L F~G)		
68	Completion of floor slab @ unloading bay and touch up	7 days	10/06/19	16/06/19	Completion of floor slab @ unloading bay and touch up		
69	Install FS & Electrical work @ Unloading Bay	14 days	17/06/19	30/06/19	Install FS & Electrical work @ Unloading Bay		
70	Miscellaneous work & cleaning	18 days	01/07/19	18/07/19			
71	Transformer Area	76 days	21/01/19	14/04/19			
72	Completion of Plant Installation	0 days	21/01/19	21/01/19			
73	Installation of Roofing and Fence Louvre walls	21 days	21/01/19	18/02/19	Installation of Roofing and Fence Louvre walls		
74	Installation of Building Services	45 days	19/02/19	04/04/19	Installation of Building Services		
75	Removal of scaffoldings	10 days	05/04/19	14/04/19	Removal of scaffoldings		
76	Link Bridge	87 days	14/01/19	18/04/19			
77	Scaffold erection	10 days	14/01/19	23/01/19			
78	Roof Cladding	21 days	24/01/19	21/02/19			
79	Fire partition & internal panels	45 days	22/02/19	07/04/19	Fire partition & internal panels		
80	Vertical Cladding Panels	10 days	08/04/19	17/04/19	Vertical Cladding Panels		
81	Floor tiles	21 days	22/02/19	14/03/19			

16-8002 OS Work Prog (23Mar19) Critical Split Task [Pattern] Split Milestone ◆ Summary ▾

16/8002 Outstanding Work Programme

16-8002 OS Work Prog (23Mar19).mpp

26/03/19

ID	Task Name	Duration	Start	Finish	Apr '19	May '19	Jun '19
82	Downpipe installation	14 days	15/03/19	28/03/19	Downpipe installation		
83	FS and Electrical Installation	21 days	29/03/19	18/04/19	FS and Electrical Installation		
84	Others	161 days	15/12/18	03/06/19	03 Jun '19		
85	Staircase ST-01 + Lift Lobbies	45 days	21/03/19	04/05/19	Staircase ST-01 + Lift Lobbies		
86	Staircase ST-02 + Lobbies	30 days	05/04/19	04/05/19	Staircase ST-02 + Lobbies		
87	Fendolite touch up	60 days	16/03/19	14/05/19	Fendolite touch up		
88	Door leaf installation (Remains)	45 days	19/02/19	05/04/19	Door leaf installation (Remains)		
89	U9 Cantilever Beam improvement work	30 days	19/04/19	18/05/19	U9 Cantilever Beam improvement work		
90	Drainage & Plumbing Works for Building	45 days	20/04/19	03/06/19	Drainage & Plumbing Works		
91	Signage Installation	21 days	05/05/19	25/05/19	Signage Installation		
92	Lift Installation incl. T&C	100 days	15/12/18	03/04/19	Lift Installation incl. T&C		
93	Electrical Installation incl. T&C except G/F Turbine Hall	120 days	02/03/19	29/06/19	Electrical Installation incl. T&C except G/F Turbine Hall		
94	MVAC Installation incl. T&C except G/F Turbine Hall	120 days	02/03/19	29/06/19	MVAC Installation incl. T&C except G/F Turbine Hall		
95	FS Installation incl. T&C except G/F Turbine Hall	120 days	02/03/19	29/06/19	FS Installation incl. T&C except G/F Turbine Hall		
96	External Works	297 days	12/12/18	14/10/19			
97	Removal of remaining external scaffold	21 days	12/12/18	03/01/19	Removal of remaining external scaffold		
98	Allow access at East Elevation from roof level	0 days	15/03/19	15/03/19	Allow access at East Elevation from roof level		
99	Roof Feature at East Elevation	45 days	15/03/19	28/04/19	Roof Feature at East Elevation		
100	EVA North MSB UU & Paving Works	150 days	04/01/19	10/06/19	EVA North MSB UU & Paving Works		EVA North MSB UU
101	EVA West MSB UU & Paving Works	120 days	11/02/19	10/06/19	EVA West MSB UU & Paving Works		EVA West MSB UU
102	EVA South MSB UU & Paving Works	90 days	15/03/19	12/06/19	EVA South MSB UU & Paving Works		EVA South MSB
103	EVA North HRSG UU	50 days	01/02/19	30/03/19	EVA North HRSG UU		EVA North HRSG UU
104	EVA East HRSG UU & Paving Works Incl. Lub Oil Tank Fdn	60 days	31/03/19	29/05/19	EVA East HRSG UU & Paving Works		EVA East HRSG UU & Paving W
105	EVA South HRSG UU & Paving Works (TDK handover on 1/8/19)	45 days	01/08/19	14/09/19	EVA South HRSG UU & Paving Works		EVA South HRSG UU & Paving W
106	EVA North HRSG Paving Works	30 days	15/09/19	14/10/19	EVA North HRSG Paving Works		EVA North HRSG Paving W
107	Building Façade repair and touch up.	14 days	13/06/19	26/06/19	Building Façade repair and touch up.		Building Façade repair and touch up.
108	Touch Up at HRSG Equipment Room	21 days	09/05/19	29/05/19	Touch Up at HRSG Equipment Room		Touch Up at HRSG Equipment
109	Electrical & FS Installation @ HRSG	60 days	01/08/19	29/09/19	Electrical & FS Installation @ HRSG		Electrical & FS Installation @ HRSG
110	Lift @ HRSG Installation	90 days	01/07/19	28/09/19	Lift @ HRSG Installation		Lift @ HRSG Installation
111	Statutory Submissions & Inspection	215 days	28/03/19	28/10/19			
112	WSD Acknowledge on UG pipes (North - MSB)	14 days	28/03/19	10/04/19	WSD Acknowledge on UG pipes (North - MSB)		WSD Acknowledge on UG pipes (North - MSB)
113	WSD Acknowledge on UG pipes (MSB South)	14 days	14/04/19	27/04/19	WSD Acknowledge on UG pipes (MSB South)		WSD Acknowledge on UG pipes (MSB South)
114	WSD Acknowledge on UG pipes (MSB West)	14 days	11/04/19	24/04/19	WSD Acknowledge on UG pipes (MSB West)		WSD Acknowledge on UG pipes (MSB West)
115	WSD Acknowledge on UG pipes (HRSG North)	14 days	28/03/19	10/04/19	WSD Acknowledge on UG pipes (HRSG North)		WSD Acknowledge on UG pipes (HRSG North)
116	WSD Acknowledge on UG pipes (HRSG East)	14 days	30/04/19	13/05/19	WSD Acknowledge on UG pipes (HRSG East)		WSD Acknowledge on UG pipes (HRSG East)
117	WSD Acknowledge on UG pipes (HRSG South)	14 days	31/08/19	13/09/19	WSD Acknowledge on UG pipes (HRSG South)		WSD Acknowledge on UG pipes (HRSG South)
118	WSD Part VI for P&D	0 days	03/06/19	03/06/19	WSD Part VI for P&D		WSD Part VI for P&D
119	WSD Part VI for OFH	0 days	13/09/19	13/09/19	WSD Part VI for OFH		WSD Part VI for OFH
120	ESDM Submission for Lift @ MSB	0 days	03/04/19	03/04/19	ESDM Submission for Lift @ MSB		ESDM Submission for Lift @ MSB
121	ESDM Submission for Lift @ HRSG	0 days	28/09/19	28/09/19	ESDM Submission for Lift @ HRSG		ESDM Submission for Lift @ HRSG
122	FSD 251 & 314 submission	0 days	14/10/19	14/10/19	FSD 251 & 314 submission		FSD 251 & 314 submission

16-8002 OS Work Prog (23Mar19)

Critical Split Task

Split

Milestone ◆

Summary ▾

16/8002 Outstanding Work Programme

16-8002 OS Work Prog (23Mar19).mpp

26/03/19

ID	Task Name	Duration	Start	Finish	Apr '19	May '19	Jun '19
123	OP Submission	0 days	28/10/19	28/10/19			
124	C.W. Pump, Intake and Urea Plant and Outstanding External Works	247 days	31/12/18	11/09/19			
125	C.W. Pump Area incl. Chlorination Area	134 days	14/01/19	04/06/19			
126	Cable tray at pipe rack ready for power supply laying	0 days	31/01/19	31/01/19			
127	Power supply laying and T&C for BS installation at CW. Pump Equip. Room	45 days	31/01/19	24/03/19			
128	Building's work touch up	30 days	25/03/19	23/04/19			
129	TDK confirm not use of temp. access to CW Intake	0 days	14/01/19	14/01/19			
130	Drainage construction under Chlorination area	21 days	14/01/19	11/02/19			
131	Bearing inspection by BD	30 days	12/02/19	13/03/19			
132	Foundation Construction of Chlorination area	21 days	14/03/19	03/04/19			
133	Above ground RC @ Chlorination area	21 days	04/04/19	24/04/19			
134	RC plinths and Drainage works	21 days	25/04/19	15/05/19			
135	Road Reinstatement at Demin. Plant Road	120 days	14/01/19	21/05/19			
136	Relocation Hoarding to middle road and return area to GEN	14 days	22/05/19	04/06/19			
137	Urea Plant	205 days	31/12/18	31/07/19			
138	Handover for plant erection	0 days	31/12/18	31/12/18			
139	Building Services and raised floors for Urea Ele. Equip Room	14 days	02/01/19	15/01/19			
140	Cable Tray ready at Pipe rack for power laying	0 days	31/01/19	31/01/19			
141	Power laying and T&C for BS at Urea Ele. Equip Rm	30 days	25/03/19	23/04/19			
142	TDK Return area for middle road construction	0 days	15/04/19	15/04/19			
143	Storm Drain construction at Middle Road	30 days	15/04/19	14/05/19			
144	Remaining UU at middle road + paving	60 days	15/05/19	13/07/19			
145	TDK return Urea Preparation Area for deferred works	0 days	15/04/19	15/04/19			
146	Construction of RC bund wall, step, slab, etc.	21 days	15/04/19	05/05/19			
147	Erection of Removable Metal cladding	21 days	06/05/19	26/05/19			
148	Installation of folding shutters + touch up	21 days	27/05/19	16/06/19			
149	Underground oily drain modification + Foam Gun relocation	60 days	04/04/19	02/06/19			
150	Urea Shelter BD approval + Consent	80 days	15/03/19	02/06/19			
151	Urea Shelter fdn and superstructure	45 days	17/06/19	31/07/19			
152	Other & External works	245 days	02/01/19	11/09/19			
153	Chimney Remaining Installation works for L10	90 days	02/01/19	09/04/19			
154	Return from ground treatment at North of Area B1 & D2	0 days	15/04/19	15/04/19			
155	Site Clearance for Paving at Middle Road to Chimney Rd	30 days	15/04/19	14/05/19			
156	New Pipe Rack foundation Under L11 Contract	60 days	15/05/19	13/07/19			
157	Road Paving and other service reinstatement	60 days	14/07/19	11/09/19			

SCHEDULE C. Contract No. 16/2209
 Lamma Power Station Extension - Unit 10
 Complete Erection, Inspection, Testing &
 Commissioning of Power Block Facilities

Appendix J
**FOR
 INFO**

No.	Description	2019		
		Apr	May	Jun
	Erection Key Date		Ⓢ	
			Synchr ○	
			Ⓞ HRSG Gas in 1-May	
A	HRSG PORTION			
A-01	Install Casing (Bottom/Side/Top) with Structure		Bott	
A-02	Upper/Lower Connection Pipe			
A-03	Module Install (Bundle Tube Block)			
A-04	Down Commer Pipe			
A-05	Drum Lifting / HDR Level Adjustment			
A-06	Critical Piping/connecting piping (Main Steam, Aux, R/H, HP/LP Feed Water)			
A-07	Other piping			
A-08	Access Platform / Hand Rail			
A-09	Inside Baffle Plate & Seismic Tie Adjust / Setting			
A-10	SCR System			

SCHEDULE C. Contract No. 16/2209
 Lamma Power Station Extension - Unit 10
 Complete Erection, Inspection, Testing &
 Commissioning of Power Block Facilities

Appendix J
**FOR
 INFO**

No.	Description	2019		
		Apr	May	Jun
	Erection Key Date			
				▼
A-11	Inlet Duct Structure / Include Pipe Rack (U9-U10 Connection)			
A-12	Inlet Duct			
A-13	Exhaust Duct Structure			
A-14	Exhaust Duct			
A-15	Aux Equip(B/D Tank, HP/IP Feed Water Pump, LP Eco Recirculation Pump, etc.) HP/IP Feed Water Pump Reserve feed water Tank		Final	
A-16	Insulation			
A-17	Painting			
A-18	Install Catalyst			▼
A-19	Steam Blowing out(other scope) & alkaline boiling out			

SCHEDULE C. Contract No. 16/2209
 Lamma Power Station Extension - Unit 10
 Complete Erection, Inspection, Testing &
 Commissioning of Power Block Facilities

Appendix J
**FOR
 INFO**

No.	Description	2019		
		Apr	May	Jun
	Erection Key Date			(S) Synchronisation HRSG Gas in 1-May
	Installation of Temporary piping, Support & Silencer Execution of Steam blowing out Dismantle of Temporary piping, Support & Silencer Execution of Steam boiling out			
B	GT/ST/GEN PORTION			
B-1	Turbine O/H Crane			
B-2	Condenser			
B-3	Install ST			

SCHEDULE C. Contract No. 16/2209
 Lamma Power Station Extension - Unit 10
 Complete Erection, Inspection, Testing &
 Commissioning of Power Block Facilities

Appendix J
**FOR
 INFO**

No.	Description	2019		
		Apr	May	Jun
	Erection Key Date		(S) Synchr ○ (O) HRSG Gas in 1-May	
B-4	Install GEN		●-----●-----● GT S ● Seal Oil Flushing	
B-5	Install GT	●-----●		
		P/T		

SCHEDULE C. Contract No. 16/2209
 Lamma Power Station Extension - Unit 10
 Complete Erection, Inspection, Testing &
 Commissioning of Power Block Facilities

Appendix J
**FOR
 INFO**

No.	Description	2019		
		Apr	May	Jun
	Erection Key Date			
B-6	Aux Equipment			
B-7	Insulation			
B-8	Painting			
B-9	Switchgear/Hoist/Hoist for condenser			

SCHEDULE C. Contract No. 16/2209
 Lamma Power Station Extension - Unit 10
 Complete Erection, Inspection, Testing &
 Commissioning of Power Block Facilities

Appendix J
**FOR
 INFO**

No.	Description	2019		
		Apr	May	Jun
	Erection Key Date		Ⓢ	
			Synchr ○	
			Ⓞ HRSG Gas in 1-May	
C	ERECTION & INSTRUMENTATION PORTION			
C-1	Transformer & Ancillaries (G Tx, U Tx, Ex Tx, SFC Tx)			
C-2	EQUIPMENT INSTALLATION			
	Generator & Ancillaries			
	Isolated Phase Busducts			
	Switchgear and Accessories			
	UPS, Batterys, Battery Charger System & DBs			
	Electrical Panels & Local Control Panels			
	Control Systems, Control Panels, Local Instrument Cubicle & Rack			
	Channel Base Installation			
C-3	CABLING SYSTEM INSTALLATION			
	Cable Ladder / Tray Installation			
	Conduit Pipe Installation			
	Earthing Installation			
	Cable Laying & Termination			
	Fire Resistant Sealing	●	●	
	Cable Trench Opening & Transportation	●		

SCHEDULE C. Contract No. 16/2209
 Lamma Power Station Extension - Unit 10
 Complete Erection, Inspection, Testing &
 Commissioning of Power Block Facilities

Appendix J
**FOR
 INFO**

No.	Description	2019		
		Apr	May	Jun
	Erection Key Date			
C-4	INSTRUMENTS, INSTR. PIPINGS & AIR TUBE			
	Local Instruments, Piping & Tubing			
	Instrument Calibration			
C-5	OTHER WORK			
	275kV Shunt Reactor Relocation			
	Turbine Overhead Crane, Hoist, Battery Power Supply			
	Existing CWP etc.			
	BOP & Other Works			
	Site Cleaning			
C-6	TESTING & COMMISSIONING			
	Testing & Commissioning			
	Commissioning Assistant			

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Apr '19	May '19	Jun '19
1	Civil and Building Works for Unit 11 and Associated Works	1197 days	01/06/18	30/09/21			
2	Contract Key Dates	1197 days	01/06/18	30/09/21			
3	Contract Commencement Date	0 days	01/06/18	01/06/18			
4	Section A1 - Ground treatment installation works at Zone 1A	0 days	31/10/18	31/10/18			
5	Section A2 - Ground treatment installation works at Zone 1B	0 days	31/10/18	31/10/18			
6	Section A3 - Ground treatment installation works at Zone 2	0 days	31/01/19	31/01/19			
7	Section A4 - Ground treatment installation works at Zone 3	0 days	31/01/19	31/01/19			
8	Section A5 (i) - Ground treatment installation works at Zone 4 - Band drain installation	0 days	31/01/19	31/01/19			
9	Section A5 (ii) - Ground treatment installation works at Zone 4 - Surcharge filling	0 days	30/09/20	30/09/20			
10	Section A6 (i) - A&A Works for No. 4 C.W. Outfall at Area E18	0 days	31/05/20	31/05/20			
11	Section A6 (ii) - External works at Area E15	0 days	15/02/20	15/02/20			
12	Section B1 (i) - Area south of L11 MSB and HRSG from GL11-F eastwards leading to Chimney Road at Area E1 & E2	0 days	01/12/19	01/12/19			
13	Section B1 (ii) - Supporting structures for overhead cranes of L11 MSB including the associated roof structure except the roof deferred works	0 days	01/12/19	01/12/19			
14	Section B1 (iii) - FSRU Civil works at Area E13	0 days	31/05/21	31/05/21			
15	Section B2 - Retractable Cover D at Area E22	0 days	31/12/19	31/12/19			
16	Section B3 - External works at Area B1, D2 and D4	0 days	06/01/20	06/01/20			
17	Section C1 - Area south of L11 MSB from GL11-F westwards leading to Station Road at Area E3(A) & E3(B)	0 days	15/12/19	15/12/19			
18	Section C2 - (i) Southern part of L11 HRSG area and its surrounding at Area E7 except the deferred works for Lube Oil Storage Tank	0 days	01/11/19	01/11/19			
19	Section C2 - (ii) L11 Turbo Block foundation including the L11 MSB ground floor together with the equipment foundations between GL 11-F to 11-H and 11-1 to 11-6 for the installation of power generator, air inlet duct and lube oil reservoir	0 days	15/02/20	15/02/20			
20	Section C2 - (iii) G/F of L11 MSB including the Condenser Pit, Circulating Water Pipe Pit and equipment foundations between GL 11-B to 11-C and 11-1 to 11-6 for the installation of condenser	0 days	15/12/19	15/12/19			
21	Section D - (i) Roads and external grounds surrounding L11 MSB and L11 HRSG in addition to the southern & eastern areas mentioned above in Area E5 and E6	0 days	15/02/20	15/02/20			
22	Section D - (ii) Remaining northern part of L11 HRSG area and its surrounding in Area E6	0 days	15/02/20	15/02/20			
23	Section D - (iii) Whole of L11 MSB including the pipe and cable rack along south façade of L11 MSB with all underground utilities at Area E4 including C.W. Inlet and Outlet Culvert except the deferred works	0 days	15/02/20	15/02/20			
24	Section D - (iv) Link Bridge between L10 and L11 MSB and at the south of L11 MSB including their associated alternations & additions (A&A) Works at L10 MSB	0 days	15/02/20	15/02/20			
25	Section D - (v) Gas Duct Foundation, Pipe and Cable Rack and associated trench in Area E20	0 days	15/02/20	15/02/20			
26	Section E1 - (i) Link Bridge and Pipe and Cable Rack connecting L11 MSB to the western area of L11 MSB at Area E3	0 days	31/05/20	31/05/20			
27	Section E1 - (ii) Gas Receiving Station and L11 Gas Receiving Station Equipment Room (GRS) Area Extension at Area E16	0 days	30/06/20	30/06/20			
28	Section E1 - (iii) External Works at Area E15 (C)	0 days	28/02/21	28/02/21			
29	Section E2 - Pipe and Cable Rack and trench at west of Chimney Road and Pipe and Cable Rack at south of Middle Road at Area E8 and E19	0 days	15/05/20	15/05/20			
30	Section E3 - Gas Pipe Support Foundation and Pipe Trench and associated external works at Area E14, E15 (A) and E15 (B)	0 days	30/06/20	30/06/20			
31	Section E4 - 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (A)	0 days	15/09/19	15/09/19			

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Apr '19	May '19	Jun '19
32	Section F - 275kV Station Building Extension and associated works at Area E17	0 days	01/04/20	01/04/20			
33	Section G - A&A Works at No. 4 C.W. Intake at Area E12	0 days	31/05/20	31/05/20			
34	Section H - L11 Steel flue liner at No. 4 Chimney	0 days	14/08/19	14/08/19			
35	Section I - (i) 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (B)	0 days	15/05/20	15/05/20			
36	Section I - (ii) Interconnector 2 Trench Modification Works at Area E10	0 days	15/05/20	15/05/20			
37	Section J - (i) Demolition of Retractable Cover A&B & (ii) Foundation of LMX Light Oil Storage Tank Nos. 3 & 4 and A&A for Existing Bund Wall at Area	0 days	30/04/21	30/04/21			
38	Section K1 - External works at Area 15 (E) and 15(F)	0 days	31/05/21	31/05/21			
39	Section K2 - Removal of Southern Bund and External Works at Area D5, D6 and D7	0 days	31/05/21	31/05/21			
40	Section K3 - All remaining works shall be completed for reporting completion to BD and ready for OP inspection	0 days	30/09/21	30/09/21			
41	General & Preliminary	272 days	01/06/18	09/03/19			
42	Set up Temporary Site Office and Utilities	90 days	01/06/18	29/08/18			
43	Permit Applications & Statuary Submissions	120 days	30/08/18	27/12/18			
44	Existing Utilities scanning & Excavation Permit	45 days	13/11/18	27/12/18			
45	Tower Crane erection 2@MSB, 1@ 275	60 days	30/12/18	09/03/19			
46	Submission and Approval	554 days	01/06/18	16/12/19			
47	Method Statement / Temp Work Submission & Approval from HEC for General Works	240 days	01/06/18	26/01/19			
48	BD Approval & Consent (If required)	120 days	01/06/18	28/09/18			
49	BIM Model, CSD & CBWD Submission & Approval from HEC	200 days	29/09/18	26/04/19			
50	Structure Steelwork Connection Design Submission & BD Approval	60 days	29/09/18	27/11/18			
51	Structure Steelwork Shop Drawing & Approval	60 days	13/10/18	11/12/18			
52	Metal Cladding, louvre & windows submission & BD Approval	60 days	28/11/18	26/01/19			
53	Metal Cladding, louvre & windows shop drawing submission	60 days	12/12/18	19/02/19			
54	Order, Off Site Fabrication and Delivery (S. Steel & Cladding & louvres)	180 days	27/10/18	04/05/19			
55	Retractable Cover D BD Submission & Approval	90 days	20/02/19	20/05/19			
56	No. 4 C.W. Outfall A&A BD approval	90 days	30/08/18	27/11/18			
57	Submission & Approval of Steel Flue Assessment Report and Design Drawings	60 days	30/09/18	28/11/18			
58	Submission and Approval of Steel Flue Design from BD	60 days	30/09/18	28/11/18			
59	Material Fabrication & Delivery for L11 Flue	100 days	15/10/18	22/01/19			
60	Folding Shutters Shop Drawing Submission & Approval	120 days	20/02/19	19/06/19			
61	Fabrication & Delivery of Folding Shutters	150 days	20/06/19	16/11/19			
62	Sewage Pump System Design submission & approval	90 days	22/03/19	19/06/19			
63	Fabrication & Delivery of Sewage Pump	180 days	20/06/19	16/12/19			
64	Other material submission & approval & delivery	300 days	30/08/18	05/07/19			
65	Coordination with the Employer's Specialist Contractors	438 days	22/02/19	15/05/20			
66	Installation of Puddle Pipes at C.W. outlet Culvert	7 days	22/02/19	28/02/19			
67	Installation of Puddle Pipes at C.W. Inlet Culvert	7 days	29/04/19	05/05/19			
68	Template setting at L11 Turbo Block Foundation	60 days	15/11/19	15/01/20			
69	Template setting of holding down bolts at HRSG column base	46 days	26/07/19	09/09/19			
70	I-beam / channel base installation on top of transformer foundations at Transformer Area	30 days	15/12/19	15/01/20			
71	Overhead crane erection at turbine hall using access through a temporary opening at L11 MSB roof between GL11-G to 11-H and 11-2 to 11-6	36 days	01/12/19	07/01/20			
72	Condenser assembly and erection using access through a temporary façade opening at L11 MSB below 1/F along GL 11-6 from GL11-B to 11-C including a clear space below 1/F between GL 11-B to 11-C	127 days	15/12/19	30/04/20			
73	Installation of power train equipment including air inlet duct using access through a temporary façade opening at L11 MSB below 1/F along GL 11-6 from GL11-F to 11-H including a clear space below 1/F of the above area	142 days	15/12/19	15/05/20			

ID	Task Name	Duration	Start	Finish	Timeline (Apr '19, May '19, Jun '19)		
74	Installation of embedded materials such as holding down bolts for equipment foundations - Commencement	30 days	11/05/19	09/06/19	Installation of embedded materials		
75	Section A1 & A2 - Ground treatment at Zone 1A & 1B	92 days	01/08/18	31/10/18			
76	Plant establishment for earthworks	7 days	01/08/18	07/08/18			
77	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	45 days	08/08/18	21/09/18			
78	Delivery of band drain	5 days	29/08/18	02/09/18			
79	Plant establishment for band drain (1st rig)	10 days	03/09/18	12/09/18			
80	Plant establishment for band drain (2nd rig)	7 days	20/09/18	26/09/18			
81	Plant establishment for band drain (3rd rig)	7 days	11/10/18	17/10/18			
82	Vert. Band drain installation (1023 nos. x 44m)	45 days	13/09/18	27/10/18			
83	Deposition of surcharge up to +8.3mPD	45 days	17/09/18	31/10/18			
84	Section A3 - Ground treatment installation works at Zone 2	123 days	01/10/18	31/01/19			
85	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	30 days	01/10/18	30/10/18			
86	Delivery of band drain	6 days	18/10/18	23/10/18			
87	Vert. Band drain installation (1787 nos. x 44m)	50 days	24/10/18	12/12/18			
88	Deposition of surcharge up to +8.3mPD	60 days	03/12/18	31/01/19			
89	Section A4 - Ground treatment installation works at Zone 3	92 days	01/11/18	31/01/19			
90	Backfilling and compaction from existing ground +4.5mPD to +5.5mPD	12 days	01/11/18	12/11/18			
91	Vert. Band drain installation (2471 nos. x 44m)	60 days	09/11/18	07/01/19			
92	Deposition of surcharge up to +8.3mPD	45 days	18/12/18	31/01/19			
93	Section A5 (i) - Ground treatment installation works at Zone 4	62 days	01/12/18	31/01/19			
94	Site Preparation for Vertical Band Drain	21 days	01/12/18	21/12/18			
95	Band drain installation (2588 nos. x 44m)	50 days	13/12/18	31/01/19			
96	Section A5 (ii) - Surcharge works at Zone 4	30 days	01/09/20	30/09/20			
97	Deposition of surcharge up to +8.3mPD	30 days	01/09/20	30/09/20			
98	Section A6 (i) - A&A Works for No. 4 C.W. Outfall at Area E18	557 days	01/11/18	31/05/20	c A6(i)		
99	BD approval & Consent	90 days	01/11/18	29/01/19			
100	Mobilization	0 days	15/12/18	15/12/18			
101	Jacking Pit Sheetpile Installation	30 days	16/12/18	14/01/19			
102	Consent + ELS of jacking pit	75 days	15/01/19	09/04/19	Consent + ELS of jacking pit		
103	Pipe Jacking set up & ground strengthening	21 days	10/04/19	30/04/19	Pipe Jacking set up & ground strengthening		
104	Pipe Jacking x 3 nos.	150 days	01/05/19	27/09/19			
105	Receiving Pit Pipe & Sheet pile installation	30 days	30/01/19	10/03/19	Installation		
106	Consent + ELS of Receiving pit	90 days	11/03/19	08/06/19	Consent + ELS of Receiving pit		
107	Allow modify existing outfall manhole for pipe jacking receiving	21 days	09/06/19	29/06/19			
108	Sheetpile after L12 Piling + ELS Work	90 days	28/09/19	28/12/19			
109	Culvert Pipe Intallation & water test	110 days	11/11/19	10/03/20			
110	Thrust Box Construction	21 days	11/03/20	31/03/20			
111	Manhole extension at Outfall no. 4	40 days	01/04/20	10/05/20			
112	Sheet pile for future extension along GRS	21 days	28/09/19	18/10/19			
113	Reinstatement	21 days	11/05/20	31/05/20			
114	Section A6 (ii) - External works at Area E15(D)	37 days	01/01/20	15/02/20			
115	Area possession & Clearance	6 days	01/01/20	06/01/20			
116	Road & Surface Works	31 days	07/01/20	15/02/20			
117	Section B1 (i) - Area south of L11 MSB and HRSG from GL11-F eastwards leading to Chimney Road at Area E1 & E2	386 days	01/11/18	01/12/19	c B1(i)		
118	Area Possession & Clearance	0 days	01/11/18	01/11/18			
119	Excavation for CW Inlet Culvert (South of L11 HRSG)	21 days	06/03/19	26/03/19	Excavation for CW Inlet Culvert (South of L11 HRSG)		
120	Installation CW Inlet Culvert pipe	30 days	27/03/19	25/04/19	Installation CW Inlet Culvert pipe		
121	Construction of Thrust Box & Manholes,etc	14 days	26/04/19	09/05/19	Construction of Thrust Box & Manholes,etc		
122	Backfill	21 days	10/05/19	30/05/19	Backfill		
123	Install underground utilities	45 days	12/10/19	25/11/19			
124	Backfill and Temporary paving for Condensor Move in (E1)	14 days	19/10/19	01/11/19			
125	Backfill and Temporary paving for Condensor Move in (others)	30 days	02/11/19	01/12/19			

ID	Task Name	Duration	Start	Finish	Timeline		
					Apr '19	May '19	Jun '19
126	Section B1 (ii) - Supporting structures for overhead cranes of L11 MSB including the associated roof structure except the roof deferred works	385 days	01/11/18	01/12/19	c.B1(i)		
127	Area possession & Clearance	0 days	01/11/18	01/11/18			
128	Erection of turbine hall roof except defer work	0 days	11/10/19	11/10/19			
129	Installation of crane griders	21 days	12/10/19	01/11/19			
130	Turbine hall wall claddings	60 days	02/10/19	01/12/19			
131	Section B1 (iii) - FSRU Civil works at Area E13 (GRS)	151 days	01/01/21	31/05/21			
132	Submission and approval for consent to work	0 days	01/01/21	01/01/21			
133	Civil & Building Works	130 days	01/01/21	10/05/21			
134	Ground reinstatement	21 days	11/05/21	31/05/21			
135	Section B2 - Retractable Cover D at Area E22	353 days	01/01/19	31/12/19			
136	Area Possession, Demolition and clearance work	60 days	01/01/19	11/03/19			
137	Foundation construction	75 days	12/03/19	25/05/19			Foundation construction
138	Backfill & Ground statement	20 days	26/05/19	14/06/19			Backfill & Ground statement
139	Superstructure fabrication & delivery	88 days	21/05/19	16/08/19			
140	Superstructure erection	90 days	17/08/19	14/11/19			
141	E&M Installation and T&C	45 days	15/11/19	31/12/19			
142	Section B3 - External works at Area B1, D2 and D4	359 days	01/01/19	06/01/20			
143	Receive Area from HKE, Area Possession & Clearance	0 days	01/01/19	01/01/19			
144	Removal of existing paving for band drain under Section A5(i)	30 days	01/01/19	30/01/19			
145	Complete Vert. Band drain under Section A5(i)	0 days	31/01/19	31/01/19			
146	Ground preparation for B1, D2 & D4	60 days	06/11/19	06/01/20			
147	Section C1 - Area south of L11 MSB from GL11-F westwards leading to Station Road at Area E3(A) & E3(B)	399 days	01/11/18	15/12/19			
148	Area Possession & Clearance	0 days	01/11/18	01/11/18			
149	Excavation for CW Outlet/Inlet Culvert (work parallel & after MSB ELS phase 1)	40 days	15/01/19	05/03/19			
150	Installation CW Inlet Culvert pipe (South of L11 Condensor)	21 days	15/02/19	07/03/19			
151	Installation CW Outlet Culvert Pipe connect to Type C1	21 days	06/03/19	26/03/19			
152	Construction of Thrust Box & Manholes,etc	14 days	27/03/19	09/04/19			Construction of Thrust Box & Manholes,etc
153	Backfill	21 days	10/04/19	30/04/19			Backfill
154	Installation remain sheetpile for future Outlet Culvert	30 days	01/05/19	30/05/19			Installation remain sheetpile for future Outlet Culvert
155	Construct Temp Paving for Condenser move in	30 days	15/11/19	15/12/19			
156	Section C2 - (i) Southern part of L11 HRSG area and its surrounding at Area E7 except the deferred works for Lube Oil Storage Tank	295 days	01/01/19	01/11/19			
157	Area Possession & Clearance	0 days	01/01/19	01/01/19			
158	Excavation & Pile Caps & Tie Beams (HRSG South Area E7)	30 days	27/04/19	26/05/19			Excavation & Pile Caps & Tie Beams (HRSG South Area E7)
159	Construction RC foundations	60 days	27/05/19	25/07/19			
160	Construction RC plinths	30 days	10/09/19	09/10/19			
161	Construction underground utilities	75 days	26/07/19	08/10/19			
162	Backfill & Construction on-grade slabs	30 days	25/09/19	24/10/19			
163	Backfill and Temporary paving	18 days	15/10/19	01/11/19			
164	Section C2 - (ii) L11 Turbo Block foundation including the L11 MSB ground floor together with the equipment foundations between GL 11-F to 11-H and 11-1 to 11-6 for the installation of power generator, air inlet duct and lube oil reservoir	421 days	01/12/18	15/02/20			
165	Area Possession & Clearance	0 days	01/12/18	01/12/18			
166	Excavation & Pile Caps & Tie Beams (MSBL11 - Turbo Block North)	65 days	30/12/18	14/03/19			Excavation & Pile Caps & Tie Beams (MSBL11 - Turbo Block North)
167	Excavation & Pile Caps & Tie Beams (MSBL11 - Turbo Block South)	45 days	15/03/19	28/04/19			Excavation & Pile Caps & Tie Beams (MSBL11 - Turbo Block South)
168	Backfill and construction turbine block foundation	21 days	29/04/19	19/05/19			Backfill and construction turbine block foundation
169	Construction of internal drainage	46 days	22/05/19	06/07/19			
170	Construction RC walls incl. G/F rooms	45 days	12/10/19	25/11/19			
171	Construction turbine block columns and upper portion for plant embed installation	21 days	25/10/19	15/11/19			
172	Concrete Turbine upper part foundation & clear falsework	22 days	16/01/20	15/02/20			

ID	Task Name	Duration	Start	Finish	
173	Section C2 - (iii) G/F of L11 MSB including the Condenser Pit, Circulating Water Pipe Pit and equipment foundations between GL 11-B to 11-C and 11-1 to 11-6 for the installation of condenser	400 days	01/11/18	15/12/19	c.C2(iii)
174	Area Possession & Clearance	0 days	01/11/18	01/11/18	
175	Excavation to foundation level at ELS Type A	35 days	30/12/18	12/02/19	
176	Construction of CW Outlet Box	30 days	13/02/19	14/03/19	Box
177	Construction of pile caps & tie beams & hot well sump pit	45 days	13/02/19	29/03/19	Construction of pile caps & tie beams & hot well sump pit
178	Construction of pile caps & tie beams from +2.5mPD	30 days	30/03/19	28/04/19	Construction of pile caps & tie beams from +2.5mPD
179	Backfill & Construction of CW Inlet Box	21 days	29/04/19	19/05/19	Backfill & Construction of CW Inlet Box
180	Backfill and Construction ground beams & trenches	30 days	20/05/19	18/06/19	Backfill and Constr
181	Construction of indoor underground drainage	18 days	19/06/19	06/07/19	
182	Backfill & construction on-grade slabs	14 days	07/07/19	20/07/19	
183	Construction Column casting and RC walls	21 days	18/09/19	08/10/19	
184	Metal Cladding & Louvres for GLB-C/1-6	60 days	17/10/19	15/12/19	
185	Section D - (i) Roads and external grounds surrounding L11 MSB and L11 HRSG in addition to the southern & eastern areas mentioned above in Area E5 and E6	451 days	01/11/18	15/02/20	c.D(i)
186	Area Possession & Clearance	14 days	01/11/18	14/11/18	
187	Construction of L11 CW Outlet Pipe Type C1	90 days	15/11/18	22/02/19	
188	Backfill	21 days	23/02/19	15/03/19	
189	Undeground utilities and trenches	100 days	16/03/19	23/06/19	Undegrou
190	Construction of plant drainage, trenches & RC plinths	45 days	18/09/19	01/11/19	
191	Remaining Undeground utilities & backfill	75 days	02/11/19	17/01/20	
192	Construction on-grade slabs & pavings	30 days	08/01/20	15/02/20	
193	Section D - (ii) Remaining northern part of L11 HRSG area and its surrounding in Area E6	390 days	01/01/19	15/02/20	
194	Area Possession & Clearance	0 days	01/01/19	01/01/19	
195	Excavation & Pile Caps & Tie Beams (HRSG north Area E6)	21 days	01/01/19	21/01/19	
196	Construction RC foundations	85 days	22/01/19	26/04/19	Construction RC foundations
197	Construction RC plinths & HRSG Lift Pit & internal drainage	60 days	27/04/19	25/06/19	Constr
198	Backfill Construction on-grade slabs	28 days	26/06/19	23/07/19	
199	Construction underground utilities	150 days	24/07/19	20/12/19	
200	Backfill and Temporary paving	45 days	22/12/19	15/02/20	
201	Section D - (iii) Whole of L11 MSB including the pipe and cable rack along south façade of L11 MSB with all underground utilities at Area E4 including C.W. Inlet and Outlet Culvert except the deferred works	451 days	01/11/18	15/02/20	c.D(iii)
202	Area Possession & Clearance	0 days	01/11/18	01/11/18	
203	Construction of pile caps & tie beams at Transformer Area	45 days	15/11/18	29/12/18	
204	Excavation & Construction Blow Down Sum pit (Type B)	21 days	13/01/19	12/02/19	
205	Construction of pile caps & tie beams at Turbine Hall Area (GL. D-F)	60 days	13/02/19	13/04/19	Construction of pile caps & tie beams at Turbine Hall Area (GL. D-F)
206	Construction of pile caps & tie beams at SunShadeCover Area	45 days	29/04/19	12/06/19	Construction of pile caps & t
207	Preparation for S.Steelwork Erection	14 days	26/07/19	08/08/19	
208	Structural Delivery & Erection (Equipment floor portion)	40 days	09/08/19	17/09/19	
209	Structural Delivery & Erection (Air filter inlet & Turbine Hall Portion)	24 days	18/09/19	11/10/19	
210	Structural Delivery & Erection (Pipe & Cable rack at south of L11)	21 days	12/10/19	01/11/19	
211	Fire Coating Application at Joint	130 days	18/09/19	05/02/20	
212	External Scaffolding Erection	45 days	18/09/19	01/11/19	
213	Construction 1/F RC Slab	12 days	18/09/19	29/09/19	
214	Construction M/F RC Slab	7 days	30/09/19	06/10/19	
215	Construction 2/F RC Slab	12 days	07/10/19	18/10/19	
216	Construction 3/F RC Slab	12 days	19/10/19	30/10/19	
217	Construction 4/F RC Slab	12 days	31/10/19	11/11/19	
218	Construction 5/F RC Slab	21 days	12/11/19	02/12/19	
219	Construction Roof RC Slab (except defer portion)	12 days	24/11/19	05/12/19	
220	Construction Upper Roof RC Slab	12 days	06/12/19	17/12/19	

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Apr '19	May '19	Jun '19
221	Construction Defer Roof RC Slab (G.L. G-H)	12 days	15/12/19	28/12/19			
222	Construction of Staircase ST-01 & lift shaft & machine room	90 days	12/10/19	11/01/20			
223	Construction of Staircase ST-02 except defer work	75 days	30/09/19	13/12/19			
224	Construction of RC plinth, kerbs & parapet Walls	30 days	03/12/19	03/01/20			
225	Erection of Skylight & Roof Features	30 days	17/12/19	17/01/20			
226	Waterproofing	30 days	02/01/20	09/02/20			
227	ABFW Works from 1/F to 5/F equipment rooms	110 days	07/10/19	04/02/20			
228	Metal Cladding, Windows and Louvres incl. roof feature	115 days	08/10/19	10/02/20			
229	Removal of external scaffolding	30 days	03/01/20	10/02/20			
230	Building Services E&M Access & Installation	110 days	18/10/19	15/02/20			
231	Section D - (iv) Link Bridge between L10 and L11 MSB and at the south of L11 MSB including their associated alternations & additions (A&A) Works at L10 MSB	451 days	01/11/18	15/02/20	c D(iv)		
232	Area Possession & Clearance	0 days	01/11/18	01/11/18			
233	A&A works at South of L10 MSB	60 days	24/07/19	21/09/19			
234	Erection of link bridge structural steel	24 days	12/10/19	04/11/19			
235	Casting of bridge deck	5 days	05/11/19	09/11/19			
236	Metal roofing installation	21 days	10/11/19	30/11/19			
237	ABWF work	21 days	01/12/19	21/12/19			
238	Form new opening at MSB for final connection	10 days	22/12/19	02/01/20			
239	E&M Work	35 days	03/01/20	15/02/20			
240	Section D - (v) Gas Duct Foundation, Pipe and Cable Rack and associated trench in Area E20	451 days	01/11/18	15/02/20	c D(v)		
241	Area Possession & Clearance	0 days	01/11/18	01/11/18			
242	Sheet pile installation & submit as-built	60 days	01/11/18	30/12/18			
243	Consent for excavation	30 days	31/12/18	29/01/19			
244	Excavation & plate load test	60 days	30/01/19	09/04/19	Excavation & plate load test		
245	Construction of foundation	45 days	10/04/19	24/05/19	Construction of foundation		
246	Backfill	21 days	25/05/19	14/06/19	Backfill		
247	Remaining Pipe & cable rack and associated trenches in Area E20	116 days	12/10/19	15/02/20			
248	Section E1 - (i) Link Bridge and Pipe and Cable Rack connecting L11 MSB to the western area of L11 MSB at Area E3	143 days	01/01/20	31/05/20			
249	Area Possession	0 days	01/01/20	01/01/20			
250	Excavation & construction of new foundation	60 days	01/01/20	09/03/20			
251	Backfill	10 days	10/03/20	19/03/20			
252	Erection of Structural steel	20 days	01/05/20	20/05/20			
253	Ground Reinstatement	11 days	21/05/20	31/05/20			
254	Section E1 - (ii) Gas Receiving Station and L11 Gas Receiving Station Equipment Room (GRS) Area Extension at Area E16	587 days	01/11/18	30/06/20	c E1(ii)		
255	Area Possession	0 days	01/11/18	01/11/18			
256	Removal of Surcharge and excavation	18 days	01/01/20	18/01/20			
257	Modification of Site Drainage	35 days	19/01/20	02/03/20			
258	Construction of new RC for GRS Equipment Room	75 days	18/01/20	10/04/20			
259	ABWF for GRS Equipment room	45 days	11/04/20	25/05/20			
260	E&M Installation	45 days	16/05/20	29/06/20			
261	Construction of new Gas pipe plinths & racks	45 days	26/02/20	10/04/20			
262	Backfill and construction site drainage	21 days	11/04/20	01/05/20			
263	External Paving and install new fencing	60 days	02/05/20	30/06/20			
264	Section E1 - (iii) External Works at Area E15 (C)	273 days	01/06/20	28/02/21			
265	Removal of Surcharge and excavation	45 days	01/06/20	15/07/20			
266	Underground drianage, Utilities and RC plinths	123 days	16/07/20	15/11/20			
267	Backfill and install surface utilities	45 days	16/11/20	30/12/20			
268	Roadwork	60 days	31/12/20	28/02/21			
269	Section E2 - Pipe and Cable Rack and trench at west of Chimney Road and Pipe and Cable Rack at south of Middle Road at Area E8 and E19	480 days	01/01/19	15/05/20			

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Apr '19	May '19	Jun '19
270	BD consent	0 days	01/01/19	01/01/19			
271	Excavation & plate load test	60 days	01/01/19	11/03/19			
272	Construction of foundations & trenches	150 days	12/03/19	08/08/19			
273	Backfill & underground utilities	120 days	09/08/19	06/12/19			
274	Pipe & cable rack Erection	90 days	07/12/19	16/03/20			
275	Ground reinstatement	70 days	07/03/20	15/05/20			
276	Section E3 - Gas Pipe Support Foundation and Pipe Trench and associated external works at Area E14, E15 (A) and E15 (B)	173 days	01/01/20	30/06/20			
277	Removal of surcharge / site clearance	21 days	01/01/20	21/01/20			
278	Excavation & construction of pipe trench	30 days	22/01/20	29/02/20			
279	Construction of gas pipe support foundation	30 days	01/03/20	30/03/20			
280	Construction of underground drainage and utilities	60 days	31/03/20	29/05/20			
281	Backfill & road work	32 days	30/05/20	30/06/20			
282	Section E4 - 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (A)	185 days	15/03/19	15/09/19			
283	Obtain Permit to work & Road close permit	2 days	15/03/19	16/03/19			
284	Excavation & construction new cable trench	150 days	17/03/19	13/08/19			
285	Re-excavate cable trench for cable laying	150 days	19/04/19	15/09/19			
286	Section F - 275kV Station Building Extension and associated works at Area E17	650 days	01/06/18	01/04/20			
287	Installation of ELS for 275kV Switching Station near Staircase ST-3 and ST-6	14 days	01/06/18	14/06/18			
288	Construction of Staircase ST-3	110 days	15/06/18	02/10/18			
289	OP inspection of Staircase ST-3	0 days	02/10/18	02/10/18			
290	Consent & BA10 for demolition of existing staircase	0 days	16/10/18	16/10/18			
291	Demolition of existing staircase and submit BA14	14 days	17/10/18	30/10/18			
292	Consent & BA10 for new foundation work	21 days	31/10/18	20/11/18			
293	Pile Cap & Tie Beam construction incl. basement trench	60 days	21/11/18	19/01/19			
294	RC Construction up to 1/F	90 days	20/01/19	29/04/19			
295	Construction of staircase ST6	60 days	30/04/19	28/06/19			
296	Structural Steel Delivery & Erection	90 days	30/04/19	28/07/19			
297	Scaffolding erection	21 days	29/07/19	18/08/19			
298	Construction of 2/F RC slab	21 days	12/08/19	01/09/19			
299	Construction of R/F RC slab	21 days	02/09/19	22/09/19			
300	Construction of UR/F RC slab	14 days	23/09/19	06/10/19			
301	Construction of GIS Hall Floor	45 days	02/09/19	16/10/19			
302	Construction of staircase ST4	70 days	29/07/19	06/10/19			
303	Construction of staircase ST5 & Lift Shaft	90 days	12/08/19	09/11/19			
304	Concrete of RC walls, plinths, kerb and parapet walls	60 days	07/10/19	05/12/19			
305	ABFW Works from UB/F to 2/F equipment rooms	210 days	14/06/19	11/01/20			
306	Building Services E&M Access & Installation	210 days	14/07/19	19/02/20			
307	Metal Cladding, Windows and Louvres incl. roof feature	100 days	19/08/19	26/11/19			
308	Removal of external scaffolding	30 days	27/11/19	28/12/19			
309	External Underground drainage and Utilities works	50 days	29/12/19	25/02/20			
310	Road & Paving reinstatement	30 days	11/02/20	11/03/20			
311	FSD inspection	14 days	12/03/20	25/03/20			
312	OP inspection	14 days	19/03/20	01/04/20			
313	Section G - A&A Works at No. 4 C.W. Intake at Area E12	143 days	01/01/20	31/05/20			
314	Permit to work	0 days	01/01/20	01/01/20			
315	Erection of temp. platform	30 days	01/01/20	08/02/20			
316	Demolition work	60 days	09/02/20	08/04/20			
317	Modify existing slab openings	45 days	05/04/20	19/05/20			
318	Removal of platform	12 days	20/05/20	31/05/20			
319	Section H - L11 Steel flue liner at No. 4 Chimney	216 days	01/01/19	14/08/19			
320	Complete erection of L10 Steel flue	0 days	01/01/19	01/01/19			

ID	Task Name	Duration	Start	Finish	Gantt Chart		
					Apr '19	May '19	Jun '19
321	Modification of erection equipment	21 days	01/01/19	21/01/19			
322	Erection temp. platform and demolition work	30 days	22/01/19	02/03/19			
323	Structural steel delivery & Erection	90 days	03/03/19	31/05/19	Structural steel delivery & Erection		
324	Removal of temp. work	45 days	01/06/19	15/07/19			
325	Reinstate G/F louvre wall and access door	30 days	16/07/19	14/08/19			
326	Section I - (i) 275kV cable trenching works connecting the 275kV Switching Station Extension and L11 MSB at Area E9 (B)	232 days	15/09/19	15/05/20			
327	Obtain Permit to work & Road close permit	0 days	15/09/19	15/09/19			
328	Excavation & construction new cable trench	160 days	16/09/19	04/03/20			
329	Re-excavate cable trench for cable laying	72 days	05/03/20	15/05/20			
330	Section I - (ii) Interconnector 2 Trench Modification Works at Area E10	275 days	01/04/20	31/12/20			
331	Obtain Permit to work & Road close permit	0 days	01/04/20	01/04/20			
332	Re-excavate & new cable trench for cable laying	275 days	01/04/20	31/12/20			
333	Section J - (i) Demolition of Retractable Cover A&B & (ii) Construction of new LOT 3 & 4	426 days	01/03/20	30/04/21			
334	Obtain permit to work & Road close permit	0 days	01/03/20	01/03/20			
335	Erection of Hoarding	21 days	01/03/20	21/03/20			
336	Removal of existing cover & structural steel	30 days	22/03/20	20/04/20			
337	Demolish of existing bund wall and staircases	45 days	21/04/20	04/06/20			
338	Demolish of existing slab & foundation	60 days	05/06/20	03/08/20			
339	Consent for new work	30 days	04/08/20	02/09/20			
340	Construction of new bund wall and foundation	100 days	03/09/20	11/12/20			
341	Construction of new oil separator	80 days	23/09/20	11/12/20			
342	Construct underground drainage and surface channel	40 days	12/12/20	20/01/21			
343	Construction on-grade slab	60 days	21/01/21	21/03/21			
344	Removal of hoarding and ground reinstatement	40 days	22/03/21	30/04/21			
345	Section K1 - External works at Area 15 (E) and 15(F)	365 days	01/06/20	31/05/21			
346	Removal of surcharge	30 days	01/06/20	30/06/20			
347	Construct new drainage and utilities work	200 days	01/07/20	16/01/21			
348	Road & Paving	135 days	17/01/21	31/05/21			
349	Section K2 - Removal of Southern Bund and External Works at Area D5, D6 and D7	365 days	01/06/20	31/05/21			
350	Demolition work	30 days	01/06/20	30/06/20			
351	Construct new drainage and utilities work	200 days	01/07/20	16/01/21			
352	Road & Paving	135 days	17/01/21	31/05/21			
353	Section K3 - All remaining works shall be completed for reporting completion to BD and ready for OP inspection (PS1.4.4)	623 days	08/01/20	30/09/21			
354	Completion of remaining roof after over headcrane move in	30 days	08/01/20	15/02/20			
355	Construction of G/F Lube Oil Tank Room	61 days	01/06/20	31/07/20			
356	Construction of wall and staircase at G/F after Condensor Move in	139 days	15/05/20	30/09/20			
357	Construction of Durasteel Steel wall panel after IBP installation	32 days	15/05/20	15/06/20			
358	Construction of Transformer fence wall, cladding & associated FS services	122 days	01/09/20	31/12/20			
359	Final restatement of road & paving around MSB & HRSG	122 days	01/09/20	31/12/20			
360	Installation of trench covers and gratings after plant installation	151 days	01/10/20	28/02/21			
361	Backfill and reinstatement after 275kV cable laying	122 days	01/06/21	30/09/21			

Monthly Waste Flow Table for March 2019

Project: Lamna Power Station Extension - Civil and Building Works for Unit L10

Contractor: Paul Y. Construction Company, Limited

Record by: Ben Lam

Year of Record: 2016, 2017, 2018 & 2019

MM.YYYY	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of Non-inert C&D Materials Generated Monthly					
	Excavated Materials			Non-excavated Materials					Metals (steel bar / metal strip) ⁽¹⁾	Metals (aluminum can) ⁽¹⁾	Paper / cardboard packaging ⁽¹⁾	Plastics ^{(1) & (4)}	Chemical waste (wasted lubricant oil/oil container)	Other, e.g. general refuse
	Disposed in Public Fill	Disposed in Sorting Facilities	Others (e.g. Reused in the Contract / Other Projects)	Broken Concrete or Construction Waste Collected by Recycled Company	Reused in the Contract	Reused in other Projects	Disposed in Public Fill	Disposed in Sorting Facilities						
	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)
Jan-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Feb-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mar-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Apr-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
May-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jun-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jul-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aug-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sep-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oct-16	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nov-16	1779.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec-16	0.00	1.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.48
Jan-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00
Feb-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar-17	3160.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.17	0.00	0.00	0.00	0.00	0.00
Apr-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.84	0.00	0.00	0.00	0.00	0.00
May-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.41	0.00	0.00	0.00	0.00	0.00
Jun-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul-17	2988.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.26	0.00	0.00	0.00	0.00	0.00
Aug-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.61	0.00	0.00	0.00	0.00	0.00
Sep-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.04	0.00	0.00	0.00	0.00	0.00
Oct-17	1963.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00
Nov-17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.90	0.00	0.00	0.00	0.00	0.00
Dec-17	3011.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.41	0.00	0.00	0.00	0.00	0.00
Jan-18	117.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.81	0.00	0.00	0.00	0.00	151.22
Feb-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00
Mar-18	2434.48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.94
Apr-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.41	0.00	0.00	0.00	0.00	0.00
May-18	1390.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.35
Jul-18	1655.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.11	0.00	0.00	0.00	0.00	18.35
Aug-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.04	0.00	0.00	0.00	0.00	35.11
Sep-18	823.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.75	0.00	0.00	0.00	0.00	2.93
Nov-18	1734.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60	5.09
Dec-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.64	0.00	0.00	0.00	0.00	1.79
Jan-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.94	0.00	0.00	0.00	0.00	25.57
Feb-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	21057.60	1.43	0.00	0.00	0.00	0.00	0.00	0.00	282.34	0.00	0.00	0.00	1.20	304.83

Total Inert C&D Waste Materials Generated	Non-inert C&D Materials		
	C&D Materials Recycled	C&D Waste Disposed of at Landfill	Chemical Waste
21059.03 tonnes	282.34 tonnes	304.83 tonnes	1200 Liters

Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 21059.03 tonnes of inert C&D material were generated from the Project, of which 0 tonnes were reused in this and other contracts, and the remaining 21059.03 tonnes were disposed as public fill to Fill Banks / Sorting Facilities.

(b) Non-inert C&D materials (construction wastes) include metals, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Metals generated from the Project were grouped into construction wastes as the materials were not disposed of with others at the public fill.

(c) 0 kg of metals, 0 kg of papers/ cardboard packing and 0 kg of plastics were sent to recyclers for recycling during the reporting period.

(d) Construction wastes other than metals, paper/cardboard packaging, plastics and chemicals were disposed of at Landfill.

Notes:

- (1) metal, paper & plastic were collected by recycler
- (2) The performance target of waste recycling are specified in the Contract.
- (3) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- (4) Plastics refer to plastic bottles/ containers, plastic/ foam from packaging material.
- (5) Broken concrete for recycling into aggregates.
- (6) Disposal of inert waste to public fill or sorting facilities will NOT be considered as recycled waste.

Monthly Waste Flow Table for March 2019

Project: LAMMA POWER STATION EXTENSION – Unit 10 Complete Erection, Inspection, Testing & Commissioning of Power Block Facilities

Contractor: Taihei Dengyo Kaisha, Ltd.

Record by: Stephen Sin

Year of Record: 2017, 2018, 2019

MM.YYYY	Actual Quantities of Inert C&D Materials Generated Monthly							Actual Quantities of Non-inert C&D Materials Generated Monthly						
	Excavated Materials				Non-excavated Materials			Metals (steel bar / metal strip) ⁽¹⁾	Metals (aluminum can) ⁽¹⁾	Paper / cardboard packaging ⁽¹⁾	Plastics ^{(1) & (4)}	Chemical waste (wasted lubricant oil/oil container)	Other, e.g. general refuse	
	Disposed in Public Fill	Disposed in Sorting Facilities	Others (e.g. Reused in the Contract / Other Projects)	Broken Concrete or Construction Waste Collected by Recycled Company	Reused in the Contract	Reused in other Projects	Disposed in Public Fill							Disposed in Sorting Facilities
(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in L)	(in '000kg)		
Jan 2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Feb 2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Mar 2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Apr 2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
May 2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Jun 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Aug 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Sep 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Oct 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Dec 2017	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jan 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Feb 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Mar 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.73	
Apr 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.09	
May 2018	0.00	0.00	0.00	0.00	0.00	0.00	8.43	7.53	0.00	0.00	0.00	0.00	0.00	
Jun 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Jul 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.82	
Aug 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	67.37	
Sep 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.36	
Oct 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	91.32	
Nov 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.35	
Dec 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.23	
Jan 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.97	
Feb 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	60.00	7.11	
Mar 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Apr 2019														
May 2019														
Jun 2019														
Jul 2019														
Aug 2019														
Sep 2019														
Oct 2019														
Nov 2019														
Dec 2019														
Total	0.00	0.00	0.00	0.00	0.00	0.00	8.43	7.53	0.00	0.00	0.00	120.00	255.35	

Total Inert C&D Waste Materials Generated	Non-inert C&D Materials		
	C&D Materials Recycled	C&D Waste Disposed of at Landfill	Chemical Waste
15.96 tonnes	0.00 tonnes	255.35 tonnes	120.00 Liters

Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 15.96 tonnes of inert C&D material were generated from the Project, of which 0 tonnes were reused in this and other contracts, and the remaining 15.96 tonnes were disposed in Public Fill and Sorting Facilities.

(b) Non-inert C&D materials (construction wastes) include metals, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Metals generated from the Project were grouped into construction wastes as the materials were not disposed of with others at the public fill.

(c) 0 kg of metals, 0 kg of papers/ cardboard packing and 0 kg of plastics were sent to recyclers for recycling during the reporting period.

(d) Construction wastes other than metals, paper/cardboard packaging, plastics and chemicals were disposed of at Landfill.

Notes:

- (1) metal, paper & plastic were collected by recycler
- (2) The performance target of waste recycling are specified in the Contract.
- (3) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- (4) Plastics refer to plastic bottles/ containers, plastic/ foam from packaging material.
- (5) Broken concrete for recycling into aggregates.
- (6) Disposal of inert waste to public fill or sorting facilities will **NOT** be considered as recycled waste.

Monthly Waste Flow Table for March 2019

Project: Lamma Power Station Extension - Civil and Building Works for Unit L11

Contractor: Paul Y. Construction Company, Limited

Record by: Ben Lam

Year of Record: 2018 & 2019

MM.YYYY	Actual Quantities of Inert C&D Materials Generated Monthly								Actual Quantities of Non-inert C&D Materials Generated Monthly					
	Excavated Materials			Non-excavated Materials					Metals (steel bar / metal strip) ⁽¹⁾	Metals (aluminum can) ⁽¹⁾	Paper / cardboard packaging ⁽¹⁾	Plastics ^{(1) & (4)}	Chemical waste (wasted lubricant oil/oil container)	Other, e.g. general refuse
	Disposed in Public Fill	Disposed in Sorting Facilities	Others (e.g. Reused in the Contract / Other Projects)	Broken Concrete or Construction Waste Collected by Recycled Company	Reused in the Contract	Reused in other Projects	Disposed in Public Fill	Disposed in Sorting Facilities						
(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000kg)	(in '000L)	(in '000kg)	
Jul 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep 2018	3160.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nov 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.87
Dec 2018	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.67
Jan 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.66	0.00	0.00	0.00	0.60	0.00
Mar 2019	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.05	0.00	0.00	0.00	0.00	0.00
Apr 2019														
May 2019														
Jun 2019														
Jul 2019														
Aug 2019														
Sep 2019														
Oct 2019														
Nov 2019														
Dec 2019														
Total	3160.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.71	0.00	0.00	0.00	0.60	19.54

Total Inert C&D Waste Materials Generated	Non-inert C&D Materials		
	C&D Materials Recycled	C&D Waste Disposed of at Landfill	Chemical Waste
3160.23 tonnes	16.71 tonnes	19.54 tonnes	600 Liters

- Where (A) Inert C&D materials include bricks, concrete, building debris, rubble and excavated spoil. In total, 3160.23 tonnes of inert C&D material were generated from the Project, of which 0 tonnes were reused in this and other contracts, and the remaining 3160.23 tonnes were disposed as public fill to Fill Banks / Sorting Facilities.
- (b) Non-inert C&D materials (construction wastes) include metals, paper / cardboard packaging waste, plastics and other wastes such as general refuse. Metals generated from the Project were grouped into construction wastes as the materials were not disposed of with others at the public fill
- (c) 12050 kg of metals 0 kg of papers/ cardboard packing and 0 kg of plastics were sent to recyclers for recycling during the reporting period.
- (d) Construction wastes other than metals, paper/cardboard packaging, plastics and chemicals were disposed of at Landfill.

Notes:

- (1) metal, paper & plastic were collected by recycler
- (2) The performance target of waste recycling are specified in the Contract.
- (3) The waste flow table shall also include C&D materials that are specified in the Contract to be imported for use at the Site.
- (4) Plastics refer to plastic bottles/ containers, plastic/ foam from packaging material.
- (5) Broken concrete for recycling into aggregates.
- (6) Disposal of inert waste to public fill or sorting facilities will NOT be considered as recycled waste.